

## ROTO SILENTA 630 RS



### **Inhalt des Dokuments / content of the document**

Uputa za korištenje (HR)

Rotoren und Zubehör / Rotors and accessories



# Uputa za korištenje

## ROTO SILENTA 630 RS



Prijevod originalne Upute za korištenje

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## 1 O ovom dokumentu

### 1.1 Primjena ovog dokumenta

- Prije prve uporabe uređaja pomno i u potpunosti pročitajte ovaj dokument.  
Ako je potrebno, obratite pozornost na priložene dodatne informacije.
- Ovaj je dokument dio uređaja i mora se držati nadohvat ruke.
- Priložite ovaj dokument kada uređaj prosljeđujete trećim stranama.
- Trenutna inačica dokumenta na dostupnim jezicima može se pronaći na web-stranici proizvođača: ➔ <https://www.hettichlab.com/de/download-center/>







### 1.2 Napomena o spolu

Za lakšu čitljivost koristi se muški ili ženski jezični oblik. U smislu načela jednakog tretmana, odgovarajući pojmovi odnose se na sve spolove i ne podrazumijevaju nikakvo vrednovanje.

### 1.3 Simboli i oznake u ovom dokumentu

#### Opći simboli

U ovom dokumentu se koriste sljedeće oznake za isticanje radnih uputa, rezultata, popisa, referenci i drugih elemenata:

Oznaka	Objašnjenje
1.  2.  3.  ... 	Detaljne upute kroz svaku fazu
	Rezultati poduzetih radnji
	Reference na dijelove dokumenta i druge primjenjive dokumente
■ ... ■ ...	Popisi bez određenog redoslijeda
[Gumb]	Upravljački elementi (na primjer: gumb, sklopka)
„Indikator“	Elementi indikatora (na primjer: signalna svjetla, elementi zaslona)

## 2 Sigurnost

### 2.1 Predviđena namjena

#### Predviđena namjena

Predstavljeni uređaj je laboratorijska centrifuga pogodna za medicinske primjene.

Njegova isključiva terapijska svrha je centrifugiranje krvi u sustavima vrećica za krv. Izdvojene krvne komponente iz drugog uređaja (separatora) prenose se u odgovarajuće satelitske vrećice. Tako dobivene pojedinačne komponente potom se koriste za transfuziju ili autotransfuziju.

Centrifugom smije upravljati samo stručno osoblje u ambulancama za davanje krvi ili bolnicama.

Centrifuga je namijenjena samo za gore navedene svrhe.



Bilo kakva drugačija upotreba ili upotreba izvan navedenih uvjeta smatra se neprikladnom. Tvrtka Andreas Hettich GmbH & Co. KG neće biti odgovorna ni za kakvu štetu koja proizlazi iz takvih upotreba.

Predviđena namjena uključuje i poštivanje svih uputa iz Priručnika za upotrebu te pridržavanje intervala pregleda i održavanja.

### Nepredviđena namjena

- Centrifuga nije prikladna za korištenje u potencijalno eksplozivnim, radioaktivnim, biološki ili kemijski kontaminiranoj atmosferi.
- Korisnik mora poduzeti odgovarajuće mjere prilikom centrifugiranja opasnih tvari ili smjesa tvari koje su otrovne, radioaktivne ili onečišćene patogenim mikroorganizmima.

Proizvođač općenito preporučuje da se za opasne tvari koriste samo posude za centrifugiranje s posebnim čepovima na navoj.

Za materijale iz rizičnih skupina 3 i 4 upotrebljavajte epruvete za centrifugiranje sa čepom s bio-sigurnosnim sustavom.

- Proizvođač ne preporučuje centrifugiranje sa zapaljivim ili eksplozivnim materijalima.
- Proizvođač ne preporučuje centrifugiranje s materijalima koji međusobno kemijski reagiraju s visokom energijom.

### Predvidljiva zlouporaba

U okviru predviđene namjene, proizvođač preporučuje korištenje samo pribora koji je on odobrio.

Centrifugom rukujte samo pod nadzorom.

## 2.2 Zahtjevi za osoblje

### Potrebne kvalifikacije

Korisnik je u cijelosti pročitao upute za uporabu i upoznao se s uređajem.



#### UPUTA

##### Oštećenje uređaja uzrokovano neovlaštenim osobama

- Zahvati i izmjene na uređajima od strane neovlaštenih osoba su na vlastitu odgovornost i dovode do gubitka svih jamstvenih zahtjeva i potraživanja odgovornosti.

### Školovani korisnik

Korisnik je školovan ili osposobljen za rad u laboratoriju i sposoban je obavljati poslove koji su mu dodijeljeni te samostalno prepoznati i izbjeći moguće opasnosti.

### Osobna zaštitna oprema

Nedostatak ili neprikladna osobna zaštitna oprema povećava opasnost od narušavanja zdravlja i ozljeda.

- Upotrebljavajte samo ispravnu osobnu zaštitnu opremu.
- Upotrebljavajte samo osobnu zaštitnu opremu koja je prilagođena osobi (npr. veličinom).
- Pridržavajte se informacija o daljnjoj zaštitnoj opremi za određene aktivnosti.

## 2.3 Odgovornost rukovatelja



*Za pravilnu i sigurnu uporabu uređaja slijedite upute u ovom dokumentu.*

*Sačuvajte upute za uporabu za buduće potrebe.*

### Pružanje informacija

- Pridržavanje uputa u ovom dokumentu osigurava sljedeće:
  - izbjegavanje opasnih situacija,
  - smanjenje troškova popravaka i zastoja u radu na minimum,
  - povećanje pouzdanosti i vijeka trajanja uređaja.
- Rukovatelj je odgovoran za poštivanje propisa tvrtke, standarda i nacionalnih zakona.
- Zabilježite i držite reviziju dokumenta odvojeno od dokumenta. Ako se izgubi, dokument se može zamijeniti ispravnom revizijom.
- Upute za uporabu držite dostupne na mjestu uporabe uređaja.
- U slučaju prodaje uređaja, prosljedite kupcu upute za uporabu.

### Obuka osoblja

Nedostatak znanja pri radu s uređajem može dovesti do teških ozljeda i smrti.

- Podučite osoblje u skladu s uputama o njihovim zadacima i povezanim rizicima.

## 2.4 Sigurnosne upute



***Izvešća o ozbiljnim događajima i incidentima koji se moraju prijaviti***

*Ako dođe do težih incidenata koji zahtijevaju prijavu u vezi s uređajem ili njegovim priborom, obavezno ih je prijaviti proizvođaču i, ako je potrebno, nadležnom tijelu u kojem korisnik i/ili pacijent ima prijavljeno sjedište.*



### OPASNOST

**Opasnost od kontaminacije korisnika uslijed nedovoljnog čišćenja ili nepridržavanja uputa za čišćenje.**

- Pridržavajte se uputa za čišćenje.
- Prilikom čišćenja uređaja nosite osobnu zaštitnu opremu.
- Pridržavajte se laboratorijskih propisa (npr. TRBA - Tehnička pravila za biološke agense, IfSG - Njemački zakon o zaštiti od infekcija, plan higijene) za rukovanje biološkim agensima.



### OPASNOST

**Rizik od požara i eksplozije opasnih tvari u uzorcima.**

- Pridržavajte se relevantnih propisa i smjernica za rukovanje kemikalijama i opasnim tvarima.
- Nemojte koristiti agresivne kemikalije (na primjer: opasna, korozivna sredstva za ekstrakciju kao što je kloroform, jake kiseline).



## UPOZORENJE

### Opasnosti od nedovoljnog ili nepravodobnog održavanja.

- Pridržavajte se rokova održavanja.
- Provjerite ima li na uređaju vidljivih oštećenja ili nedostataka.

U slučaju vidljivih oštećenja ili nedostataka, isključite uređaj iz pogona i obavijestite servisera.



## ⚠ UPOZORENJE

### Opasnost od strujnog udara zbog ulaska vode ili drugih tekućina.

- Zaštitite uređaj od vanjskog prodora tekućine.
- Nemojte ulijevati tekućine u unutrašnjost uređaja.
- Uređaj prevozite samo u originalnoj ambalaži.



## ⚠ UPOZORENJE

### Kontaminacija opasnim tvarima i smjesama!

U slučaju tvari i smjesa koje su otrovne, radioaktivne i/ili kontaminirane patogenim mikroorganizmima, pridržavajte se sljedećih mjera:

- Obavezno upotrebljavajte samo epruvete za centrifugiranje s posebnim čepovima na navoj za opasne tvari.
- Za materijale iz rizičnih skupina 3 i 4 upotrebljavajte epruvete za centrifugiranje sa čepom s bio-sigurnosnim sustavom.
- Bez korištenja bio-sigurnosnog sustava, uređaj nije mikrobiološki nepropustan u smislu norme EN / IEC 61010-2-020.
- Ako je potrebno, obratite se proizvođaču.



## UPOZORENJE

### Opasnost od ozljeda i oštećenja uređaja zbog labavog rotora.

- Prilikom postavljanja rotora, zahvatnik osovine motora mora pravilno sjesti u utor na rotoru.
- Rukom stegnite maticu koja pričvršćuje rotor.
- Provjerite dobru učvršćenost rotora.
- Pridržavajte se rokova održavanja.



## OPREZ

### Opasnost od ozljeda uslijed vrtnje rotora

Duga kosa i odjeća mogu zapeti za rotor dok se ručno pomiče.

- Skupite i svežite dugu kosu.
- Ne dopustite da dijelovi odjeće ulaze u komoru centrifuge.

**UPUTA**

Oštećenje elektronike uređaja zbog neispravnog napona ili frekvencije sklopke uređaja.

- Priključite uređaj na ispravan mrežni napon i frekvenciju mreže.  
Vrijednost se može pronaći u tehničkim podacima i na tipskoj oznaci.

**UPUTA**

Oštećenje uređaja i uzoraka zbog prijevremenog prekida programa.

Program se može prijevremeno prekinuti ako dođe do nestanka struje, ako je stroj isključen dok je program u tijeku ili je utikač izvučen iz utičnice.

- Ne isključujte uređaj dok je program u tijeku.
- Ne oslobađajte poklopac uređaja dok je program u tijeku.
- Nemojte izvlačiti utikač dok je program u tijeku.

### 3 Pregled uređaja

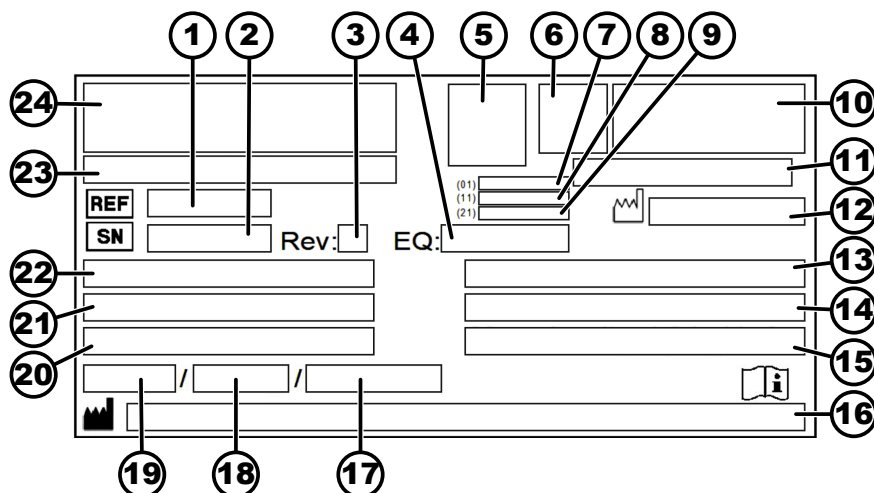
#### 3.1 Tehnički podaci

Proizvođač	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen		
Model	ROTO SILENTA 630 RS		
Tip	5005, 5005-50	5005-80	5005-90
Mrežni napon (±10%)	400 V 3~ +N		
Mrežna frekvencija	50 – 60 Hz		
Priključna vrijednost	9700 VA	9400 VA	6600 VA
Potrošnja struje	14 A	13,5 A	9,5 A
Rashladno sredstvo	R452A		
maks. kapacitet	12000 ml		
maks. dopuštena gustoća	1,2 kg/dm <sup>3</sup>		
maks. broj okretaja (okr/min)	6000		
maks. ubrzanje (RCF)	6520		
maks. kinetička energija	215000 Nm		

Obavezni tehnički pregled (DGUV Regeln 100-500) (vrijedi samo u Njemačkoj)	da		
<b>Uvjeti okoline (EN / IEC 61010-1):</b>			
Mjesto postavljanja	samo u zatvorenim prostorima		
Visina	do 2000 m nadmorske visine		
Okolišna temperatura	5 °C do 40 °C		
Vlažnost zraka	maksimalna relativna vlažnost zraka 80 % za temperature do 31 °C, linearno opadajući do 50 % relativne vlažnosti na 40 °C.		
Kategorija prenapona (IEC 60364-4-443)	II		
Stupanj onečišćenja	2		
Razred zaštite uređaja	I nije prikladno za korištenje u potencijalno eksplozivnim okruženjima.		
<b>EMK:</b>			
Emisija smetnji, Neosjetljivost na smetnje	EN / IEC 61326-1 Razred B		
Razina buke (ovisno o rotoru)	≤62 dB(A)		≤56 dB(A)
<b>Dimenzije:</b>			
Širina	813 mm		
Dubina	1015 mm	1050 mm	
Visina	973 mm		
Masa	oko 355 kg	oko 367 kg	oko 306 kg
Proizvođač	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen		
Model	ROTO SILENTA 630 RS		
Tip	5005-08		
Mrežni napon (±10%)	208-220 V +6/-10% 3~ (+N) +PE		
Mrežna frekvencija	50 – 60 Hz		
Priključna vrijednost	9000 VA		
Potrošnja struje	25 A		

Rashladno sredstvo	R452A
maks. kapacitet	12000 ml
maks. dopuštena gustoća	1,2 kg/dm <sup>3</sup>
maks. broj okretaja (okr/min)	6000
maks. ubrzanje (RCF)	6498
maks. kinetička energija	215000 Nm
Obavezni tehnički pregled (DGUV Regeln 100-500) (vrijedi samo u Njemačkoj)	da
<b>Uvjeti okoline (EN / IEC 61010-1):</b>	
Mjesto postavljanja	samo u zatvorenim prostorima
Visina	do 2000 m nadmorske visine
Okolišna temperatura	5 °C do 30 °C
Vlažnost zraka	maksimalna relativna vlažnost zraka 80 % za temperature do 31 °C, linearno opadajući do 50 % relativne vlažnosti na 40 °C.
Kategorija prenapona (IEC 60364-4-443)	II
Stupanj onečišćenja	2
Razred zaštite uređaja	I nije prikladno za korištenje u potencijalno eksplozivnim okruženjima.
<b>EMK:</b>	
Emisija smetnji, Neosjetljivost na smetnje	EN / IEC 61326-1 Razred B
Razina buke (ovisno o rotoru)	≤62 dB(A)
<b>Dimenzije:</b>	
Širina	813 mm
Dubina	1015 mm
Visina	973 mm
Masa	oko 401 kg

## Tipska oznaka



Slika 1: Tipska oznaka

- 1 Broj artikla
- 2 Serijski broj
- 3 Revizija
- 4 Broj opreme
- 5 Kôd matrice podataka
- 6 može biti Označavanje medicinskih proizvoda ili in vitro dijagnostike
- 7 Global Trade Item Number (GTIN)
- 8 Datum proizvodnje
- 9 Serijski broj
- 10 može biti EAC-oznaka, CE-oznaka
- 11 Zemlja proizvodnje
- 12 Datum proizvodnje
- 13 Mrežna frekvencija
- 14 Maksimalna kinetička energija
- 15 Maksimalna dopuštena gustoća
- 16 Adresa proizvođača
- 17 može biti Tlak u krugu rashladnog sredstva
- 18 može biti Količina punjenja rashladnog sredstva
- 19 može biti Tip rashladnog sredstva
- 20 Broj okretaja u minuti
- 21 Vrijednost snage
- 22 Mrežni napon
- 23 može biti Oznaka uređaja
- 24 Logotip proizvođača

## 3.2 Europska registracija

### Sukladnost uređaja



Sukladnost uređaja prema EU smjernicama.

#### Prijavljeno tijelo:

mdc medical device certification GmbH – Prijavljeno tijelo CE 0483

Tel: +49 (0)711 253597 0

Faks: +49 (0)711 258597 10

E-pošta: mdc@mdc-ce.de

Web-mjesto: www.mdc-ce.de

Adresa: Kriegerstraße 6, D-70191 Stuttgart; Deutschland

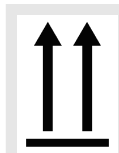
### Single Registration Number

SRN: DE-MF-000010680

## Osnovni-UDI-DI

Osnovni-UDI-DI	Svrstavanje uređaja
040506740100019J	ROTO SILENTA 630 RS (Medicinski proizvod)

## 3.3 Važne oznake na pakiranju



## GORE

Ovo je ispravan uspravan položaj proizvoda u ambalaži za transport i/ili skladištenje.



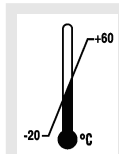
## LOMLJIVA ZAPAKIRANA ROBA

Sadržaj u transportnoj ambalaži je lomljiv, stoga se njime mora pažljivo rukovati.



## ZAŠTITITI OD VLAGE

Otpremnu ambalažu treba držati dalje od kiše i u suhom okruženju.



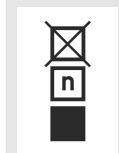
## OGRANIČENJE TEMPERATURE

Obavezno je skladištenje, prijevoz i rukovanje ambalažom za otpremu unutar naznačenog raspona temperature (-20 °C bis +60 °C)



## OGRANIČENJE VLAGE

Proizvod u ambalaži mora se skladištiti, transportirati i njime se mora rukovati unutar naznačenog raspona vlažnosti (10 % do 80 %).



## OGRANIČEN BROJ NASLAGANIH PAKETA

Maksimalni broj jednakih paketa koji se mogu složiti na donji paket, gdje je „n“ dopušteni broj paketa. Donji paket nije uračunat u „n“.

## 3.4 Važne oznake na uređaju



Oznake na uređaju ne smiju se uklanjati, prelijepiti ili prekrivati.





Pozor, područje opće opasnosti.

Prije uporabe uređaja obavezno pročitajte upute za puštanje u rad i rukovanje te se pridržavajte sigurnosnih uputa!



Upozorenje na biološku opasnost.



Upozorenje na vruću površinu.

Nepridržavanje ovih uputa može dovesti do materijalne štete i tjelesnih ozljeda.



Smjer vrtnje rotora.

Orijentacija strelice pokazuje smjer okretanja rotora.



Simbol za odvojeno prikupljanje električne i elektroničke opreme, prema Direktivi 2012/19/EU (WEEE).

Uporaba u zemljama Europske unije, u Norveškoj i Švicarskoj.



Položaji sklopke s ključem.

IOIOI  
OPTICAL

Centrifuga je opremljena optičkim sučeljem.

Optičko sučelje označeno je simbolom.

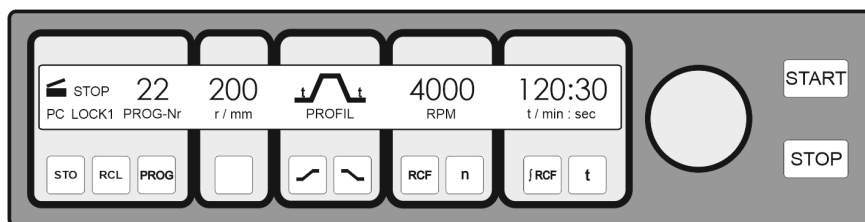
Putem sučelja se može upravljati centrifugom i mogu se tražiti podaci. Tipka *[PROG]* svijetli tijekom podatkovne komunikacije.



Ekvipotencijal: Utični priključak (PA utikač) za izjednačavanje potencijala (samo za centrifuge s PA utikačem).

## 3.5 Elementi za rukovanje i indikatori

### 3.5.1 Upravljački panel



Slika 2: Upravljački panel

### 3.5.2 Indikatori



Slika 3: Tipka [Poklopac]



Slika 4: Indikator „Poklopac je zaključan“



Slika 5: Indikator „Poklopac otvoren“

#### LOCK 1, LOCK 2

Slika 6: Indikator [Položaj sklopke s ključem]

#### LOCK 4, LOCK 5

Slika 7: Indikator [Položaj sklopke s ključem]

#### PC, ~~PC~~

Slika 8: Indikator [Serijska komunikacija]



Slika 9: Indikator „Rotacija“

- Tipka svijetli kada je poklopac zatvoren.
- Indikator se pojavljuje kada je poklopac zaključan.
- Indikator se pojavljuje kada je poklopac otvoren.
- Indikator se pojavljuje kada je sklopka s ključem u ovom položaju.
- Indikator se pojavljuje kada je aktivirano programsko zaključavanje serijskom komunikacijom (samo za centrifuge sa serijskom komunikacijom).
- Indikator se pojavljuje kada centrifuga ima serijsko sučelje i centrifuga je spojena ili nije spojena.
- Indikator se pojavljuje kada se rotor okreće.

## STOP

Slika 10: Indikator [STOP]

- Indikator se pojavljuje tijekom centrifugiranja sve dok se rotor okreće. Nakon zaustavljanja u slučaju nužde, indikator trepće.
- Indikator trepće nakon zaustavljanja u nuždi.

### 3.5.3 Upravljački elementi



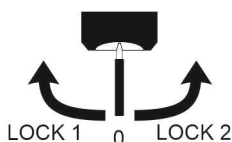
Slika 11: [Okretni gumb]

- Podešavanje pojedinačnih parametara.  
Okretanje u smjeru suprotnom od kazaljke sata smanjuje vrijednost.  
Okretanje u smjeru kazaljke sata povećava vrijednost.



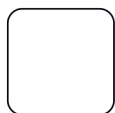
Slika 12: [Mrežna sklopka]

- Uključuje i isključuje uređaj.



Slika 13: [Sklopka s ključem]

- Ovisno o svom položaju, sklopka s ključem uključuje i isključuje različite funkcije.



Slika 14: Tipka [Temperatura i polumjer centrifugiranja]

- Zadana vrijednost temperature, parametar T/°C  
Podesivo od -20 °C do +40 °C, u koracima od 1 °C (kod opcije grijanje/hlađenje podesivo od -20 °C do +90 °C).  
Najniža dostižna temperatura ovisi o rotoru.
- Polumjer centrifugiranja  
Parametar r/mm. Unos u mm.



Slika 15: Tipka [Parametar zaleta]

- Parametar zaleta  
Stupanj 9 = najkraće vrijeme zaleta, Stupanj 1 = najduže vrijeme zaleta.
- Parametar vremena zaleta  
Podesivi vremenski raspon ovisi o postavljenom broju okretaja.



Slika 16: Tipka [Parametar samozaustavljanja]

- Stupnjevi kočenja, parametar  
R = linearna krivulja kočenja,  
B = slično eksponencijalnoj krivulji kočenja.  
Stupanj R9, B9 = kratko vrijeme samozaustavljanja, ...  
Stupanj R1, B1 = dugo vrijeme samozaustavljanja,  
Stupanj R0 = samozaustavljanje bez kočenja.
- Vrijeme samozaustavljanja, parametar  
Podesivi vremenski raspon ovisi o postavljenom broju okretaja.
- Broj okretaja isključenja kočnice, parametar n<sup>o</sup> /RPM  
Nakon postizanja tog broja okretaja, nastupa samozaustavljanje bez kočenja.



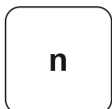
Slika 17: Tipka [Poklopac]

- Poklopac otvoren.



Slika 18: Tipka [∫RCF]

- Traženje integrala od RCF, parametar ∫RCF



Slika 19: Tipka [n]

- Broj okretaja, parametar RPM.  
Podesivo od 50 okr/min do maksimalnog broja okretaja rotora (n-max-Rotor)
- Traženje maksimalnog broja okretaja rotora, parametar "n-max-Rotor"



Slika 20: Tipka [PROG]

- Biranje lokacije programa, parametar PROG-Nr.



Slika 21: Tipka [RCF]

- Relativno centrifugalno ubrzanje, parametar RCF/RZB  
Može se postaviti brojčana vrijednost koja daje broj okretaja između 50 okr/min i najvećeg broja okretaja rotora (n-max-Rotor). Podesivo u koracima od po 1 sekunde.
- Traženje maksimalnog RCF rotora, parametar "RCF-max-Rotor".



Slika 22: Tipka [RCL]

- Pozivanje programa.



Slika 23: Tipka [START]

- Pokretanje centrifugiranja.
- Prihvatanje promjena tijekom centrifugiranja.



Slika 24: Tipka [STO]

- Spremanje programa. Moguće je spremiti 89 programa (lokacije programa od 1 do 89). Lokacije programa „----“ i 90 do 99 služe kao automatski međuspremnik. Nijedan se program ne može spremiti na ove programske lokacije.



Slika 25: Tipka [STOP]



Slika 26: Tipka [t]

- Završetak centrifugiranja.  
Rotor se vrti s prethodno odabranim stupnjem kočenja.

- Vrijeme rada, parametar t/min:sec  
Parametar t/min: Podesivo od 1 do 999 min, u koracima od 1 minute.  
Parametar t/ :sec. Podesivo od 1 - 59 s, u koracima od 1 sekunde.  
Kontinuirani rad „---:--“

### 3.6 Originalni zamjenski dijelovi

Koristite samo originalne rezervne dijelove proizvođača i odobreni pribor.

### 3.7 Opseg isporuke

Uz centrifugu se isporučuje sljedeći pribor:

- 1 mast za podmazivanje osigurača
- 1 viličasti ključ (SW17 i SW19)
- 1 šesterokutni imbus-ključ (SW5 x 170)
- 10 pokrivne kape Ø12
  
- 3 vijka za drvo
- 3 podložne pločice
- 2 metalne vodilice
- 4 čavla sa širokom glavom
- 1 upute za uporabu
- 1 informacijski list za uklanjanje ambalaže
- 1 informacijski list za postavljanje
- 3 programske tablice s podacima za S upravljački dio

Dodatno za tipove 5005-08, 5005-80, 5005-90:

- 1 Upute za postavljanje i instalaciju

Dodatno za dostavu u Njemačkoj:

- 1 ispitna knjižica

Rotori i pripadajući pribor isporučuju se ovisno o narudžbi.

### 3.8 Povrat robe

Za povrat se uvijek mora zatražiti originalni povratni obrazac (RMA) proizvođača. Bez originalnog povratnog obrasca proizvođača nije moguće sigurno preuzeti robu i prijaviti robu proizvođaču. Obrazac za povrat (RMA) sadrži "Izjavu o neprotivljenju" (UBE) koju je potrebno u potpunosti ispuniti i priložiti uz povrat.

Ako se uređaj i/ili pribor šalju natrag proizvođaču, pošiljatelj povrata mora očistiti i dekontaminirati cijelu pošiljku povrata. Ako povratni predmeti nisu očišćeni ili su nedovoljno očišćeni i/ili nedovoljno dekontaminirani, to će izvršiti proizvođač, na trošak pošiljatelja.

Uz povratnu pošiljku moraju biti pričvršćeni originalni osigurači za transport, pogledajte ➔ *Poglavlje 4 „Transport i skladištenje“ na stranici 20*. Uređaj se mora poslati u originalnom pakiranju.

## 4 Transport i skladištenje

### 4.1 Uvjeti transporta i skladištenja

#### Uvjeti transporta



#### UPUTA

**Oštećenje uređaja uslijed nedostatka korištenja osigurača za transport.**

- Prije transporta uređaja, pričvrstite osigurače za transport.



#### UPUTA

**Oštećenje uređaja uslijed kondenzata.**

Kod temperaturne razlike između hladnog i toplog, postoji opasnost od stvaranja kondenzacije na elektroničkim komponentama. Kondenzat koji se stvara može izazvati kratki spoj ili uništiti elektroniku.

- Uređaj ostavite najmanje 3 sata u toploj prostoriji da se ugrije prije nego što ga priključite na električnu mrežu. ili
- pustite da radi 30 minuta u hladnoj prostoriji kako bi se zagrijao.

- Prije transporta pričvrstite osigurače za transport i isključite uređaj iz električne utičnice.
- Temperatura u transportu mora biti između -20 °C i +60 °C.
- Vлага se ne smije kondenzirati. Vлага mora biti između 10 % i 80 %.
- Uzmite u obzir težinu uređaja.
- Prilikom prijevoza s transportnim pomagalom (npr. transportnim kolicima), pomagalo mora moći nositi najmanje 1,6 puta veću težinu uređaja.
- Osigurajte uređaj od prevrtanja i pada tijekom transporta.
- Nikada ne transportirajte uređaj položen na bok ili okrenut naopako.

#### Uvjeti skladištenja

- Uređaj se mora čuvati u originalnom pakiranju.
- Uređaj čuvajte samo u suhim prostorijama.
- Temperatura skladištenja mora biti između -20 °C i +60 °C.
- Vлага se ne smije kondenzirati. Vлага mora biti između 10 % i 80 %.

## 5 Puštanje u rad

### 5.1 Raspakiranje centrifuge



#### OPREZ

Opasnost od prignječenja od dijelova koji ispadnu iz pakiranja.

- Držite uređaj u položaju ravnoteže tijekom postupka raspakiranja.
- Otvarajte ambalažu samo na za to predviđenim mjestima.



#### OPREZ

Opasnost od ozljeda uslijed dizanja teških tereta.

- Osigurajte odgovarajući broj pomagača.
- Uzmite u obzir težinu. Pogledajte ➔ *Poglavlje 3.1 „Tehnički podaci“ na stranici 10.*



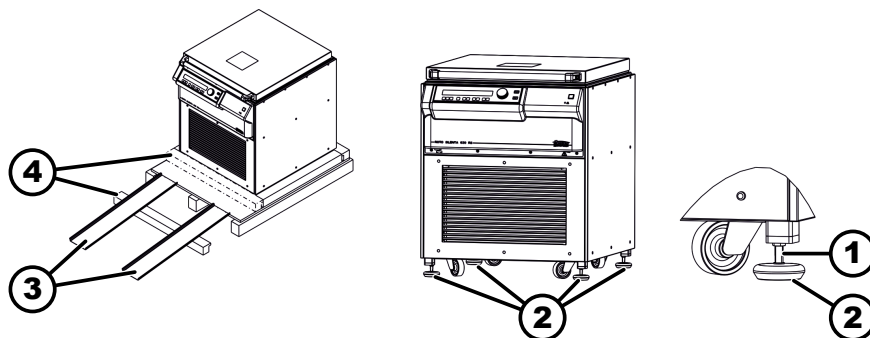
#### UPUTA

Oštećenje uređaja zbog nestručnog podizanja.

- Ne podižite centrifugu hvatanjem za upravljačku ploču ili držač upravljačke ploče.

#### Osoblje:




- Školovani korisnik



Slika 27: Raspakiranje

- 1 Zaravnanje
- 2 Nogari uređaja
- 3 Metalne vodilice
- 4 Drvene gredice

1. ➤ Uklonite ambalažu.
2. ➤ Uklonite drvene gredice (4).
3. ➤ Metalne vodilice (3) učvrstite s pomoću dva čavla za drvenu paletu.
4. ➤ Drvene gredice (4) podmetnite pod metalne vodilice (3) kao potporu.
5. ➤ Viličasti ključ (otvora 10 mm) natakните na zaravnanje (1) i nogare uređaja (2) uvrnite prema gore koliko god je moguće.
6. ➤ Pažljivo odmičite centrifugu s drvene palete putem metalnih vodilica (3).

7.  Gurnite centrifugu na mjesto za postavljanje.
8.  Viličasti ključ (otvora 10 mm) natakните na zaravnanje (1) pa nogare uređaja (2) odvrnite prema dolje koliko god je moguće, sve dok zakretni kotači ne budu više dodirivali pod.
9.  Okretanjem nogara uređaja (2) poravnajte centrifugu u vodoravnom položaju.

## 5.2 Postavljanje i priključivanje centrifuge

### Postavljanje centrifuge



#### UPOZORENJE

Opasnost od ozljeda zbog nedovoljne udaljenosti od centrifuge.

- Zabranjeno je zadržavanje osoba te držanje opasnih stvari ili predmeta unutar **sigurnosnog područja od 300 mm** od uređaja za centrifugiranje dok centrifuga radi, a u skladu s EN / IEC 61010-2-020.
- Mora se održavati razmak od **300 mm** do proreza za ventilaciju i ventilacijskih otvora centrifuge.



#### OPREZ

Opasnost od prignječenja i oštećenja uređaja uslijed prevrtanja zbog promjena položaja uzrokovanih vibracijama.

- Postavite uređaj na stabilnu i vodoravnu površinu.
- Odaberite površinu za postavljanje prema težini uređaja.






#### UPUTA

Oštećenje uzoraka i uređaja uslijed prekoračenja ili pada ispod najviše dopuštene temperature okoline.

- Za postavljanje uređaja uzmite u obzir maksimalne i minimalne dopuštene temperature okoline.
- Nemojte postavljati uređaj pored izvora topline.
- Ne izlažite uređaj izravnoj sunčevoj svjetlosti.
- Ne izlažite uređaj mrazu.

#### Osoblje:

- Školovani korisnik

1.  Postavite uređaj na stabilnu i ravnu površinu.
2.  Održavajte razmak od 300 mm oko uređaja.
3.  Pridržavajte se okolišnih uvjeta u tehničkim podacima (→ *Poglavlje 3.1 „Tehnički podaci“ na stranici 10*).

### Priključivanje centrifuge



#### UPUTA

Oštećenje uređaja uzrokovano neovlaštenim osobama

- Zahvati i izmjene na uređajima od strane neovlaštenih osoba su na vlastitu odgovornost i dovode do gubitka svih jamstvenih zahtjeva i potraživanja odgovornosti.



**UPUTA****Oštećenje uređaja uslijed kondenzata.**

Kod temperaturne razlike između hladnog i toplog, postoji opasnost od stvaranja kondenzacije na elektroničkim komponentama. Kondenzat koji se stvara može izazvati kratki spoj ili uništiti elektroniku.

- Uređaj ostavite najmanje 3 sata u toploj prostoriji da se ugrije prije nego što ga priključite na električnu mrežu. ili
- pustite da radi 30 minuta u hladnoj prostoriji kako bi se zagrijao.

**Osoblje:**

- Školovani korisnik

1. ► Kod tipova 5005-90 i 5005-08 radi se o uređajima s fiksnim priključkom na mrežu.

U slučaju uređaja s fiksnim priključkom na mrežu, u instalaciju zgrade mora se, prema normi za laboratorijske uređaje EN / IEC 61010-1, ugraditi sklopka za isključivanje mrežnog napajanja uređaja.

Ta sklopka mora biti smještena u blizini uređaja, na dohvat ruke korisnika i označena kao prekidač za isključivanje tog uređaja.

Sklopka mora biti osigurana od ponovnog uključivanja.

2. ► Ako je uređaj u samoj instalaciji zgrade dodatno osiguran strujnom zaštitnom sklopkom - FID, mora se koristiti zaštitna sklopka tipa B.

Ako se koristi sklopka drugog tipa, može se dogoditi da strujna zaštitna sklopka ili ne isključi uređaj, kada se na njemu pojavi greška ili da ga isključi iako na uređaju nema greške.

3. ► Tipovi 5005-08, 5005-80 i 5005-90 moraju se spojiti u skladu s uputama za postavljanje i montažu (AH5005-02).

4. ► Centrifuga s PA utikačem:

ako je potrebno, spojite PA utikač na poledini uređaja na dodatni medicinski sustav za izjednačavanje potencijala.

5. ► Provjerite odgovara li mrežni napon specifikaciji na tipskoj oznaci.

6. ► Kod tipova 5005, 5005-50 i 5005-80:

Spojite uređaj na standardnu mrežnu utičnicu pomoću mrežnog kabela.

### 5.3 Uključivanje i isključivanje centrifuge

**Uključivanje centrifuge****Osoblje:**

- Školovani korisnik

- Postavite sklopku napajanja u položaj [//].
  - ➔ Ovisno o vrsti centrifuge, tipke trepću.
  - Ovisno o vrsti centrifuge, sljedeći indikatori se pojavljuju jedan za drugim:
    - model centrifuge
    - posljednji kôd rotora prepoznat detekcijom rotora i maksimalan broj okretaja rotora
    - Inačica programa
    - Kada je poklopac zatvoren: Indikator „OPEN OEFFNEN“
    - Kada je poklopac otvoren: Podaci o centrifugiranju posljednjeg korištenog programa ili programa 1.

#### Trenutačni prikaz podataka centrifugiranja nakon uključivanja

1. → Postavite sklopku napajanja u položaj [//].
2. → Pri prvoj vizualnoj promjeni prikaza (inverzni prikaz) pritisnite bilo koju tipku (osim tipke [STOP]).
  - ➔ Prikazuju se podaci o centrifugiranju.

#### Isključivanje centrifuge

- Rotor je zaustavljen.
- Postavite sklopku napajanja u položaj [/0].

## 6 Rukovanje

### 6.1 Otvaranje i zatvaranje poklopca

#### Otvaranje poklopca

##### Osoblje:

- Školovani korisnik

Centrifuga je uključena.

Rotor je zaustavljen.

- Pritisnite tipku [Poklopac].
  - ➔ Poklopac se oslobađa motorizirano.
  - Svjetlo tipke [Poklopac] se isključuje.
  - Pojavljuje se indikator „Poklopac otvoren“.

#### Zatvaranje poklopca



##### ! OPREZ

##### Opasnost od prignječenja pri zatvaranju poklopca.

Opasnost od prignječenja prstiju kada motor za zatvaranje povuče poklopac prema brtvi.

- Prilikom zatvaranja poklopca nijedan dio tijela ne smije biti u zoni opasnosti poklopca.
- Za zatvaranje poklopca pritisnite poklopac odozgo.



##### ! UPUTA

##### Oštećenje uređaja kada korisnik zalupi poklopac.

- Polako zatvorite poklopac.
- Nemojte zalupiti poklopac.

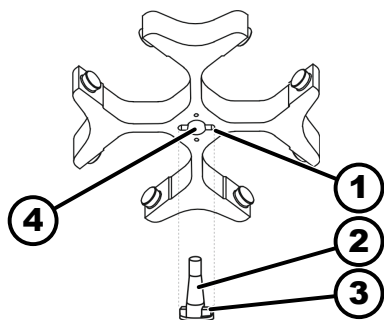
##### Osoblje:

- Školovani korisnik

- ➔ Zatvorite poklopac i ručku nježno pritisnite prema dolje.
  - Poklopac se zaključava motorizirano.
  - Svijetli tipka [Poklopac].
  - Pojavljuje se indikator „Poklopac je zaključan”.

## 6.2 Vađenje i ugradnja rotora

### Vađenje rotora s pomoću stezne matice



Slika 28: Postavljanje i skidanje rotora

- 1 Utor
- 2 Osovina motora
- 3 Zahvatnik
- 4 Provrt

### Osoblje:

- Školovani korisnik
1. ➔ Poklopac otvoren.
  2. ➔ Otpustite steznu maticu rotora pomoću isporučeneog ključa.
    - Nakon prevladavanja točke pritiska za podizanje, rotor se odvaja od konusa osovine motora (2).
  3. ➔ Okrećite steznu maticu sve dok se rotor ne bude mogao podići s osovine motora.
  4. ➔ Uklonite rotor

### Ugradnja rotora sa steznom maticom

### Osoblje:

- Školovani korisnik
- Poklopac je otvoren.
1. ➔ Očistite osovinu motora (2) i provrt rotora (4).
  2. ➔ Osovinu motora (2) lagano namažite mašću, pogledajte ➔ *Poglavlje 8.2 „Upute za čišćenje i dezinfekciju” na stranici 42.*
  3. ➔ Rotor namjestite uspravno na osovinu motora (2).  
Zahvatnik (3) osovine motora mora upasti u utor (1) rotora. Na rotoru je označena orijentacija utora.
  4. ➔ Zavrnite rukom steznu maticu rotora pomoću isporučeneog ključa.
  5. ➔ Provjerite dobru učvršćenost rotora.

## 6.3 Umetanje i vađenje vjedra

### Umetanje vjedra



#### UPUTA

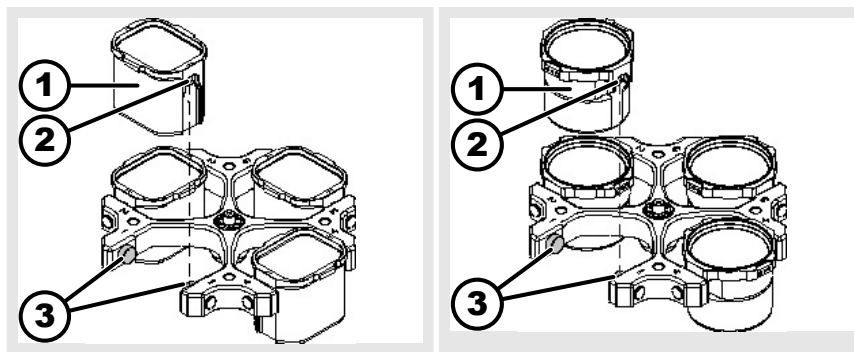
Oštećenje uređaja uzrokovano neravnotežom uslijed nepravilnog opterećenja rotora.

- Opteretite sve položaje izletnog rotora istim vjedorima.



Vjedra koja su označena brojem mjesta na rotoru smiju se koristiti samo na tom mjestu.

Vjedra označena brojem pripadajućeg skupa smiju se koristiti samo zajedno.



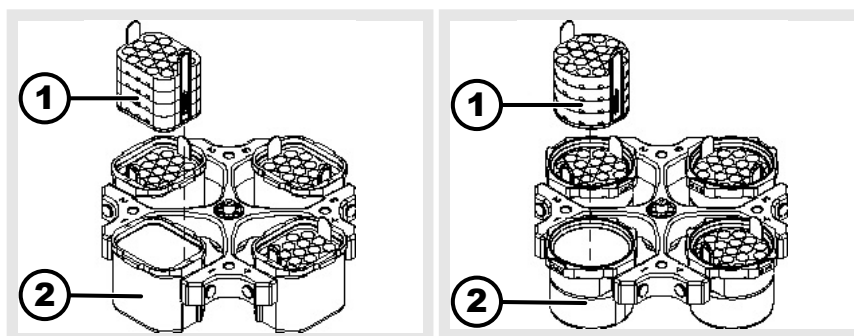
1. ➤ Provjerite dobru učvršćenost rotora.
2. ➤ Podmažite osigurače (3).
3. ➤ Odozgo umetnite vješalicu (1) u rotor. Izdanci za vješanje (3) moraju se nalaziti u utorima (2).
4. ➤ Gurnite vjedra (1) do kraja prema dolje.

#### Vađenje vjedra

- Izvadite vjedro (1) koso prema gore iz rotora.

## 6.4 Umetanje i vađenje adaptera

### Adapter,



#### umetanje

- Umetnite adapter (1) okomito odozgo u vjedra (2).

#### vađenje

- Izvadite adapter (1) ravno prema gore i iz vjedra (2).

## 6.5 Opterećenje

### Punjenje posuda za centrifugiranje



#### UPOZORENJE

Opasnost od ozljeda zbog kontaminiranog materijala uzorka. Kontaminirani materijal uzorka izlazi tijekom centrifugiranja iz posude za uzorak.

- Koristite samo epruvete za centrifugiranje s posebnim čepovima na navoj za opasne tvari.
- U slučaju materijala u rizičnim skupinama 3 i 4, koristite bio-sigurnosni sustav uz epruvete za centrifugiranje koje se mogu zatvoriti (pogledajte "Laboratory Biosafety Manual" Svjetske zdravstvene organizacije).



### UPUTA

#### Oštećenje uređaja zbog jako korozivnih tvari.

Jako korozivne tvari mogu narušiti mehaničku čvrstoću rotora, vjedra i pribora.

- Nemojte centrifugirati visoko korozivne tvari.



*Standardne staklene centrifugalne epruvete mogu se puniti do RCF 4000 (DIN 58970, dio 2).*

### Osoblje:

- Školovani korisnik

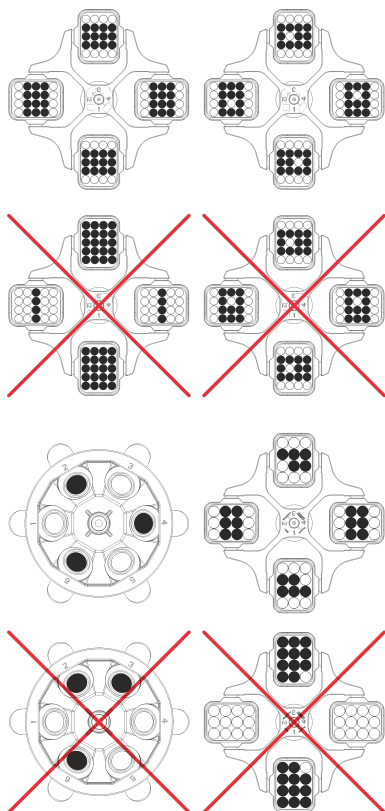
→ Puniti epruvete za centrifugiranje izvan centrifuge.

Ne smije se prekoračiti maksimalni kapacitet posuda za centrifugiranje koji navodi proizvođač.

U slučaju kutnih rotora, epruvete za centrifugiranje smiju se napuniti samo do te mjere da se tekućina ne može izbaciti iz epruveta tijekom centrifugiranja.

Kako bi razlike u težini unutar epruveta bile što manje, važno je osigurati da su epruvete ravnomjerno napunjene.

### Opterećivanje izletnih rotora



**Pri korištenju vrećica za krv potrebno je obratiti pozornost na sljedeće:**

### Osoblje:

- Školovani korisnik

1. → Provjerite dobru učvršćenost rotora.

2. → Epruvete moraju biti raspoređene simetrično i ravnomjerno na sve položaje na rotoru.

Težina dopuštene količine punjenja naznačena je na svakom rotoru. Težina se ne smije prekoračiti.

Prilikom opterećivanja vjedra i izletnog otklona vjedra tijekom centrifugiranja, tekućina ne smije dospjeti u vjedra i centrifugalnu komoru.

Kod spremnika s gumenim podloščima ispod epruveta uvijek mora biti isti broj gumenih podložaka.

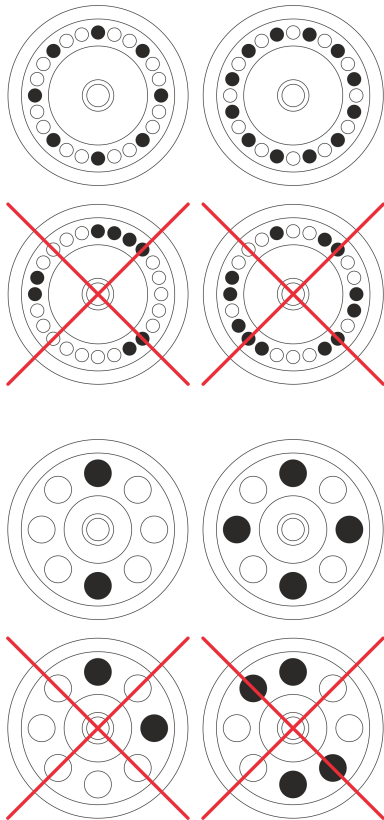
Sva mjesta na rotoru moraju biti zauzeta jednakim vjedrima. Određena vjedra označena su brojem mjesta na rotoru. Vjedro se smije koristiti samo na pripadajućem mjestu na rotoru.

Vjedra označena brojem skupa (npr. S001/4) smiju se koristiti samo zajedno u kompletu.

1. → Ako vjedra nisu napunjena istom težinom, razlike se mogu nadoknaditi utezima za ravnotežu.

2. ➤ U slučaju da nema dovoljno sistemskih krvnih vrećica za potpuno opterećenje rotora, prazna vjedra se mogu opremiti umetcima za uravnoteženje.
3. ➤ Ako je potrebno, fino podešavanje se izvodi isporučanim utezima za tariranje.

### Opterećivanje kutnih rotora



### Osoblje:

- Školovani korisnik

1. ➤ Provjerite dobru učvršćenost rotora.
2. ➤ Epruvete moraju biti raspoređene ravnomjerno na sve položaje na rotoru.

Prilikom opterećivanja rotora tekućina ne smije dospjeti u rotor i centrifugalnu komoru.

Kod tih rotora, epruvete za centrifugiranje smiju se napuniti samo do te mjere da se tekućina ne može izbaciti iz epruveta tijekom centrifugiranja.

Težina dopuštene količine punjenja naznačena je na svakom rotoru. Težina se ne smije prekoračiti.

## 6.6 Otvaranje i zatvaranje BIO sigurnosnog sustava

### 6.6.1 Objašnjenje

Korisnik mora poduzeti odgovarajuće mjere prilikom centrifugiranja opasnih tvari ili smjesa tvari koje su otrovne, radioaktivne ili onečišćene patogenim mikroorganizmima.

Obavezna je upotreba epruveta za centrifugiranje s posebnim čepovima na navoj za opasne tvari.

U slučaju materijala u rizičnim skupinama 3 i 4, mora se koristiti bio-sigurnosni sustav uz epruvete za centrifugiranje sa čepom (pogledajte „Laboratory Bio-safety Manual“ Svjetske zdravstvene organizacije).

U bio-sigurnosnom sustavu, bio-brtva (brtveni prsten) sprječava ispuštanje kapljica i aerosola.

Ako se vjedro biosigurnosnog sustava koristi bez poklopca, brtveni prsten mora se ukloniti iz vjedra kako bi se izbjeglo oštećenje prstena tijekom centrifugiranja.

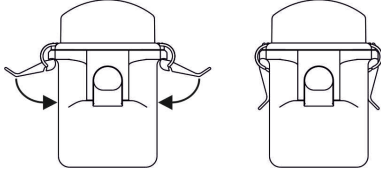
Oštećeni biosigurnosni sustavi više nisu mikrobiološki pouzdano zabrtvljeni.

Bez korištenja bio-sigurnosnog sustava, centrifuga nije mikrobiološki nepropustan u smislu norme EN / IEC 61010-2-020.

## Skladištenje biosigurnosnih sustava

Kako bi se izbjeglo oštećenje brtvenih prstenova tijekom skladištenja, biosigurnosni sustavi smiju se skladištiti samo s otvorenim poklopcem.

### 6.6.2 Poklopac sa zapornim zatvaranjem



Slika 29: Bio-sigurnosni sustav

#### Zatvaranje

1. ➤ Stavite poklopac.
2. ➤ Preklopite obje zaporne kopče prema dolje dok ne budu spuštene niže od izdanaka vjedra.

#### Otvaranje

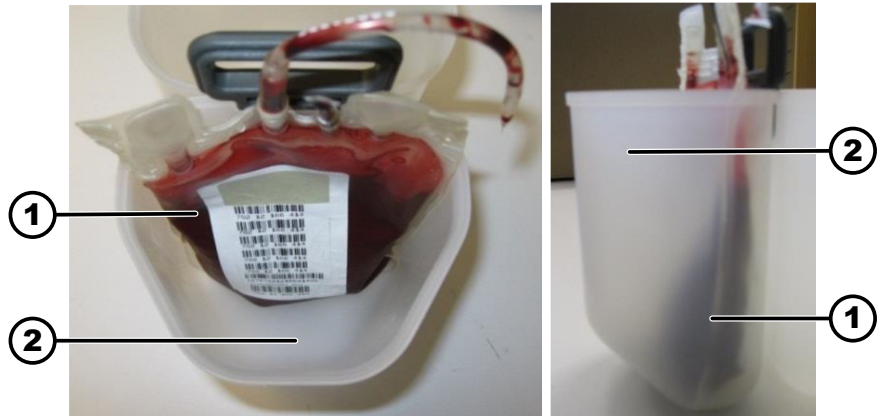
1. ➤ Preklopite obje zaporne kopče prema gore dok ne budu podignute više od izdanaka vjedra.
2. ➤ Skinite poklopac s rotora.

## 6.7 Upute za pakiranje HettLiner

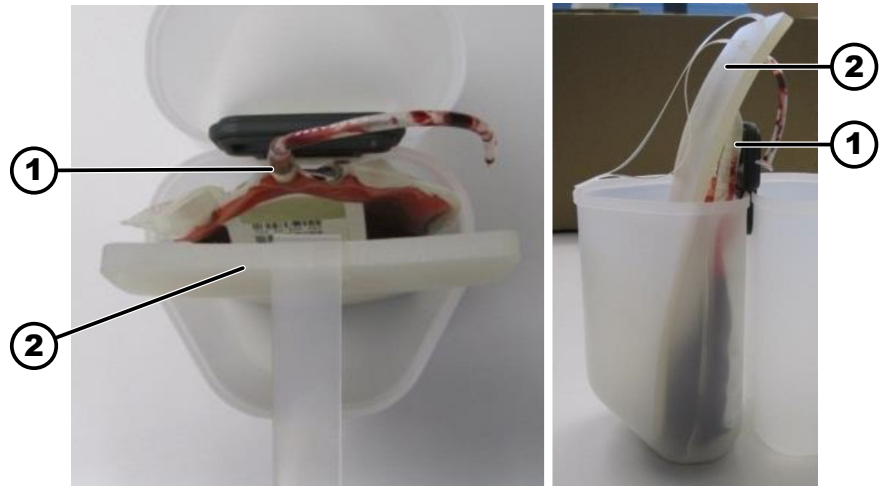
### Pakiranje prije centrifugiranja



*Pazite da se plastični umetak ne može prevrnuti prilikom stavljanja i vađenja (ako je potrebno, koristite pomagalo za umetanje 4509).*

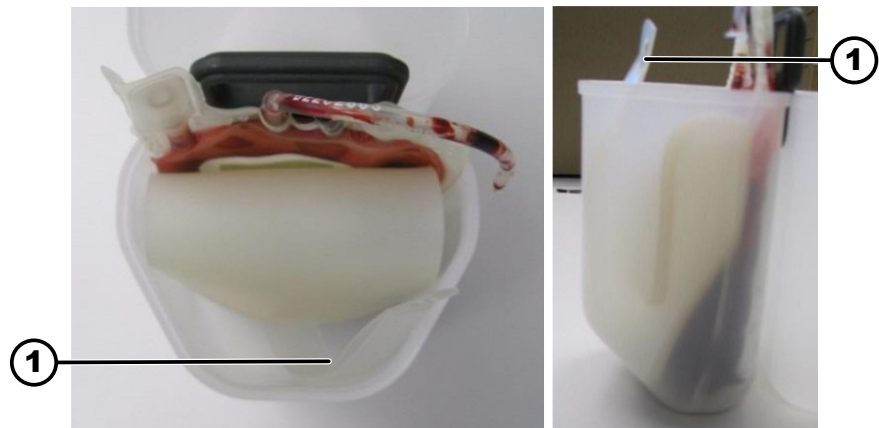


1. ➤ Vrećicu za krv (1) stavite u umetak (2).



- 2.** Vrećicu čvrsto držite za priključak (1) pa potpornu ploču (2) ugurajte u umetak s vanjske strane vrećice.

Pri tome pazite da donji rub potporne ploče dodiruje dno umetka što je bolje moguće.



- 3.** Presavijte potpornu ploču prema van i pritišćite prema dolje dok presavijeni rub ploče ne bude u razini s razinom tekućine u vrećici za krv.

Gornji rub potporne ploče ne smije previše izvirati iz umetka kako bi se izbjegao rizik zapinjanja za krakove rotora tijekom centrifugiranja.

Pazite na položaj petlje (1) tako da se može dosegnuti nakon centrifugiranja.

- 4.** Ako postoje, presavijte praznu satelitsku vrećicu odnosno prazne satelitske vrećice i pakirajte različito ovisno o odgovarajućem priboru i volumenu punjenja vrećice za krv. Prednost je presaviti satelitske vrećice i spakirati ih izvana između presavijene potporne ploče i vanjske stjenke umetka.

Pri tome pazite da silikonska ploča ne isklizne.

Ako je potrebno, prilikom pakiranja satelitske vrećice, silikonska ploča se može pritisnuti uz petlju i tako zadržati.

Zatim se mora provjeriti položaj petlje.





- 5.** Položite priključke preko potporne ploče tako da ventili ne mogu puknuti.

Pazite da petlja ne izvire iz umetka.

Ugurajte dijelove petlje koji izviruju preko ruba umetka između presavijene potporne ploče i stjenke umetka.



### Raspakiranje nakon centrifugiranja







6.  Ako je potrebno, između presavijene potporne ploče i stjenke umetka treba staviti protuutege.
1.  Izvucite satelitsku vrećicu iz umetka dok jednom rukom držite silikonsku ploču na mjestu.
2.  Polako izvucite presavijeni dio potporne ploče pomoću priložene petlje.  
Kontrolirano vratite potpornu ploču u prvobitni oblik. Presavijeni dio potporne ploče može odskočiti i pomiješati sastojke krvi.
3.  Izvadite preostalu vrećicu krvi iz umetka zajedno s potpornom pločom ili nakon uklanjanja potporne ploče.

## 6.8 Centrifugiranje

### 6.8.1 Centrifugiranje u kontinuiranom radu

#### Osoblje:





- Školovani korisnik

1.  Nastavite pritiskati tipku *[t]* dok polje za unos parametra „t/min:” ne dobije tamnu pozadinu.
2.  Okretnim gumbom odaberite vrijednost 0.
3.  Nastavite pritiskati tipku *[t]* dok polje za unos parametra „t/:sec” ne dobije tamnu pozadinu.
4.  Okretnim gumbom odaberite vrijednost 0.
  - U polju za unos prikazuje se „---:--”.
5.  Pritisnite tipku *[START]*.
  - Pokreće se centrifugiranje.  
Indikator „Rotacija” svijetli sve dok se rotor okreće.  
Brojanje vremena počinje u 00:00.  
Tijekom centrifugiranja prikazuje se broj okretaja rotora ili dobivena RCF vrijednost, temperatura u centrifugalnoj komori i proteklo vrijeme.
6.  Za prekid centrifugiranja pritisnite tipku *[STOP]*.  
Samozaustavljanje se odvija s postavljenim parametrima samozau-  
stavljanja.
  - Prikazuje se „OPEN OEFFNEN”.

### 6.8.2 Centrifugiranje s odabirom vremena

#### Osoblje:

- Školovani korisnik

1.  Nastavite pritiskati tipku *[t]* dok polje za unos parametra „t/min:” ne dobije tamnu pozadinu.
2.  Koristeći *[Okretni gumb]* podesite željenu vrijednost.
3.  Nastavite pritiskati tipku *[t]* dok polje za unos parametra „t/:sec” ne dobije tamnu pozadinu.
4.  Koristeći *[Okretni gumb]* podesite željenu vrijednost.

5. ➤ Pritisnite tipku *[START]*.
  - Pokreće se centrifugiranje.
  - Indikator „*Rotacija*” svijetli sve dok se rotor okreće.
  - Tijekom centrifugiranja prikazuje se broj okretaja rotora ili dobivena RCF vrijednost, temperatura u centrifugalnoj komori i preostalo vrijeme.
6. ➤ Nakon isteka vremena ili ako se rad centrifugiranja prekine pritiskom na tipku *[STOP]*, provodi se samozaustavljanje s odabranim parametrima.
  - Prikazuje se „*OPEN OEFFNEN*”.

### 6.8.3 Promjena postavki tijekom centrifugiranja

Tijekom centrifugiranja moguće je mijenjati vrijeme rada, broj okretaja, relativno centrifugalno ubrzanje (RCF/RZB), parametre zaleta i samozaustavljanja te temperaturu (samo za uređaje s hlađenjem).

Parametri se mogu mijenjati samo pojedinačno te jedan za drugim.

1. ➤ Promjena vrijednosti željenog parametra pomoću *[Okretni gumb]*
2. ➤ Pritisnite tipku *[START]*.
  - Vrijednosti trenutnog programa kopiraju se na programsku lokaciju „----” i ažuriraju s promijenjenom vrijednošću.
  - Izvorni program nije prebrisan.

## 6.9 Funkcija brzog zaustavljanja

Osoblje:

- Školovani korisnik

➤ Dvaput pritisnite tipku *[STOP]*.

- Indikator „*STOP*” trepće.

Prikazuje se i provodi samozaustavljanje s razinom kočenja „R9” (najkraće vrijeme samozaustavljanja).

Ako se odabere stupanj kočenja „R0”, vrijeme zaustavljanja je iz tehničkih razloga dulje nego kod stupnja kočenja „R9”.

## 7 Postupci sa softverom

### 7.1 Sklopka s ključem

Ključ mora biti pohranjen na način da je zaštićen od neovlaštenog pristupa.

Položaji ključa	Funkcija
Lijevi položaj ključa	Prikazuje se „ <i>LOCK 1</i> ”. Programi se mogu samo pozivati, ali ne i mijenjati.
Desni položaj ključa	Prikazuje se „ <i>LOCK 2</i> ”. Nikakvi programi se ne mogu pozivati i mijenjati.
Srednji položaj ključa	nema prikaza statusa. Nema programskog zaključavanja. Programi se mogu pozivati i mijenjati.

## 7.2 Parametar centrifugiranja

### 7.2.1 Parametar zaleta i samozaustavljanja



Prikazuju se postavljeni parametri zaleta i samozaustavljanja.

x: 1-9 = stupanj zaleta, t = vrijeme zaleta

y: R1-R9, B1-B9 = stupanj kočenja, R0 = samozaustavljanje bez kočenja, t = vrijeme samozaustavljanja, n<sup>(\*)</sup> = broj okretaja isključenja kočnice

#### Stupanj zaleta

1. ➤ Više puta pritisnite tipku *[Parametar zaleta]* dok se ne prikaže parametar „*Stupanj zaleta*” ili parametar „*Vrijeme zaleta*” i polje za unos dobije tamnu pozadinu.

2. ➤ Postavite željeni stupanj pomoću *[Okretni gumb]*.

#### Vrijeme zaleta

1. ➤ Više puta pritisnite tipku *[Parametar zaleta]* dok se ne prikaže parametar „*Vrijeme zaleta min:sek*” i polje za unos dobije tamnu pozadinu.

2. ➤ Postavite željeni stupanj pomoću *[Okretni gumb]*.

Ako je postavljeno vrijeme zaleta dulje od vremena rada, centrifugiranje završava prije nego što se postigne postavljeni broj okretaja.

#### Stupanj kočenja

1. ➤ Više puta pritisnite tipku *[Parametar samozaustavljanja]* dok se ne prikaže parametar „*Stupanj samozaustavljanja*” ili parametar „*Vrijeme samozaustavljanja*” i polje za unos dobije tamnu pozadinu.

2. ➤ Postavite željeni stupanj pomoću *[Okretni gumb]*.

B stupnjevi kočenja mogu se postaviti samo s posebnim rotorima.

#### Vrijeme samozaustavljanja

Ako je postavljen broj okretaja isključenja kočnice, ne može se postaviti vrijeme samozaustavljanja.

1. ➤ Više puta pritisnite tipku *[Parametar samozaustavljanja]* dok se ne prikaže parametar „*Stupanj samozaustavljanja min:sek*” i polje za unos dobije tamnu pozadinu.

2. ➤ Postavite željeni stupanj pomoću *[Okretni gumb]*.

#### Broj okretaja isključenja kočnice

1. ➤ Više puta pritisnite tipku *[Parametar samozaustavljanja]* dok se ne prikaže parametar „*n<sup>(\*)</sup>/RPM*” i polje za unos dobije tamnu pozadinu.

2. ➤ Postavite željeni stupanj pomoću *[Okretni gumb]*.

### 7.2.2 Vrijeme centrifugiranja



Za kontinuirani rad minute i sekunde moraju biti postavljene na nulu.

Kontinuirani rad označen je na zaslonu simbolom „---:--”.

1. ➤ Nastavite pritiskati tipku *[t]* dok polje za unos parametra „*t/min:*” ne dobije tamnu pozadinu.

2. ➤ Koristeći *[Okretni gumb]* podesite željenu vrijednost.

3. ➤ Nastavite pritiskati tipku *[t]* dok polje za unos parametra „*t/:sec*” ne dobije tamnu pozadinu.

4. ➤ Koristeći *[Okretni gumb]* podesite željenu vrijednost.

### 7.2.3 Broj okretaja okr/min

1. ➤ Više puta pritisnite tipku *[n]* dok se ne prikaže parametar „*RPM*” i polje za unos dobije tamnu pozadinu.

2. ➤ Koristeći *[Okretni gumb]* podesite željenu vrijednost.

### Prikaz maksimalnog broja okretaja rotora

1. ➤ Više puta pritisnite tipku *[n]* dok se ne prikaže parametar „RPM” i polje za unos dobije tamnu pozadinu.
2. ➤ Pritisnite i držite tipku *[n]*.
  - Prikazuje se maksimalni broj okretaja rotora (n-max-Rotor).

### 7.2.4 Integral od RCF

Integral RCF je mjera učinka sedimentacije ( $\int n^2 dt$ ). Vrijednost se koristi za usporedbu ciklusa centrifugiranja.

- Pritisnite i držite tipku *[Integral RCF]*.
  - Prikazuje se „Integral RCF”.

### 7.2.5 Temperatura

1. ➤ Više puta pritisnite tipku *[Temperatura i polumjer centrifugiranja]* dok se ne prikaže parametar „T/C°” i polje za unos dobije tamnu pozadinu.
2. ➤ Koristeći *[Okretni gumb]* podesite željenu vrijednost.

### 7.2.6 Relativno centrifugalno ubrzanje RCF

Relativno centrifugalno ubrzanje RCF ovisi o broju okretaja i polumjeru centrifugiranja.

Relativno centrifugalno ubrzanje RCF iskazano je kao višekratnik ubrzanja gravitacije (g).

Relativno centrifugalno ubrzanje RCF je numerička vrijednost bez jedinice i koristi se za usporedbu učinka separacije i sedimentacije.

$$RCF = \left( \frac{RPM}{1000} \right)^2 * r * 1,118$$

$$RPM = \sqrt{\frac{RCF}{r * 1,118}} * 1000$$

RCF = relativno centrifugalno ubrzanje

RPM = broj okretaja

r = polumjer centrifugiranja u mm = udaljenost od sredine osi rotacije do dna epruvete za centrifugiranje.

### 7.2.7 Podešavanje relativnog centrifugalnog ubrzanja (RCF/RZB)

1. ➤ Više puta pritisnite tipku *[RCF]* dok se ne prikaže parametar „RCF/RZB” i polje za unos dobije tamnu pozadinu.
2. ➤ Koristeći *[Okretni gumb]* podesite željenu vrijednost.

### Prikaz maksimalnog RCF-a rotora

1. ➤ Više puta pritisnite tipku *[RCF]* dok se ne prikaže parametar „RCF/RZB” i polje za unos dobije tamnu pozadinu.
2. ➤ Pritisnite i držite tipku *[RCF]*.
  - Prikazuje se maksimalni RCF rotora (RCF-max-Rotor).

## 7.2.8 Centrifugiranje tvari ili smjesa tvari gustoće veće od 1,2 kg/dm<sup>3</sup>

Kod centrifugiranja pri najvećoj brzini, gustoća tvari ili smjese tvari ne smije biti veća od 1,2 kg/dm<sup>3</sup>. Za tvari ili smjese veće gustoće broj okretaja se mora smanjiti. Dopušteni broj okretaja može se izračunati pomoću sljedeće formule:

$$\text{Smanjen broj okretaja } (n_{red}) = \sqrt{\frac{1,2}{\text{visoka gustoća [kg/dm}^3\text{]}}} * \text{Maksimalni broj okretaja [RPM]}$$

Na primjer: Maksimalni broj okretaja 4000 okr/min, gustoća 1,6 kg/dm<sup>3</sup>

$$n_{red} = \sqrt{\frac{1,2(\text{kg/dm}^3)}{1,6(\text{kg/dm}^3)}} * 4000 \text{ RPM} = 3464 \text{ RPM}$$

Ako se, u iznimnim slučajevima, prekorači maksimalno opterećenje navedeno na vjedru, broj okretaja se također mora smanjiti. Dopušteni broj okretaja može se izračunati pomoću sljedeće formule:

$$\text{Smanjen broj okretaja } (n_{red}) = \sqrt{\frac{\text{maksimalno opterećenje [g]}}{\text{stvarno opterećenje [g]}}} * \text{Maksimalni broj okretaja [RPM]}$$

Na primjer: Maksimalni broj okretaja 4000 okr/min, maksimalno opterećenje 300 g, stvarno opterećenje 350 g

$$n_{red} = \sqrt{\frac{300 \text{ g}}{350 \text{ g}}} * 4000 \text{ RPM} = 3703 \text{ RPM}$$

Ako je nešto nejasno, informacije trebaju doći od proizvođača.

## 7.2.9 Polumjer centrifugiranja

1. ➤ Više puta pritisnite tipku *[Temperatura i polumjer centrifugiranja]* dok se ne prikaže parametar „r/mm” i polje za unos dobije tamnu pozadinu.

2. ➤ Koristeći *[Okretni gumb]* podesite željenu vrijednost.

Promjenom polumjera automatski se podešava vrijednost RCF/RZB, što je označeno treptanjem.

## 7.3 Programiranje

### 7.3.1 Pozivanje ili učitavanje programa

1. ➤ Tipkom *[PROG]* odaberite parametar „PROG-Nr”. Polje za unos imat će tamnu pozadinu.

2. ➤ Koristeći *[Okretni gumb]* podesite željenu lokaciju programa.

3. ➤ Pritisnite tipku *[RCL]*.

➤ Prikazuju se podaci centrifugiranja za željenu lokaciju programa.

### 7.3.2 Unos ili promjena programa

1. ➤ Postavite željene parametre.

2. ➤ Tipkom *[PROG]* odaberite parametar „PROG-Nr”. Polje za unos imat će tamnu pozadinu.

3. ➤ Koristeći *[Okretni gumb]* podesite željenu lokaciju programa.

Ako indikator lokacije programa trepće, ta programska lokacija je već zauzeta podacima o centrifugiranju. U tom slučaju postavite slobodnu lokaciju programa ili nastavljanjem prebrišite podatke o centrifugiranju.

4. ➤ Pritisnite tipku [STO].
  - Postavke su spremljene na željenu lokaciju programa.
5. ➤ Dvaput pritisnite tipku [STO].
  - Već spremljeni podaci o centrifugiranju bit će prebrisani.

### 7.3.3 Automatski međuspremnik

Međuspremnik sadrži lokaciju programa „---“ i lokacije od 90 do 99.

Nakon svakog pokretanja ciklusa centrifugiranja, promijenjeni podaci centrifugiranja automatski se spremaju na programsku lokaciju „---“.

Promijenjeni podaci o centrifugiranju zadnjih 11 ciklusa centrifugiranja spremaju se u međuspremnik i mogu se dohvatiti.

## 7.4 Prepoznavanje rotora

- Nakon pokretanja ciklusa centrifugiranja, provodi se detekcija rotora.
- Ako je rotor promijenjen, centrifugiranje se prekida nakon prepoznavanja rotora. Prikazuje se kôd rotora (R) i maksimalan broj okretaja (n-max) novootkrivenog rotora.
- Ako je maksimalni broj okretaja korištenog rotora niži od postavljenog broja okretaja, okretaji se ograničavaju na maksimalan broj okretaja rotora.

## 7.5 Hlađenje (kod centrifuga s hlađenjem)

### 7.5.1 Indikacija hlađenja

Kod centrifuga s opcijom grijanja/hlađenja, zadana vrijednost temperature može se postaviti od -20 °C do +90 °C. Ako stvarna temperatura odstupa od zadane temperature za više od 5 °C, to se signalizira treptanjem indikatora vrijednosti temperature.

Najniža dostižna temperatura ovisi o rotoru.

### 7.5.2 Hlađenje u mirovanju

Kada rotor miruje i poklopac je zatvoren, centrifugalna komora se hladi na prethodno odabranu temperaturu. Na zaslonu se prikazuje zadana vrijednost temperature.

### 7.5.3 Pred-hlađenje rotora

Za brzo pred-hlađenje neopterećenih rotora i pribora preporučujemo centrifugiranje s postavkama za kontinuirani rad i brojem okretaja od oko 20 % maksimalnog broja okretaja rotora.

## 7.6 Grijanje (kod centrifuga s grijanjem)

Tijekom centrifugiranja, komora se po potrebi zagrijava do prethodno odabrane temperature. Kada rotor miruje, grijanje je isključeno.

**OPREZ****Opasnost od opekline od vrućih površina.**

Temperatura površine grijaćeg elementa u komori centrifuge može doseći do 500 °C ili 932 °F.

- Nemojte dirati grijaći element.
- Tijekom centrifugiranja na vrlo visokoj temperaturi (npr. +90 °C) unutarnja strana poklopca uređaja se zagrijava. U tom slučaju nemojte dirati unutarnju stranu poklopca.

**UPUTA****Oštećenje plastičnih vjedra uslijed previsoke temperature**

- Plastična vjedra smiju se koristiti samo na temperaturama do najviše 40 °C ili 104 °F.

## 7.7 Izbornik stroja

### 7.7.1 Pozivanje informacija o sustavu

Mogu se tražiti sljedeće informacije o sustavu:

- Model centrifuge
- Maksimalni brojevi okretaja različitih kôdova rotora
- Inačica programa centrifuge
- Tip pretvarača frekvencije
- Inačica programa pretvarača frekvencije

Rotor je zaustavljen.

1. Pritisnite i držite tipku *[t]*.
  - ➔ Nakon 8 sekundi uključuje se zvučni signal „*SOUND / BELL*”.
2. Pritisnite tipku *[t]*.
  - ➔ Prikazuju se sati rada „*CONTROL*”.
3. Pritisnite tipku *[t]*.
  - ➔ Prikazuju se datum i vrijeme na satu.
4. Pritisnite tipku *[t]*.
  - ➔ Prikazuje se inačica stroja i hlađenja „*VERS 12 °C / \* 03*”.
5. Pritisnite tipku *[t]*.
  - ➔ Prikazuju se sati rada pretvarača frekvencije „*FC/CCI XX h*”.
6. Pritisnite tipku *[t]*.
  - ➔ Prikazuje se tip pretvarača frekvencije „*FU/CCI*”.
7. Pritisnite tipku *[t]*.
  - ➔ Prikazuje se inačica programa pretvarača frekvencije „*FU/CCI - S*”.
8. Pritisnite tipku *[t]*.
  - ➔ Prikazuje se inačica programa tiskane pločice izvora napajanja „*°C / \* - S. 01.07*”.
9. Pritisnite tipku *[STOP/OPEN]* za napuštanje izbornika

### 7.7.2 Pozivanje sati rada

Rotor je zaustavljen.

1. Poklopac otvoren.

2. ➤ Pritisnite i držite tipku [t].
  - ➔ Nakon 8 sekundi prikazuje se „SOUND / BELL XXX”.
3. ➤ Pritisnite tipku [t].
  - ➔ Prikazuje se „CONTROL:” i sati rada.
  - Prikaz sati rada isključuje se automatski nakon 10 sekundi.

## 7.7.3 Zvučni signal

### 7.7.3.1 Općenito

Zvučni signal se oglašava nakon sljedećih postavki:

OFF	<ul style="list-style-type: none"> <li>■ nakon pojave smetnji u intervalu od 2 s.</li> </ul>
ON1	<ul style="list-style-type: none"> <li>■ nakon pojave smetnji u intervalu od 2 s.</li> <li>■ nakon završetka centrifugiranja i mirovanja rotora u intervalima od 30 s.</li> </ul>
ON2	<ul style="list-style-type: none"> <li>■ nakon pojave smetnji u intervalu od 2 s.</li> <li>■ nakon završetka centrifugiranja i mirovanja rotora u intervalima od 30 s.</li> <li>■ sa svakim pritiskom tipke.</li> </ul>

Otvaranjem poklopca ili pritiskom na bilo koju tipku prekida se zvučni signal.

### 7.7.3.2 Podešavanje zvučnog signala

1. ➤ Otvorite poklopac.
2. ➤ Pritisnite i držite tipku [t].
  - ➔ Nakon 8 sekundi prikazuje se „SOUND / BELL ON1”, „SOUND / BELL ON2” ili „SOUND / BELL OFF”.
3. ➤ Koristeći [Okretni gumb] podesite „OFF”, „ON1” ili „ON2”.
4. ➤ Pritisnite tipku [START].
  - ➔ Postavke su spremljene.
  - Nakratko se prikazuje „\*\*\* OK \*\*\*”.

### 7.7.4 Podaci o centrifugiranju prikazani nakon uključivanja







Nakon uključivanja, prikazuju se podaci centrifugiranja programa 1 ili oni posljednjeg korištenog programa.

1. ➤ Postavite sklopku napajanja u položaj [I].
2. ➤ Pri prvoj vizualnoj promjeni prikaza (inverzni prikaz) pritisnite tipku [STOP].
  - ➔ Prikazuje se „PROGRAM 1, LAST PROGRAM”.
3. ➤ Postavite željenu funkciju pomoću [Okretni gumb].
4. ➤ Pritisnite tipku [START].
  - ➔ Postavke su spremljene.
  - Nakratko se prikazuje „\*\*\* OK \*\*\*”.

### 7.7.5 Podešavanje datuma i sata

Rotor je zaustavljen.



1.  Poklopac otvoren.
2.  Pritisnite i držite tipku [t].
  - Nakon 8 sekundi prikazuje se „SOUND / BELL”.
3.  Dvaput pritisnite tipku [t].
  - Prikazuju se datum i vrijeme na satu
    - a: godina
    - mon: mjesec
    - d: dan
    - h: sati
    - min: minute
4.  Više puta pritisnite tipku [Temperatura i polumjer centrifugiranja] dok se ne prikaže željeni parametar i polje za unos dobije tamnu pozadinu.
5.  Koristeći [Okretni gumb] podesite željenu vrijednost.
6.  Pritisnite tipku „Start”.
  - Postavke su spremljene.
  - Nakratko se prikazuje „\*\*\* OK\*\*\*”.

## 7.8 Povezivanje programa

### 7.8.1 Povezivanje programa ili mijenjanje jedne programske poveznice











*Povezivanje programa moguće je samo kod programa u kojima su postavljeni stupnjevi zaleta i kočnja.*






*Prije povezivanja, programi se moraju spremiti u željenom redoslijedu unosom programa ili opozivom programa.*

*Lokacije programa moraju biti uzastopne (npr. lokacije 10+11+12).*






#### Povezivanje programa

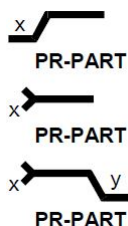
1.  Tipkom [PROG] odaberite parametar „PROG-Nr”. Polje za unos imat će tamnu pozadinu.
2.  Koristeći [Okretni gumb] postavite programsku lokaciju početnog programa (XX+).
3.  Pritisnite tipku [RCL].
  - Prikazuju se podaci centrifugiranja za željenu lokaciju programa
4.  Dvaput pritisnite tipku [PROG].
  - Izabran je parametar PR-PART.
  - Polje za unos imat će tamnu pozadinu.
5.  Dvaput pritisnite tipku [STO].
  - Program je povezan i prikazan je broj programa sljedeće lokacije programa (+XX+).
6.  Dvaput pritisnite tipku [RCL].
  - Prikazuju se podaci centrifugiranja za željenu lokaciju programa
7.  Dvaput pritisnite tipku [STO].
  - Program je povezan i prikazan je broj programa sljedeće lokacije programa (+XX+).
8.  Ponavljajte dva zadnja koraka dok se svi programi ne povežu.

### Mijenjanje povezivanja programa







9.  Pritisnite tipku *[PROG]*.
  - Prikazuje se broj završnog programa (+XX).
1.  Pozovite željeni program.
2.  Promijenite željeni parametar.
3.  Ponovno spremite promijenjene podatke centrifugiranja na istu programsku lokaciju.
  - Sa spremanjem se poništava povezivanje programa.
4.  Ponovno povezivanje programa.

### 7.8.2 Ciklus centrifugiranja s povezanim programima

1.  Dvaput pritisnite tipku *[PROG]*.
  - Izabran je parametar PR-PART.  
Polje za unos imaće tamnu pozadinu.
2.  Koristeći *[Okretni gumb]* postavite programsku lokaciju početnog programa (XX+).
3.  Pritisnite tipku *[RCL]*.
  - Prikazuju se podaci centrifugiranja za željenu lokaciju programa
4.  Pritisnite tipku *[START]*.
  - Pokreće se centrifugiranje.  
Pojavljuje se indikator „Rotacija”, sve dok se rotor okreće.  
Prikazuje se stupanj zaleta i kočenja povezanih programa.
    - Početni program (XX+)
      - x: Stupanj zaleta početnog programa x
    - Prateći program (+XX+)
      - x: Stupanj zaleta pratećeg programa x
    - Završni program (+XX)
      - x: Stupanj zaleta završnog programa
      - y: Stupanj kočenja završnog programa
5.  Nakon isteka vremena završnog programa, odvija se samozaustavljanje sa stupnjem kočenja završnog programa.  
Ako se centrifugiranje prekine pritiskom na tipku *[STOP]*, odvija se samozaustavljanje s razinom kočenja programa koji je trenutno u tijeku.



### 7.8.3 Brisanje povezivanja programa

1.  Tipkom *[PROG]* odaberite parametar „PROG-Nr”. Polje za unos imaće tamnu pozadinu.
2.  Koristeći *[Okretni gumb]* postavite programsku lokaciju početnog programa (XX+).
3.  Pritisnite tipku *[RCL]*.
  - Prikazuju se podaci centrifugiranja za željenu lokaciju programa
4.  Dvaput pritisnite tipku *[PROG]*.
  - Prikazuje se parametar „PR-PART”.  
Polje za unos imaće tamnu pozadinu.
5.  Dvaput pritisnite tipku *[STO]*.
6.  Pritisnite tipku *[PROG]*.

## 8 Čišćenje i njega

### 8.1 Pregledna tablica

Pog.	Radovi koje treba obaviti	po potrebi	dnevno	tjedno	godišnje	Stranica
<b>8</b>	<b>Čišćenje i njega</b>					41
<b>8.3</b>	<b>Čišćenje</b>					42
8.3	Čišćenje uređaja		X			42
8.3	Čišćenje biosigurnosnih sustava			X		42
8.3	Čišćenje pribora			X		42
<b>8.4</b>	<b>Dezinfekcija</b>					43
8.4	Dezinficiranje uređaja	X				43
8.4	Dezinficiranje pribora	X				43
<b>8.5</b>	<b>Održavanje</b>					44
8.5	Podmažite gumenu brtvu centrifugalne komore			X		44
8.5	Podmažite gumenu brtvu biosigurnosnog sustava			X		44
8.5	Podmažite osigurače			X		44
8.5	Provjera pribora			X		44
8.5	Provjera bio-sigurnosnog sustava			X		44
8.5	Provjera oštećenja centrifugalne komore				X	44
8.5	Podmazivanje osovine motora				X	44
8.5	Pribor s ograničenim rokom uporabe	X				44
8.5	Zamjena epruveta za centrifugiranje	X				45

## 8.2 Upute za čišćenje i dezinfekciju



### OPASNOST

Opasnost od kontaminacije korisnika uslijed nedovoljnog čišćenja ili nepridržavanja uputa za čišćenje.

- Pridržavajte se uputa za čišćenje.
- Prilikom čišćenja uređaja nosite osobnu zaštitnu opremu.
- Pridržavajte se laboratorijskih propisa (npr. TRBA - Tehnička pravila za biološke agense, IfSG - Njemački zakon o zaštiti od infekcija, plan higijene) za rukovanje biološkim agensima.

- Uređaj i pribor ne smiju se prati u perilicama posuđa.
- Provedite samo ručno čišćenje i dezinfekciju tekućinom.
- Temperatura vode ne smije biti viša od 25 °C.
- Kako biste izbjegli znakove korozije uzrokovane sredstvima za čišćenje ili dezinfekciju, potrebno je pridržavati se posebnih uputa za primjenu od proizvođača sredstva za čišćenje ili dezinfekciju.

### Sredstva za dezinfekciju:

- Sredstvo za dezinfekciju površina (bez sredstva za dezinfekciju ruku i instrumenata)
- Etanol kao jedina djelatna tvar.  
Okno za gledanje, na poklopcu uređaja, nemojte dezinficirati mješavinom etanola i propanola.
- Koncentracija ne manja od 30 %
- pH-vrijednost: 6 – 8
- Nekorozivno

## 8.3 Čišćenje

### Čišćenje uređaja

1. Poklopac otvoren.
2. Isključite uređaj i odvojite ga od naponskog napajanja.
3. Uklonite pribor.
4. Očistite kućište centrifuge i komoru centrifuge sapunom ili blagim deterdžentom i vlažnom krpom.
5. Nakon uporabe sredstava za čišćenje, ostatke sredstva za čišćenje uklonite brisanjem vlažnom krpom.
6. Površine se moraju osušiti odmah nakon čišćenja.
7. Ako se stvori kondenzat vode, osušite centrifugalnu komoru upijajućom krpom.

### Čišćenje biosigurnosnih sustava

1. Bio-sigurnosni sustav očistite deterdžentom i vlažnom krpom.
2. Nakon uporabe sredstava za čišćenje, ostatke sredstva za čišćenje uklonite brisanjem vlažnom krpom.
3. Odmah nakon čišćenja posušite pribor krpom koja ne ostavlja dlačice i komprimiranim zrakom bez ulja. Potpuno osušite sve šupljine komprimiranim zrakom bez ulja.

### Čišćenje pribora

1. Pribor očistite sredstvom za čišćenje i vlažnom krpom.

2. ▶ Nakon uporabe sredstava za čišćenje, ostatke sredstva za čišćenje uklonite brisanjem vlažnom krpom.
3. ▶ Odmah nakon čišćenja posušite pribor krpom koja ne ostavlja dlačice i komprimiranim zrakom bez ulja. Potpuno osušite sve šupljine komprimiranim zrakom bez ulja.

### 8.4 Dezinfekcija



*Dezinfekciji uvijek mora prethoditi čišćenje relevantnih komponenti.*

*Pogledajte ▶ Poglavlje 8.3 „Čišćenje” na stranici 42*



*Koncentracija i vrijeme izlaganja dezinfekcijskog sredstva prema uputama proizvođača.*

#### Dezinficiranje uređaja



#### OPREZ

**Opasnost od ozljeda zbog ulaska vode ili drugih tekućina.**

- Zaštitite uređaj od vanjskog prodora tekućine.
- Nemojte provoditi dezinfekciju uređaja raspršivanjem.

1. ▶ Poklopac otvoren.
2. ▶ Isključite uređaj i odvojite ga od naponskog napajanja.
3. ▶ Uklonite pribor.
4. ▶ Očistite kućište i centrifugalnu komoru dezinfekcijskim sredstvom.
5. ▶ Nakon upotrebe dezinfekcijskog sredstva, ostatke dezinfekcijskog sredstva uklonite brisanjem vlažnom krpom.
6. ▶ Površine se moraju osušiti odmah nakon čišćenja.

#### Dezinficiranje pribora

1. ▶ Dezinficirajte pribor sredstvom za dezinfekciju.
2. ▶ Namočite sve šupljine dezinfekcijskim sredstvom bez mjehurića zraka.
3. ▶ Nakon upotrebe dezinfekcijskog sredstva, ostavite da se ostatci dezinfekcijskog sredstva osuše ili ih uklonite.

#### Sterilizacija u autoklavu

Sljedeći pribor se može sterilizirati u autoklavu na 121 °C / 250 °F (20 min):

- Izletni rotori
- Kutni aluminijski rotori
- Metalna vjedra
- Poklopac s bio-brtvom
- Adapter,

Ne može se dati izjava o stupnju sterilnosti.

Poklopci rotora i vješalice moraju se ukloniti prije autoklaviranja.

Autoklaviranje ubrzava proces starenja materijala. Može uzrokovati promjene boje. Nakon autoklaviranja, obavezno vizualno provjerite odsutnost oštećenja na rotorima i priboru; svi oštećeni dijelovi moraju se odmah zamijeniti.

Ako postoje znakovi napuknuća, prijeloma ili istrošenosti, taj se brtveni prsten mora zamijeniti. Kod poklopaca s neizmjenjivim brtvenim prstenima, mora se zamijeniti cijeli poklopac.

Kako bi se osiguralo brtvljenje biosigurnosnih sustava, brtveni se prstenovi nakon autoklaviranja moraju zamijeniti.

## 8.5 Održavanje

### Podmažite gumenu brtvu centrifugalne komore

→ Lagano istrljajte brtveni prsten sredstvom za njegu gume.

### Podmažite gumenu brtvu biosigurnosnog sustava

→ Lagano istrljajte brtveni prsten sredstvom za njegu gume.

### Podmažite osigurače

1. → Uklonite pribor.
2. → Očistite osigurače.
3. → Nakon uporabe sredstava za čišćenje, ostatke sredstva za čišćenje uklonite brisanjem vlažnom krpom.
4. → Osigurače i vjedra s utorima podmažite Hettich masti u tubi 4051.
5. → Višak masnoće u centrifugalnoj komori mora se ukloniti.

### Provjera pribora

1. → Provjerite ima li na priboru istrošenosti i oštećenja od korozije.
2. → Provjerite dobru učvršćenost rotora.

### Provjera bio-sigurnosnog sustava

1. → Vizualno provjerite ima li oštećenja na svim dijelovima biološko sigurnosnog sustava.
2. → Provjerite ispravan položaj ugradnje brtvenog prstena ili brtvenih prstenova biosigurnosnog sustava.
3. → Zamijenite oštećene dijelove biosigurnosnog sustava.
4. → Ako postoje znakovi napuknuća, prijeloma ili istrošenosti, taj se brtveni prsten mora odmah zamijeniti. Kod poklopaca s neizmjenjivim brtvenim prstenima, mora se promijeniti cijeli poklopac.

### Provjera oštećenja centrifugalne komore

→ Provjerite ima li oštećenja centrifugalne komore.

### Podmazivanje osovine motora

1. → Uklonite pribor.
2. → Očistite osovinu motora.
3. → Nakon uporabe sredstava za čišćenje, ostatke sredstva za čišćenje uklonite brisanjem vlažnom krpom.
4. → Osovinu motora podmažite sa Hettich masti u tubi 4051.
5. → Višak masnoće u centrifugalnoj komori mora se ukloniti.

### Pribor s ograničenim rokom uporabe

Korištenje određenog pribora vremenski je ograničeno. Iz sigurnosnih razloga pribor se više ne smije koristiti ako je dosegnut maksimalni broj ciklusa rada ili datum isteka označen na njemu.

- Maksimalni dopušteni broj ciklusa rada ili datum isteka mogu se pronaći na priboru.
- Centrifuga je opremljena brojačem ciklusa.

**Zamjena epruveta za centrifugiranje**

**OPREZ**
**Opasnost od ozljeda slomljenim staklom.**

Krhotine stakla i kontaminirane tekućine mogu se naći unutar centrifuge zbog loma stakla.

- Nosite rukavice otporne na posjekotine.
- Nosite zaštitne naočale i masku za lice.

U slučaju curenja ili nakon puknuća epruvete za centrifugiranje, slomljeni dijelovi epruvete, krhotine stakla i prosuti centrifugirani materijal moraju se u potpunosti ukloniti. Preostali komadići stakla uzrokovat će daljnje lomljenje stakla.

Gumeni umeci i plastične čahure rotora moraju se zamijeniti ako se staklo razbije.

Ako je materijal zarazan, potrebno je izvršiti dezinfekciju.


## 9 Otklanjanje smetnji

### 9.1 Opis kvara

Ako se greška ne može otkloniti prema tablici za otklanjanje grešaka, potrebno je obavijestiti službu za korisnike. Navedite tip i serijski broj centrifuge. Oba broja nalaze se na tipskoj oznaci centrifuge.

\*broj greške se ne pojavljuje na zaslonu..

Opis pogreške	Uzrok	Pomoć
nema indikacije	Nema napona. Aktiviran je automatski zaštitni osigurač (samo za centrifuge 5005-08).	<ul style="list-style-type: none"> <li>■ Provjerite napon napajanja.</li> <li>■ Sklopka napajanja je u uključenom položaju [0].</li> </ul>
TACHO - ERROR 01, 02	Neispravnost tahografa. U kvaru je motor, pretvarač, elektronika.	<ul style="list-style-type: none"> <li>■ Poklopac otvoren.</li> <li>■ Postavite sklopku napajanja u položaj [0].</li> <li>■ Pričekajte najmanje 10 sekundi.</li> <li>■ Snažno okrećite rotor rukom.</li> <li>■ Postavite sklopku napajanja u položaj [1]. Tijekom uključivanja rotor se mora okretati.</li> </ul>
IMBALANCE / NERAVNOTEŽA	Rotor je neravnomjerno opterećen.	<ul style="list-style-type: none"> <li>■ Otvorite poklopac ili vratašca.</li> <li>■ Provjerite opterećenje rotora.</li> <li>■ Ponovite ciklus centrifugiranja.</li> </ul>
CONTROL - ERROR 04, 06-09	Greška zaključavanja poklopca.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
N > MAX 05	Greška prekoračenja broja okretaja	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
N < MIN 13	Greška preniskog broja okretaja.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
ROTORCODE 10	Greška kodiranja rotora.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>

Opis pogreške	Uzrok	Pomoć
MAINS INTERRUPT	Prekid napajanja tijekom centrifugiranja. Centrifugiranje nije dovršeno.	<ul style="list-style-type: none"> <li>■ Poklopac otvoren.</li> <li>■ Pritisnite tipku <i>[START]</i>.</li> <li>■ Po potrebi: Ponovite ciklus centrifugiranja.</li> </ul>
VERSION-ERROR 12	Elektroničke komponente ne odgovaraju, greška/kvar elektronike.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
SER I/O - ERROR 30-38	Kvar/neispravnost sučelja.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
° C * - ERROR 50-56, 58	Kvar/neispravnost hlađenja.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
LOCK - ERROR 57	Kvar/neispravnost programskog zaključavanja.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
FU / CCI - ERROR 60-83	Kvar/neispravnost upravljanja motorom.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
CONTROL - ERROR 26, 90-95, 97 - 99	Kvar/neispravnost upravljačke jedinice.	<ul style="list-style-type: none"> <li>■ Izvršite RESET-NAPAJANJA.</li> </ul>
N > ROTOR MAX 96	Broj okretaja u odabranom programu veći je od maksimalnog broja okretaja rotora.	<ul style="list-style-type: none"> <li>■ Provjerite i ispravite broj okretaja.</li> </ul>
	Rotor je promijenjen. Ugrađeni rotor ima veći maksimalni broj okretaja od prethodno korištenog rotora. Detekcija rotora još nije prepoznala rotor.	<ul style="list-style-type: none"> <li>■ Postavite broj okretaja do maksimalnog broja okretaja prethodno korištenog rotora. Pritisnite tipku <i>[START]</i> za izvođenje prepoznavanja rotora.</li> </ul>
 Cijeli zaslon svijetli.	-	<ul style="list-style-type: none"> <li>■ Obavijestite službu za korisnike.</li> </ul>

## 9.2 Postupak RESET-NAPAJANJA

1. ➤ Postavite sklopku napajanja u položaj *[0]*.
2. ➤ Pričekajte 10 sekundi.
3. ➤ Postavite sklopku napajanja u položaj *///*.

## 9.3 Otključavanje poklopca u slučaju nužde

U slučaju nestanka struje, poklopac se ne može otključati pomoću motora. Mora se izvršiti ručno otključavanje u nuždi.



### UPOZORENJE

Opasnost od strujnog udara uslijed održavanja i servisiranja uređaja pod naponom.

- Prije radova održavanja i popravaka isključite uređaj iz električne mreže.





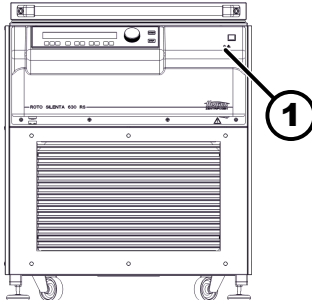
## UPOZORENJE

Opasnost od posjekotina i prignječenja od rotora u pokretu.

- Otvarajte poklopac tek nakon što se rotor zaustavi.

### Osoblje:

- Školovani korisnik



Slika 30: Otključavanje poklopca u slučaju nužde

1 Provrt

1. Pogledajte kroz okno na poklopcu kako biste bili sigurni da je rotor zaustavljen.
2. Umetnite imbus ključ vodoravno u rupu (1) i okrenite ga u smjeru kazaljke na satu za pola okreta dok se poklopac ne otvori.
3. Izvadite imbus ključ iz rupe (1).
4. Kada se napajanje ponovno uključi, pritisnite gumb [Poklopac] tako da se motorizirana brava poklopca ponovno vrati u početni položaj (otvoreno).

## 10 Zbrinjavanje

### 10.1 Opće napomene



*Uređaj možete zbrinuti preko proizvođača.*

*Za povrat uvijek morate zatražiti obrazac za odobrenje povrata materijala (RMA).*

*Ako je potrebno, obratite se tehničkoj službi proizvođača.*

- **Andreas Hettich GmbH & Co. KG**
- Föhrenstraße 12
- 78532 Tuttlingen, Germany
- Telefon: +49 7461 705 1400
- E-pošta: [service@hettichlab.com](mailto:service@hettichlab.com)



## UPOZORENJE

Opasnost od onečišćenja i kontaminacije za ljude i okoliš.

Prilikom zbrinjavanja centrifuge, ljudi i okoliš mogu se onečistiti ili kontaminirati nepravilnim ili neodgovarajućim odlaganjem.

- Uklanjanje i zbrinjavanje smije izvršiti samo obučeno i ovlašteno servisno osoblje.

Uređaj je namijenjen komercijalnom sektoru ("Business to Business" - B2B).


Prema Direktivi 2012/19/EU, uređaje više ne smijete odlagati s kućnim otpadom.

Uređaji su raspoređeni u sljedeće skupine prema registru zaklade za stare elektro uređaje Stiftung Elektro-Altgeräte Register (EAR (Njemačka građanskopravna zaklada)):

- Skupina 1 (izmjenjivači topline)



Simbol prekrižene kante za smeće označava da se uređaj ne smije odlagati s kućnim otpadom. Propisi koji uređuju odlaganje ovakvih uređaja mogu se razlikovati u pojedinim zemljama. Ako je potrebno, obratite se dobavljaču.

  
*Slika 31: Zabrana odlaganja u kućni otpad*

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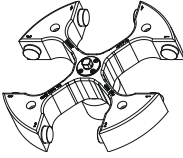

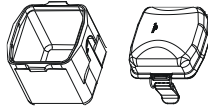












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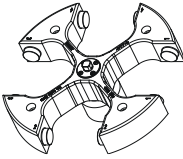

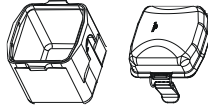





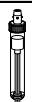
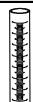









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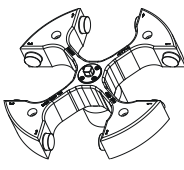

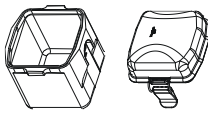
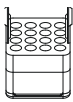



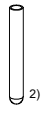

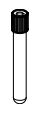


# Rotoren und Zubehör / Rotors and accessories

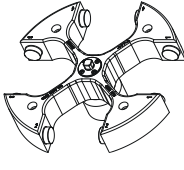

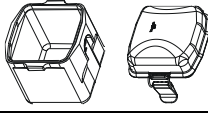


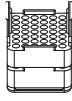






4174	5052 + 5057								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>      max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g  mit Bioabdichtung / with bio-containment 9)								
	4213		4213-93			4214			
									
	---	---	---	---	---	---	---	---	
	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	---	
Kapazität / capacity	ml	6	7	4,5 - 5	5	2,7 - 3	7,5 - 8,2	5 - 10	---
Maße / dimensions $\varnothing \times L$	mm	12 x 82	12 x 100	11 x 92	12 x 75	11 x 66	15 x 92	16 x 100	---
Anzahl p. Rotor / number p. rotor		192	192	192	192	192	120	120	---
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5003							
Radius / radius	mm	221							
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-1							

4174	5052 + 5057								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>      max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g  mit Bioabdichtung / with bio-containment 9)								
	4214		4214-93			4215		4216	4218
									
	---	---	---	---	---	---	---	---	---
	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>	 <sup>2)</sup>
Kapazität / capacity	ml	10	15	4 - 5,5	4 - 7	25	30	50	100
Maße / dimensions $\varnothing \times L$	mm	15 x 102	17 x 100	15 x 75	16 x 75	24 x 100	25 x 110	34 x 100	44 x 100
Anzahl p. Rotor / number p. rotor		120	120	120	120	44	44	24	16
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5003							
Radius / radius	mm	221							
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-1							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

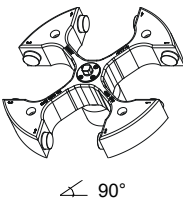
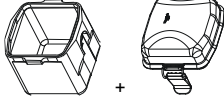
- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 9) In conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

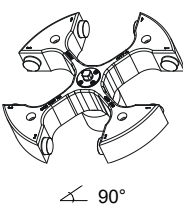
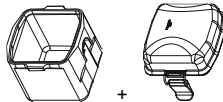

4174		5052 + 5057							
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>     90°  max. Laufzyklen / max. cycles: 30000 (4500RPM) 60000 (4000 RPM) 80000 (3500 RPM)		  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>							
		4220		4222		4222-93		---	
								---	
---		---		---		---		---	
---									
Kapazität / capacity	ml	9 - 10	12	7	4 - 7	5	2,6 - 3,4	1 - 5	---
Maße / dimensions	∅ x L	mm	16 x 92	17 x 100	12 x 100	13 x 100	12 x 75	13 x 65	13 x 75
Anzahl p. Rotor / number p. rotor		64	64	120	120	120	120	120	---
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5003							
Radius / radius	mm	221							
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-1							

4174		5052 + 5057									
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>     90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>									
		---		4223		---		4224		4225	
		---				---					
---		---		---		---		---			
---											
Kapazität / capacity	ml	---	9	8	12	---	4	1,5	2		
Maße / dimensions	∅ x L	mm	---	14 x 100	16 x 125	16 x 101	---	10 x 88	11 x 38		
Anzahl p. Rotor / number p. rotor		---	100	100	100	---	252	336	336		
Drehzahl / speed	RPM	---	4500	4500	4500	---	4500	4500	4500		
RZB / RCF	<sup>2)</sup>	---	5003	5003	5003	---	5003	5094	5094		
Radius / radius	mm	---	221	221	221	---	221	225	225		
 9 (97%)	sec	125									
 9	sec	197									
Temperatur / temperature	°C <sup>1)</sup>	-1									

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 9) 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".

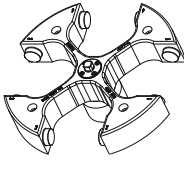
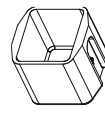

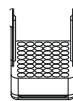











4174	5052 + 5057									
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)										
	max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM)									
	max. Beladung / max. load: 1100 g									
	mit Bioabdichtung / with bio-containment <sup>9)</sup>									
		4226	4232	4249	SK 09.00	4238	4241	4245-A		
	Microtainer	---	---	---	5127	---	---			
Kapazität / capacity	ml	0,8	15	50	14	250	290	25	50	
Maße / dimensions	Ø x L	mm	8 x 45	17 x 120	29 x 115	16,5 x 106	62 x 122	62 x 137	25 x 90	29 x 115
Anzahl p. Rotor / number p. rotor		312	92	24	92	4	4	32	32	
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5003	5184	5094	5117	5003	5003	5003	5184	
Radius / radius	mm	221	229	225	226	221	221	221	269	
	9 (97%)					125				
	9					197				
Temperatur / temperature	°C <sup>1)</sup>	-1								

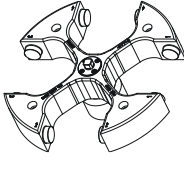
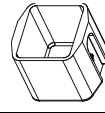

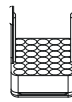
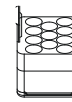
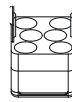
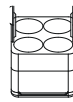










4174	5052 + 5057				5052	---				
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)										
	max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM)				---					
	max. Beladung / max. load: 1100 g				---					
	mit Bioabdichtung / with bio-containment <sup>9)</sup>				---					
		4258		4258+4449		6322	---			
						---				
	0512	0554	4234-A	Corning	Corning	---				
						---				
Kapazität / capacity	ml	750	650	750	500	250	---			
Maße / dimensions	Ø x L	mm	97 x 152	97 x 139	96 x 135	96 x 147	60 x 162	---		
Anzahl p. Rotor / number p. rotor		4				4	6	---		
Drehzahl / speed	RPM	4500				---				
RZB / RCF	<sup>2)</sup>	5184				5184	5003	---		
Radius / radius	mm	229				229	221	---		
	9 (97%)					125				
	9					197				
Temperatur / temperature	°C <sup>1)</sup>	-1								

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 3) Gefäß nur belastbar bis RZB 700
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 3) tube will not stand RCF values exceeding 700
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 9) 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".

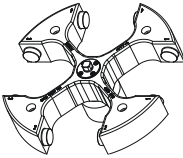


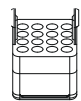
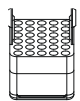












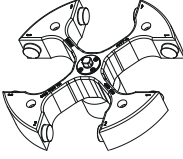




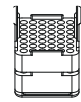








4174	4522-A								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g								
	4213		4213-93			4214			
									
	---	---	---	---	---	---	---	---	
	 2)	 2)		 2)					
Kapazität / capacity	ml	6	7	4,5 - 5	5	2,7 - 3	7,5 - 8,2	5 - 10	10
Maße / dimensions $\varnothing$ x L	mm	12 x 82	12 x 100	11 x 92	12 x 75	11 x 66	15 x 92	16 x 100	115 x 102
Anzahl p. Rotor / number p. rotor		192	192	192	192	192	120	120	120
Drehzahl / speed	RPM	4500							
RZB / RCF	2)	5003							
Radius / radius	mm	221							
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-1							

4174	4522-A								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g								
	4214		4214-93			4215		4216	4218
									
	---	---	---	---	---	---	---	---	
		 2)			 2)		 2)	 2)	
Kapazität / capacity	ml	15	15	4 - 5,5	4 - 7	25	30	50	100
Maße / dimensions $\varnothing$ x L	mm	17 x 100	17 x 100	15 x 75	16 x 75	24 x 100	25 x 110	34 x 100	44 x 100
Anzahl p. Rotor / number p. rotor		120		120		44		24	16
Drehzahl / speed	RPM	4500							
RZB / RCF	2)	5003							
Radius / radius	mm	221							
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-1							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur  
 2) Angaben des Röhrchenherstellers beachten.

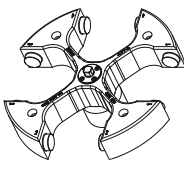
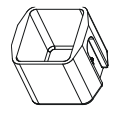
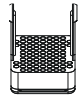
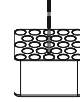
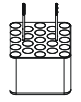
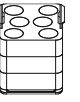
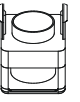

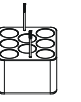










- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature  
 2) Observe the tube manufacturer's instructions.

4174	4522-A									
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>     90  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g									
	4220		4222		4222-93		---			
							---			
	---	---	---	---	---	---	---	---		
								---		
Kapazität / capacity	ml	9 - 10	12	7	4 - 7	5	2,6 - 2,9	1 - 5	---	
Maße / dimensions	Ø x L	mm	16 x 92	17 x 100	12 x 100	13 x 100	12 x 75	13 x 65	13 x 75	---
Anzahl p. Rotor / number p. rotor		64		120		120		---		
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5003								
Radius / radius	mm	221								
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	-1								

4174	4522-A									
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>     90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM) max. Beladung / max. load: 1100 g									
	---	4223			---	4224		4225		
	---				---					
	---	---	---	---	---	---	---	---	---	
	---				---				---	
Kapazität / capacity	ml	---	9	8	12	---	4	1,5	2	
Maße / dimensions	Ø x L	mm	---	14 x 100	16 x 125	16 x 101	---	10 x 88	11 x 38	11 x 38
Anzahl p. Rotor / number p. rotor		---	100			---	252	336		
Drehzahl / speed	RPM	---	4500	4500	4500	---	4500	4500	4500	
RZB / RCF	<sup>2)</sup>	---	5003	5003	5003	---	5003	5094	5094	
Radius / radius	mm	---	221	221	221	---	221	225	225	
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	-1								

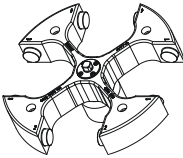




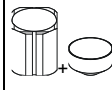
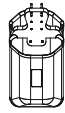
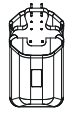

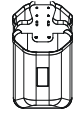



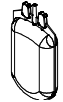

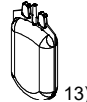
- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur  
 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature  
 2) Observe the tube manufacturer's instructions.

4174		4522-A							
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>  $\sphericalangle$ 90° max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)									
		max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM)							
		max. Beladung / max. load: 1100 g ---							
		---							
		4226	4232	SK 09.00	4249	4238	4241	4245-A	
									
		Microtainer	---	---	---	5127	---	---	---
						 8)	 8)		
Kapazität / capacity	ml	0,8	15	14	50	250	290	25	50
Maße / dimensions $\varnothing$ x L	mm	8 x 45	17 x 120	16,5 x 106	29 x 115	62 x 122	62 x 137	25 x 90	29 x 115
Anzahl p. Rotor / number p. rotor		312	92	138	24	4		32	32
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5003	5184	5117	5094	5003		5003	5184
Radius / radius	mm	221	229	226	225	221		221	229
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-1							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.

4174	4522-A					4524-A					
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)											
	max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM)					max. Laufzyklen / max. cycles: 15000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)					
	max. Beladung / max. load: 1100 g					max. Beladung / max. load: 2160 g					
	---					---					
	4258		4258+4449		6322	4529-AO <sup>10)</sup>	4529-AM <sup>10)</sup>	4529-AU <sup>10)</sup>			
											
	0512	0554	4234-A	Corning	Corning	---		---			
	 8)		 8)		 8)		 13)				
	Kapazität / capacity	ml		750		650		750		500	
	Maße / dimensions $\varnothing$ x L	mm		97 x 152		97 x 139		96 x 135		96 x 147	
Anzahl p. Rotor / number p. rotor	4		4		4		4		8		
Drehzahl / speed	RPM		4500		4500		4500		4500		
RZB / RCF	2)		5184		5184		5003		5683		
Radius / radius	mm		229		229		221		251		
 9 (97%)	sec		125		125		125		125		
 9	sec		197		197		197		197		
Temperatur / temperature	°C <sup>1)</sup>		-1-		-1-		-1-		10		

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 10) Darf nur in Gehänge 4524-A und beidseitig beladen verwendet werden. Bei Verwendung der Haltestifte darf die max. RZB 1000 nicht überschritten werden.

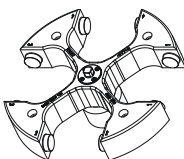




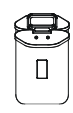
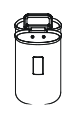

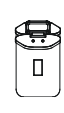


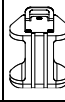
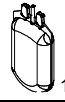
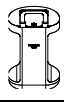

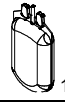
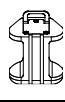


	Position der Haltestifte	Abstand der Haltestifte vom Einsatzboden (innen)
4529-AO	oben	199,5 mm
4529-AM	Mitte	182,0 mm
4529-AU	unten	164,5 mm

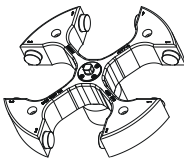

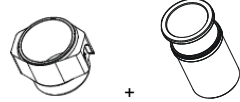


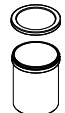

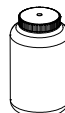






- 13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 10) May only be used in bucket 4524-A and with both sides loaded. If the holding pins are used the max. RCF of 1000 may not be exceeded.

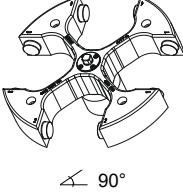










	Position of the holding pins	Distance of the holding pins from the bottom of the inserts (inside)
4529-AO	upper section	199.5 mm
4529-AM	middle section	182.0 mm
4529-AU	lower section	164.5 mm

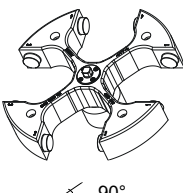



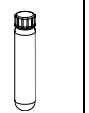
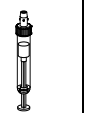
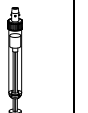


- 13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".

4174	4524-A		4546-A		4591-A		4595-C					
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>  $\angle 90^\circ$ max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)							 max. 3500 RPM zulässig					
	max. Laufzyklen / max. cycles: 15000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)		max. Laufzyklen / max. cycles: 30000 (4500 RPM) 35000 (4000 RPM) 40000 (3500 RPM)		max. Laufzyklen / max. cycles: 15000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)		max. Laufzyklen / max. cycles: 4500 (3500 RPM) 15000 (3000 RPM)					
	max. Beladung / max. load: 2160 g		max. Beladung / max. load: 2200 g		max. Beladung / max. load: 2160 g		max. Beladung / max. load: 2570 g					
	4592-B		4559-A		4598-A	4592-B		4596-A				
												
4-fach / 4-times		1-fach / 1-times		4587-A	4-fach / 4-times	4584-A	3-fach / 3-times	4-fach / 4-times	1-fach / 1-times	4587-A	---	
 13)		 12)		 13)	 12)	 13)	 13)	 12)	---			
Kapazität / capacity	ml		500	750	---	450	---	450	500	750	---	max. 1600
Maße / dimensions $\varnothing \times L$	mm		---	---	---	---	---	---	---	---	---	---
Anzahl p. Rotor / number p. rotor	8		8		8		8		8		4	
Drehzahl / speed	RPM		4500									3500
RZB / RCF	2)		5683		5479		5705		5705		3328	
Radius / radius	mm		251		242		252		252		243	
 9 (97%)	sec		125									95
 9	sec		197									131
Temperatur / temperature	$^\circ\text{C}^{1)}$		10									-12

4174	4579-A	4579-A + 4255 / 4255-P <sup>4)</sup>								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>  $\angle 90^\circ$ max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)										
	---	max. Laufzyklen / max. cycles: 30000								
	---	max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RPM)								
	---	---	---	---	4449	4430			---	
---	---	---	---					---		
---	4255 / 4255-P 4)	0512	4239	Corning		Nalgene®	Nunc®	---		
---	 11)	 5) 8)	 5) 8)	 5)	 5)	 5)	 5)	---		
Kapazität / capacity	ml		1000	750	1000	500	250	175	200	---
Maße / dimensions $\varnothing \times L$	mm		98 x 138	97 x 152	96 x 176	96 x 147	60 x 162	61,5 x 139,2	60 x 130	---
Anzahl p. Rotor / number p. rotor	4		4							---
Drehzahl / speed	RPM		4500							---
RZB / RCF	2)		5501							---
Radius / radius	mm		243							---
 9 (97%)	sec		125							---
 9	sec		197							---
Temperatur / temperature	$^\circ\text{C}^{1)}$		-11							---

- |  |   |
|--|---|
| 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur (nur bei Kühlzentrifuge)  | 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature (only with cooling centrifuges)  |
| 2) Angaben des Röhrchenherstellers beachten.   | 2) Observe the tube manufacturer's instructions.  |
| 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche   | 4) 4255-P: special surface treatment for highest hygienic requirements  |
| 5) 4255 nicht mit Deckel verschließbar   | 5) 4255 cannot be closed with the lid   |
| 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.   | 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.   |
| 11) Maximale Beladung 800g. Bei einer Beladung über 800g muss die Drehzahl reduziert werden, siehe Beschriftung auf dem Becher. Berechnung der reduzierten Drehzahl siehe Kapitel "Zentrifugation von Stoffen oder Stoffgemischen mit einer höheren Dichte als 1,2 kg/dm <sup>3</sup> ". | 11) Maximum load 800g. With a load higher than 800g the speed has to be reduced, see label on the bucket. Calculation of the reduced speed see chapter "Centrifugation of materials or mixtures of materials with a density higher than 1.2 kg/dm <sup>3</sup> ". |
| 12) Ausgleichseinsatz. Handhabung siehe in Kapitel "Beladen des Rotors".   | 12) Compensation insert. For handling see chapter "Loading the rotor".  |
| 13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".  | 13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".   |

4174	4579-A + 4255 / 4255-P <sup>4)</sup>										
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 + max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 800g (4500 RPM) 1000g (4020 RPM) 1200g (3670 RPM) ---										
	4432			4433			4434				
											
											
Kapazität / capacity	ml	1,5	2,0	5	7	2,7 - 3	4,5 - 5	9	15	15	
Maße / dimensions	∅ x L	mm	11 x 38	12 x 75	12 x 100	11 x 66	11 x 92	14 x 100	17 x 100	17 x 100	
Anzahl p. Rotor / number p. rotor		168			120			76			
Drehzahl / speed	RPM	4500									
RZB / RCF	<sup>2)</sup>	5003			4935			5094			
Radius / radius	mm	221			218			225			
 9 (97%)	sec							125			
 9	sec							197			
Temperatur / temperature	°C <sup>1)</sup>	-11									

4174	4579-A + 4255 / 4255-P <sup>4)</sup>										
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 + max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RPM) ---										
	4434										
											
					---						---
Kapazität / capacity	ml	10	10	---	4 - 5,5	9 - 10	4 - 7	5 - 10	---		
Maße / dimensions	∅ x L	mm	15 x 102	16 x 80	---	15 x 75	16 x 92	16 x 75	16 x 100	---	
Anzahl p. Rotor / number p. rotor		76									
Drehzahl / speed	RPM	4500									
RZB / RCF	<sup>2)</sup>	5094									
Radius / radius	mm	225									
 9 (97%)	sec	125									
 9	sec	197									
Temperatur / temperature	°C <sup>1)</sup>	-11									

1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur (nur bei Kühlzentrifuge)

2) Angaben des Röhrchenherstellers beachten.

4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche

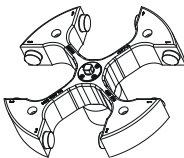




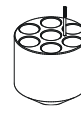








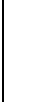


5) 4255 nicht mit Deckel verschließbar

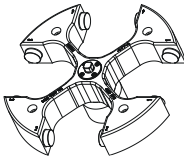


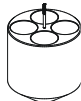


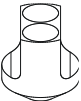







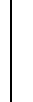


1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature (only with cooling centrifuges)

2) Observe the tube manufacturer's instructions.

4) 4255-P: special surface treatment for highest hygienic requirements

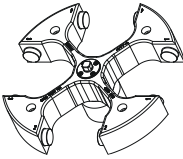

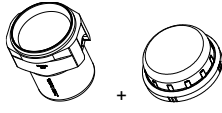








5) 4255 cannot be closed with the lid

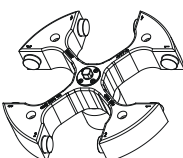
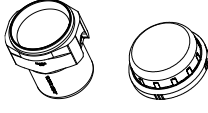






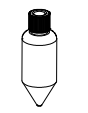
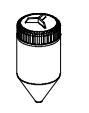

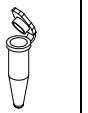
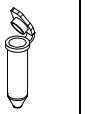


4174	4579-A + 4255 / 4255-P 4)								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\angle 90^\circ$  max. Laufzyklen /max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 								
	max. Laufzyklen /max. cycles: 30000 max. Beladung / max. load: 800 g (4500 RPM); 1000 g (4020 RPM), 1200 g (3670 RPM)								
	4435		4437		4438		4438 + 0726		
									
---	---	---	---	---	---	---	---		
									
Kapazität / capacity	ml	2,6 – 3,4	4,9	1,6 - 5	4 – 7	15	25	30	25
Maße / dimensions $\varnothing$ x L	mm	13 x 65	13 x 90	13 x 75	13 x 100	17 x 120	25 x 90	25 x 110	24 x 100
Anzahl p. Rotor / number p. rotor		84	84	84	84	48	28	28	28
Drehzahl / speed	RPM	4500	4500	4500	4500	4500	4500	4500	4500
RZB / RCF	<sup>2)</sup>	4935	4935	4935	4935	5207	5026	5026	4845
Radius / radius	mm	218	218	218	218	230	222	222	214
 g (97%)	sec	125							
 g	sec	197							
Temperatur / temperature	$^\circ\text{C}$ <sup>1)</sup>	-11							

4174	4579-A + 4255 / 4255-P 4)							
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\angle 90^\circ$  max. Laufzyklen /max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 							
	max. Laufzyklen /max. cycles: 30000 max. Beladung / max. load: 800 g (4500 RPM); 1000 g (4020 RPM), 1200 g (3670 RPM)							
	4439		4440		4441	4442	4443	
								
---	Falcon®	Falcon®	---	---	---	---	5127	
	 <sub>2)</sub>	 <sub>5)</sub>	 <sub>5)</sub>			 <sub>5), 8)</sub>	 <sub>8)</sub>	
Kapazität / capacity	ml	50	225	175	50	100	290	250
Maße / dimensions $\varnothing$ x L	mm	34 x 100	61 x 137	61 x 118	29 x 115	44 x 100	62 x 137	61 x 122
Anzahl p. Rotor / number p. rotor		16	4	4	20	8	4	4
Drehzahl / speed	RPM	4500	4500	4500	4500	4500	4500	4500
RZB / RCF	<sup>2)</sup>	4890	5501	5501	5207	4867	5320	5320
Radius / radius	mm	216	243	243	230	215	235	235
 g (97%)	sec	125						
 g	sec	197						
Temperatur / temperature	$^\circ\text{C}$ <sup>1)</sup>	-11						

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur (nur bei Kühlzentrifuge)
- 2) Angaben des Röhrchenherstellers beachten.
- 3) Gefäß nur belastbar bis RZB 700
- 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche
- 5) 4255 nicht mit Deckel verschließbar
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature (only with cooling centrifuges)
- 2) Observe the tube manufacturer's instructions.
- 3) tube will not stand RCF values exceeding 700
- 4) 4255-P: special surface treatment for highest hygienic requirements
- 5) 4255 cannot be closed with the lid
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.

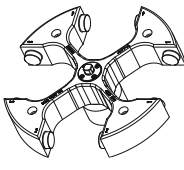
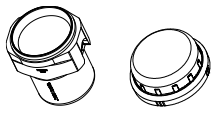










4174		4572				4547-B + 5621						
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   ↙ 90°  max. Laufzyklen / max. cycles: 30000 (4500RPM) 60000 (4000 RPM) 80000 (3500 RPM)												
		max. Laufzyklen / max. cycles: 19000 (4500 RPM), 45000 (3300 RPM) 90000 (2700 RPM)				max. Laufzyklen / max. cycles: 30000						
		max. Beladung / max. load: 1440 g				max. Beladung / max. load: 1200 g						
		---				---						
		4493		---		SK 32.08		SK 31.12-2		---		
				---						---		
		---		---		Kartusche		Kartusche		---		
				---						---		
Kapazität / capacity	ml	1 – 5	4 - 7	---		---		---		---		
Maße / dimensions	∅ x L	mm	13 x 75	13 x 100	---		43 x 193		43 x 114,5		---	
Anzahl p. Rotor / number p. rotor		224		---		4		8		---		
Drehzahl / speed	RPM	4500										
RZB / RCF	<sup>2)</sup>	4718		---		5569		5524		---		
Radius / radius	mm	208		---		246		244		---		
 9 (97%)	sec	125										
 9	sec	197										
Temperatur / temperature	°C <sup>1)</sup>	3				-9						

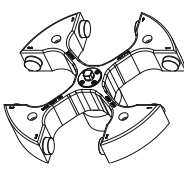
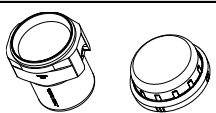











4174		4547-B + 5621															
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   ↙ 90°  max. Laufzyklen /max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)																	
		max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g															
				4449		4430		4432									
										---							
		0512		4239		Corning		Corning		Nalgene		Nunc		---		---	
																	
Kapazität / capacity	ml	750	1000	500	250	175	200	1,5	2,0	---		---					
Maße / dimensions	∅ x L	mm	97 x 152	96 x 176	96 x 147	60 x 162	61,5 x 139,2	60 x 130	11 x 38	11 x 38		11 x 38					
Anzahl p. Rotor / number p. rotor		4		4		4		4		168		168					
Drehzahl / speed	RPM	4500		4500		4500		4500		4500		4500					
RZB / RCF	<sup>2)</sup>	5592		5592		5592		5592		5094		5094					
Radius / radius	mm	247		247		247		247		225		225					
 9 (97%)	sec	125															
 9	sec	197															
Temperatur / temperature	°C <sup>1)</sup>	-9															

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 4) 4255-P: special surface treatment for highest hygienic requirements
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.

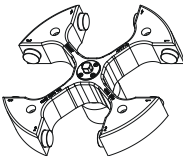
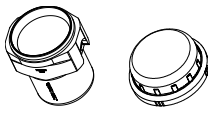

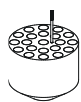
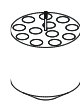
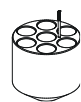
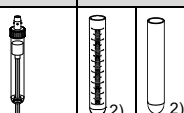
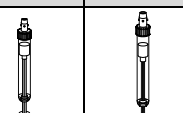






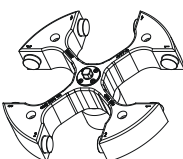
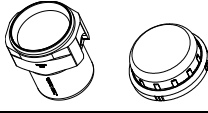
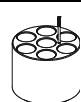
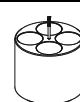

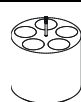
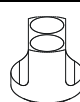
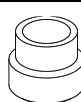






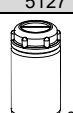

4174	4547-B + 5621									
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\sphericalangle$ 90°  max. Laufzyklen /max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g									
	4433				4434					
										
	---	---	---	---	---	---	---	---		
	 2)	 2)			 2)		---	---		
Kapazität / capacity	ml	5	7	2,7 - 3	4,5 - 5	9	10	---	---	
Maße / dimensions	Ø x L	mm	12 x 75	12 x 100	11 x 66	11 x 92	14 x 100	16 x 80	---	---
Anzahl p. Rotor / number p. rotor		120				76			---	
Drehzahl / speed	RPM	4500							---	
RZB / RCF	<sup>2)</sup>	5026				5184			---	
Radius / radius	mm	222				229			---	
 9 (97%)	sec	125							---	
 9	sec	197							---	
Temperatur / temperature	°C <sup>1)</sup>	-9							---	

4174	4547-B + 5621									
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\sphericalangle$ 90°  max. Laufzyklen /max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g									
	4434									
										
	---	---	---	---	---	---	---	---		
	 2)							 2)		
Kapazität / capacity	ml	8	4 - 5,5	7,5 - 8,2	9 - 10	4 - 7	8	5 - 10	12	
Maße / dimensions	Ø x L	mm	16 x 81	15 x 75	15 x 92	16 x 92	16 x 75	16 x 125	16 x 100	16 x 101
Anzahl p. Rotor / number p. rotor		76								
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5184								
Radius / radius	mm	229								
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	-9								

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur  
 2) Angaben des Röhrchenherstellers beachten.

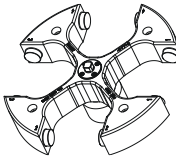
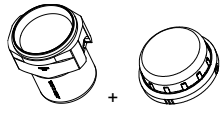





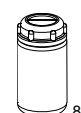

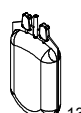
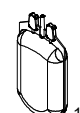
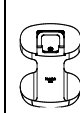
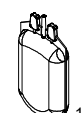


- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature  
 2) Observe the tube manufacturer's instructions.

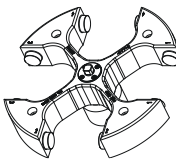

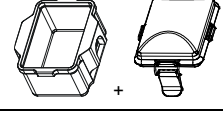



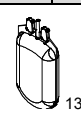
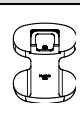
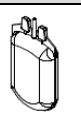
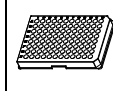

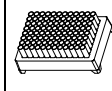



4174	4547-B + 5621								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g								
	4434		4435				4437	4438 + 0726	
									
									
Kapazität / capacity	ml	10	15	2,6 – 2,9	4,9	1 - 5	4 - 7	15	25
Maße / dimensions $\varnothing$ x L	mm	15 x 102	17 x 100	13 x 65	13 x 90	13 x 75	13 x 100	17 x 120	24 x 100
Anzahl p. Rotor / number p. rotor		76	76	84	84	84	84	48	28
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5184	5184	5026	5026	5026	5026	5298	4913
Radius / radius	mm	229	229	222	222	222	222	234	217
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-9							

4174	4547-B + 5621								
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g								
	4438		4439		4440		4441	4442	4443
									
									
Kapazität / capacity	ml	25	30	50	225	175	50	100	250
Maße / dimensions $\varnothing$ x L	mm	25 x 90	25 x 110	34 x 100	61 x 137	61 x 118	29 x 115	44 x 100	62 x 122
Anzahl p. Rotor / number p. rotor		28	28	16	4	4	20	8	4
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5117	5117	4981	5592	5592	5298	4958	5411
Radius / radius	mm	226	226	220	247	247	234	219	239
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	-9							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.

4174	4547-B + 5621				4523-A						
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 max. Laufzyklen / max. cycles: 30000				 max. Laufzyklen / max. cycles: 10000 (4500 RPM) 20000 (4000 RPM) 30000 (3500 RPM)						
	max. Beladung / max. load: 1200 g				max. Beladung / max. load: 1200 g						
	4443	---	---	SK 61.98	4548	4516-A		---			
		---	---					---			
	---	---	---	---	4-fach / 4-times	3-fach / 3-times	4-fach / 4-times	1-fach / 1-times	4589-A	1-fach / 1-times	
 8)	---	---		 13)	 13)	 12)	 13)				
Kapazität / capacity	ml	290	---	---	50	500	450	500	750	---	1000
Maße / dimensions	$\varnothing \times L$	mm	62 x 137	---	---	29 x 115	---	---	---	---	---
Anzahl p. Rotor / number p. rotor		4	---	---	20	4	---	4	---	---	4
Drehzahl / speed	RPM	4500									
RZB / RCF	<sup>2)</sup>	5411	---	---	5094	5524	---	5660	---	---	5705
Radius / radius	mm	239	---	---	225	244	---	250	---	---	252
 9 (97%)	sec	125									
 9	sec	197									
Temperatur / temperature	$^\circ\text{C}^{1)}$	-9							3		

4174	4523-A		---	SK 06.07 + 5629							
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 max. Laufzyklen / max. cycles: 10000 (4500 RPM) 20000 (4000 RPM) 30000 (3500 RPM)		---	 max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)							
	max. Beladung / max. load: 1200 g		---	max. Beladung / max. load: 700 g							
	4508	SK 03.18	---	4626							
	 14)		---								
	4-fach / 4-times	1-fach / 1-times	4589-A	1-fach / 1-times	---	MTP	MTP	MS	CP		
 13)	 12)		---	---							
Kapazität / capacity	ml	500	750	---	300	---	---	---	---		
Maße / dimensions	TxBxH / DxVxH	mm	---	---	---	86x128x15	86x128x17,5	86x128x46	86x128x22		
Anzahl p. Rotor / number p. rotor		4		4	---	24	20	4	16		
Drehzahl / speed	RPM	4500									
RZB / RCF	<sup>2)</sup>	5660		5456	---	4324					
Radius / radius	mm	250		241	---	191					
 9 (97%)	sec	125									
 9	sec	197									
Temperatur / temperature	$^\circ\text{C}^{1)}$	3		---	---	---					

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 12) Ausgleichseinsatz. Handhabung siehe in Kapitel "Beladen des Rotors".
- 13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".
- 14) Einsatz mit Schlitz für Bänder zur Fixierung der Blutbeutel.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 12) Compensation insert. For handling see chapter "Loading the rotor".
- 13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".
- 14) Insert with slots for straps for fixing the blood bags

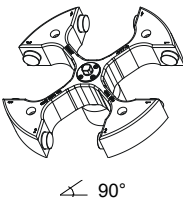
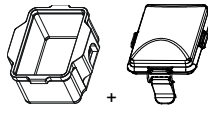

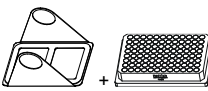





MTP Mikrotiterplatte /  
Microtitre plate

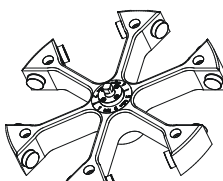
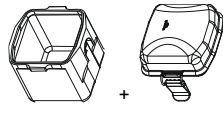











CP Kulturplatte /  
Culture plate

DWP Deep Well Platte /  
Deep well plate

MS Micronic System /  
Micronic system

QP Filterplatte /  
Filter plate

4174		SK 06.07 + 5629						
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		 max. Laufzyklen / max. cycles: 30000 (4500 RPM), 60000 (4000 RPM), 80000 (3500 RPM)						
		max. Beladung / max. load: 700 g						
		4626		4626 + 1485		---	---	---
						---	---	---
	DWP	Microtest-platten / plate Terasaki	QP	PCR-Platte 96-fach / PCR-plate 96 times	PCR-Strips	---	---	---
						---	---	---
Kapazität / capacity	ml	---	---	---	0,2	---	---	---
Maße / dimensions TxBxH / DxWxH	mm	86x128x44,5	59x84x11	86x128x 83	82x124x20	---	---	---
Anzahl p. Rotor / number p. rotor		4	8	4	4	48	---	---
Drehzahl / speed	RPM	4500						
RZB / RCF	<sup>2)</sup>	4324						
Radius / radius	mm	191						
9 (97%)	sec	125						
9	sec	197						
Temperatur / temperature	°C <sup>1)</sup>	---						

4176		5052 + 5057							
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		 max. Laufzyklen / max. cycles: 20000 (4500 RPM), 30000 (4000 RPM), 40000 (3500 RPM)							
		max. Beladung / max. load: 1100 g							
		mit Bioabdichtung / with bio-containment <sup>9)</sup>							
		4213		4213-93		4214			
									
---	---	---	---	---	---	---	---		
									
6	7	4,5 - 5	5	2,7 - 3	15	15	5 - 10		
Maße / dimensions Ø x L	mm	12 x 82	12 x 100	11 x 92	12 x 75	11 x 66	17 x 100	17 x 100	16 x 100
Anzahl p. Rotor / number p. rotor		288		288		180			
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5818							
Radius / radius	mm	257							
9 (97%)	sec	125							
9	sec	197							
Temperatur / temperature	°C <sup>1)</sup>	14							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur  
 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature  
 2) Observe the tube manufacturer's instructions.

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

- 9) 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".

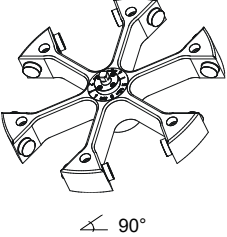
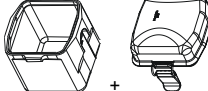
MTP Mikrotiterplatte /  
Microtitre plate

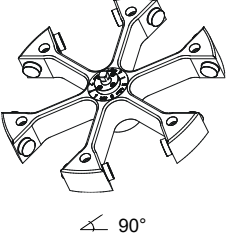
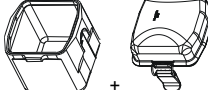
CP Kulturplatte /  
Culture plate

DWP Deep Well Platte /  
Deep well plate

MS Micronic System /  
Micronic system

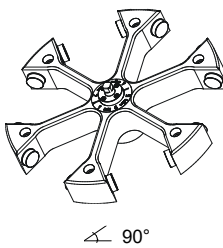
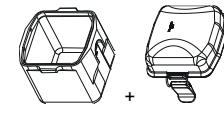











QP Filterplatte /  
Filter plate

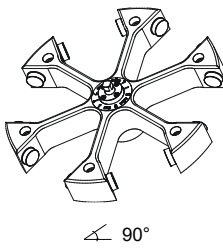
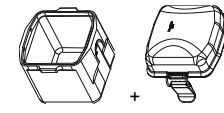












4176		5052 + 5057									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		 max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)									
		max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>									
		4214		4214-93		4215		4216		4218	
---		---		---		---		---			
Kapazität / capacity	ml	10	7,5 – 8,2	4 - 5,5	4 - 7	25	30	50	100		
Maße / dimensions Ø x L	mm	15 x 102	15 x 92	15 x 75	16 x 75	24 x 100	25 x 110	34 x 100	44 x 100		
Anzahl p. Rotor / number p. rotor		180		180		66		36			
Drehzahl / speed	RPM	4500									
RZB / RCF	<sup>2)</sup>	5818									
Radius / radius	mm	257									
9 (97%)	sec	125									
9	sec	197									
Temperatur / temperature	°C <sup>1)</sup>	14									

4176		5052 + 5057									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		 max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)									
		max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>									
		4220		4222		4222-93		---		---	
---		---		---		---		---			
Kapazität / capacity	ml	9 - 10	12	7	4 - 7	5	2,6 – 2,9	1 – 5	---		
Maße / dimensions Ø x L	mm	16 x 92	17 x 100	12 x 100	13 x 100	12 x 75	13 x 65	13 x 75	---		
Anzahl p. Rotor / number p. rotor		96		180		180		---			
Drehzahl / speed	RPM	4500									
RZB / RCF	<sup>2)</sup>	5818									
Radius / radius	mm	257									
9 (97%)	sec	125									
9	sec	197									
Temperatur / temperature	°C <sup>1)</sup>	14									

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

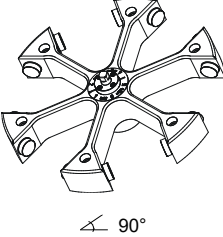
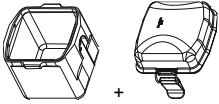


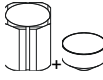








- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 9) In conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

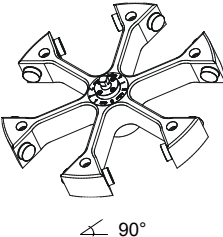

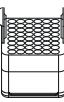

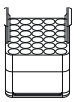










4176		5052 + 5057								
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		 max. Laufzyklen / max. cycles: 20000 (4500 PM) 30000 (4000 RPM) 40000 (3500 RPM)								
		max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>								
		---	4223			---	4224		4225	
		---				---				
---				---						
Kapazität / capacity	ml	9	8	12	---	4	1,5	2		
Maße / dimensions $\varnothing$ x L	mm	14 x 100	16 x 125	16 x 101	---	10 x 88	11 x 38	11 x 38		
Anzahl p. Rotor / number p. rotor		150	150	150	150	378	504			
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5818			---	5818	5909			
Radius / radius	mm	---	257		---	257	261			
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	14								

4176		5052 + 5057								
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		 max. Laufzyklen / max. cycles: 20000 (4500 PM) 30000 (4000 RPM) 40000 (3500 RPM)								
		max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>								
		4226	4232	4249	SK 09.00	4238		4241	4245-A	
										
Microtainer		---	---	---	5127	---	---	---		
										
Kapazität / capacity	ml	0,8	15	50	14	250	290	25	50	
Maße / dimensions $\varnothing$ x L	mm	8 x 45	17 x 120	29 x 115	16,5 x 106	62 x 122	62 x 137	25 x 90	29 x 115	
Anzahl p. Rotor / number p. rotor		468	138	36	138	6		48	48	
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5818	5999	5909	5954	5818		5818	5999	
Radius / radius	mm	257	265	261	263	257		257	265	
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	14								

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

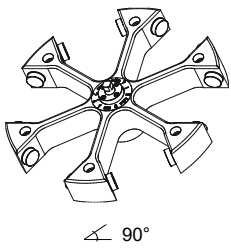
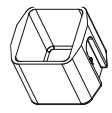






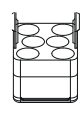

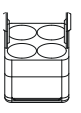
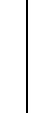


- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 9) In conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

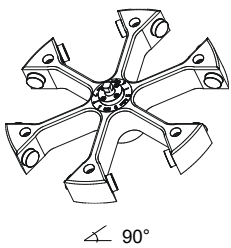
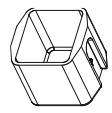
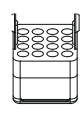

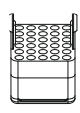

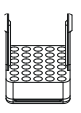
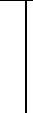


4176	5052 + 5057				5052	---			
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)									---
	max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)								---
	max. Beladung / max. load: 1100 g mit Bioabdichtung / with bio-containment <sup>9)</sup>								---
	4258		4258 + 4449		6322	---	---	---	
						---	---	---	
	0512	0554	4234-A	Corning	Corning	---	---	---	
						---	---	---	
	Kapazität / capacity	ml	750	650	750	500	250	---	
	Maße / dimensions Ø x L	mm	97 x 152	96 x 139	96 x 135	96 x 147	60 x 162	---	
	Anzahl p. Rotor / number p. rotor		6			6	6	---	
Drehzahl / speed	RPM	4500					---		
RZB / RCF	<sup>2)</sup>	5999			5999	5818	---		
Radius / radius	mm	265			265	257	---		
 9 (97%)	sec					125			
 9	sec					197			
Temperatur / temperature	°C <sup>1)</sup>					14			

4176	4522-A									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)										
	max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)									
	max. Beladung / max. load: 1100 g ---									
	4213		4213-93			4214				
										
	---	---	---	---	---	---	---	---		
										
	Kapazität / capacity	ml	6	7	4,5 - 5	5	2,7 - 3	10	7,5 - 8,2	5 - 10
	Maße / dimensions Ø x L	mm	12 x 82	12 x 100	11 x 92	12 x 75	11 x 66	15 x 102	15 x 92	16 x 100
	Anzahl p. Rotor / number p. rotor		288			288		180		
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5818								
Radius / radius	mm	257								
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	14								

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 3) Gefäß nur belastbar bis RZB 700
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 3) tube will not stand RCF values exceeding 700
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 9) 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".

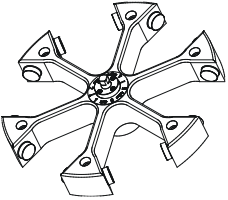

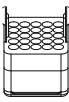

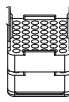








4176		4522-A															
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		  max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)  max. Beladung / max. load: 1100 g ---															
		4214		4214-93		4215		4216		4218							
		 --- 		 --- 		 --- 		 --- 		 --- 							
Kapazität / capacity ml		15		4 - 5,5		4 - 7		25		30		50		100			
Maße / dimensions $\varnothing$ x L mm		17 x 100		17 x 100		15 x 75		16 x 75		24 x 100		25 x 110		34 x 100		44 x 100	
Anzahl p. Rotor / number p. rotor		180		180		180		66		36		24					
Drehzahl / speed RPM								4500									
RZB / RCF <sup>2)</sup>								5818									
Radius / radius mm								257									
 9 (97%) sec								125									
 9 sec								197									
Temperatur / temperature °C <sup>1)</sup>								14									

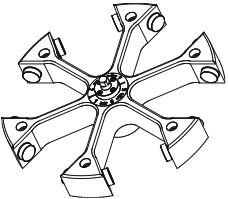

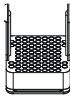
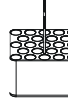
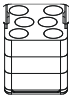
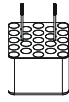
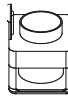
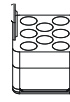
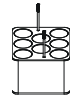




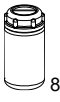
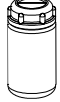




4176		4522-A															
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)		  max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)  max. Beladung / max. load: 1100 g ---															
		4220		4222		4222-93		---		---							
		 --- 		 --- 		 --- 		---		---							
Kapazität / capacity ml		9 - 10		12		7		4 - 7		5		2,6 - 2,9		1 - 5		---	
Maße / dimensions $\varnothing$ x L mm		16 x 92		17 x 100		12 x 100		13 x 100		12 x 75		13 x 65		13 x 75		---	
Anzahl p. Rotor / number p. rotor		96		180		180		180		180		180		180		---	
Drehzahl / speed RPM										4500							
RZB / RCF <sup>2)</sup>										5818							
Radius / radius mm										257							
 9 (97%) sec										125							
 9 sec										197							
Temperatur / temperature °C <sup>1)</sup>										14							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.

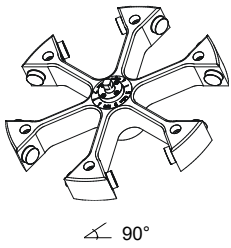
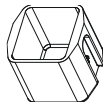


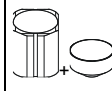

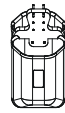






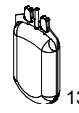




4176	4522-A								
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)								
	max. Beladung / max. load: 1100 g								
	---	4223			---	4224		4225	
	---				---				
---				---					
Kapazität / capacity	ml	---	9	8	12	---	4	1,5	2
Maße / dimensions $\varnothing$ x L	mm	---	14 x 100	16 x 125	16 x 101	---	10 x 88	11 x 38	11 x 38
Anzahl p. Rotor / number p. rotor		---	150			---	378	504	
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	---	5818			---	5818	5909	
Radius / radius	mm	---	257			---	257	261	
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	$^\circ\text{C}^{1)}$	14							

4176	4522-A								
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	  max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)								
	max. Beladung / max. load: 1100 g								
	4226	4232	4249	SK 09.00	4238	4241	4245-A		
									
Microtainer	---	---	---	5127	---	---	---		
									
Kapazität / capacity	ml	0,8	15	50	14	250	290	25	50
Maße / dimensions $\varnothing$ x L	mm	8 x 45	17 x 120	29 x 115	16,5 x 106	62 x 122	62 x 137	25 x 90	29 x 115
Anzahl p. Rotor / number p. rotor		468	138	36	138	6		48	48
Drehzahl / speed	RPM	4500							
RZB / RCF	<sup>2)</sup>	5818	5999	5909	5954	5818		5818	5999
Radius / radius	mm	257	265	261	263	257		257	265
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	$^\circ\text{C}^{1)}$	14							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.

4176	4522-A					4524-A			
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 max. Laufzyklen / max. cycles: 20000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM) max. Beladung / max. load: 1100 g					 max. Laufzyklen / max. cycles: 15000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM) max. Beladung / max. load: 2160 g			
	---					---			
	4258		4258 + 4449		6322	4529-AO <sup>10)</sup>	4529-AM <sup>10)</sup>	4529-AU <sup>10)</sup>	
									
	0512	0554	4234-A	Corning	Corning	---	---	---	
	 8)		 8)		 8)			 13)	
	Kapazität / capacity	ml		750	650	750	500	500	
	Maße / dimensions	Ø x L		mm	97 x 152	96 x 139	96 x 135	96 x 147	60 x 162
	Anzahl p. Rotor / number p. rotor	6		6		6		12	
	Drehzahl / speed	RPM		4500					
RZB / RCF	2)		5999		5999	5818	6498		
Radius / radius	mm		265		265	257	287		
 9 (97%)	sec		125						
 9	sec		197						
Temperatur / temperature	°C <sup>1)</sup>		14			16			

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 10) Darf nur in Gehänge 4524-A und beidseitig beladen verwendet werden. Bei Verwendung der Haltestifte darf die max. RZB 1000 nicht überschritten werden.

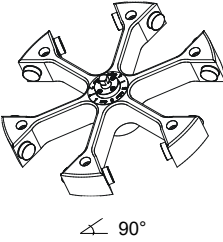
















	Position der Haltestifte	Abstand der Haltestifte vom Einsatzboden (innen)
4529-AO	oben	199,5 mm
4529-AM	Mitte	182,0 mm
4529-AU	unten	164,5 mm

- 12) Ausgleichseinsatz. Handhabung siehe in Kapitel "Beladen des Rotors".
- 13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 10) May only be used in bucket 4524-A and with both sides loaded. If the holding pins are used the max. RCF of 1000 may not be exceeded.

	Position of the holding pins	Distance of the holding pins from the bottom of the inserts (inside)
4529-AO	upper section	199.5 mm
4529-AM	middle section	182.0 mm
4529-AU	lower section	164.5 mm

- 12) Compensation insert. For handling see chapter "Loading the rotor".
- 13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".

4176	4524-A		4546-A		4591-A		4595-C						
<p><b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b></p>  <p>max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)</p>							 max. 3500 RPM zulässig						
	max. Laufzyklen / max. cycles: 15000 (4500-RPM) 30000 (4000 RPM) 40000 (3500 RPM)		max. Laufzyklen / max. cycle: 30000 (4500 RPM) 35000 (4000 RPM) 40000 (3500 RPM)		max. Laufzyklen / max. cycles: 15000 (4500 RPM) 30000 (4000 RPM) 40000 (3500 RPM)		max. Laufzyklen / max. cycles: 4500 (3500 RPM) 15000 (3000 RPM)						
	max. Beladung / max. load: 2160 g		max. Beladung / max. load: 2200 g		max. Beladung / max. load: 2160 g		max. Beladung / max. load: 2570 g						
	---		---		---		---						
	4592-B		4559-A		4598-A	4592-B		---	4596-A				
								---					
	4-fach / 4-times		4-fach / 4-times		3-fach / 3-times	4-fach / 4-times		0550	---				
	 13)		 12)		 13)	 12)		 8)	---				
	Kapazität / capacity	ml	500	750	---	450	---	450	500	750	---	2000	max. 1600
	Maße / dimensions	Ø x L	mm	---	---	---	---	---	---	---	---	180x150x100	---
Anzahl p. Rotor / number p. rotor		12		12		12	12		6	6			
Drehzahl / speed	RPM	4500		4500		4500	4500		3500	3500			
RZB / RCF		6498		6271		6498	6498		3848	3821			
Radius / radius	mm	287		277		287	287		281	279			
 9 (97%)	sec			125					95				
 9	sec			197					131				
Temperatur / temperature	°C <sup>1)</sup>			16								-3	

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 3) Gefäß nur belastbar bis RZB 700
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 10) Darf nur in Gehänge 4524-A und beidseitig beladen verwendet werden. Bei Verwendung der Haltestifte darf die max. RZB 1000 nicht überschritten werden.

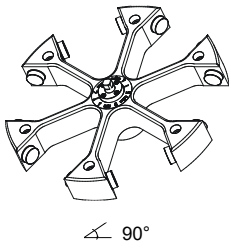




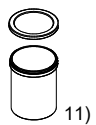
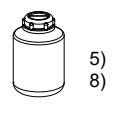
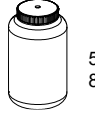
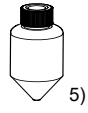
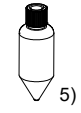
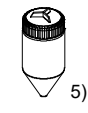
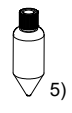


	Position der Haltestifte	Abstand der Haltestifte vom Einsatzboden (innen)
4529-AO	oben	199,5 mm
4529-AM	Mitte	182,0 mm
4529-AU	unten	164,5 mm

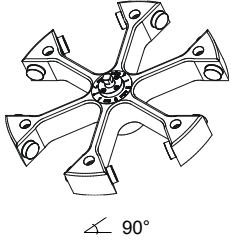

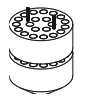












- 12) Ausgleichseinsatz. Handhabung siehe in Kapitel "Beladen des Rotors".
- 13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 3) tube will not stand RCF values exceeding 700
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 10) May only be used in bucket 4524-A and with both sides loaded. If the holding pins are used the max. RCF of 1000 may not be exceeded.

	Position of the holding pins	Distance of the holding pins from the bottom of the inserts (inside)
4529-AO	upper section	199.5 mm
4529-AM	middle section	182.0 mm
4529-AU	lower section	164.5 mm

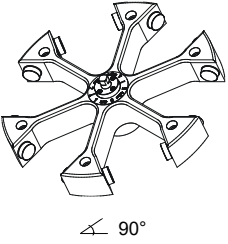











- 12) Compensation insert. For handling see chapter "Loading the rotor".
- 13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".

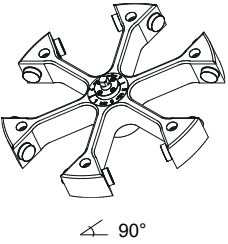
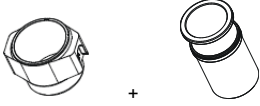













4176	4579-A	4579-A + 4255 / 4255-P <sup>4)</sup>							
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)									
	max. Laufzyklen / max. cycles: 30000								
	---	max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RKM)							
	---	---	---	4449	4430			---	
---	---	---					---		
4255 / 4255-P <sup>4)</sup>	0512	4239	Corning	Corning	Nalgene®	Nunc®	---		
 11)	 5) 8)	 5) 8)	 5)	 5)	 5)	 5)	---		
Kapazität / capacity ml	1000	750	1000	500	250	175	200	---	
Maße / dimensions Ø x L mm	98 x 138	97 x 152	98 x 175	96 x 147	60 x 162	61,5 x 139,2	60 x 130	---	
Anzahl p. Rotor / number p. rotor	6	6	6	6	6	6	6	---	
Drehzahl / speed RPM				4500					
RZB / RCF <sup>2)</sup>				6294					
Radius / radius mm				278					
 9 (97%) sec				125					
 9 sec				197					
Temperatur / temperature °C <sup>1)</sup>				4					

4176	4579-A + 4255 / 4255-P <sup>4)</sup>									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)										
	max. Laufzyklen / max. cycles: 30000									
	max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RPM)									
	4432	4433				4434				
										
---	---	---	---	---	---	---	---	---	---	---
	 2)	 2)			 2)	---	 2)	 2)	---	---
Kapazität / capacity ml	1,5	2,0	5	7	2,7 - 3	4,5 - 5	9	---	15	---
Maße / dimensions Ø x L mm	11 x 38	12 x 75	12 x 100	11 x 66	11 x 92	14 x 100	---	---	17 x 100	---
Anzahl p. Rotor / number p. rotor	252		180						114	
Drehzahl / speed RPM	4500									
RZB / RCF <sup>2)</sup>	5796		5750				5886			
Radius / radius mm	256		254				260			
 9 (97%) sec	125									
 9 sec	197									
Temperatur / temperature °C <sup>1)</sup>	4									

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur (nur bei Kühlzentrifuge)
- 2) Angaben des Röhrenherstellers beachten.
- 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche
- 5) 4255 nicht mit Deckel verschließbar
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 11) Maximale Beladung 800g. Bei einer Beladung über 800g muss die Drehzahl reduziert werden, siehe Beschriftung auf dem Becher. Berechnung der reduzierten Drehzahl siehe Kapitel "Zentrifugation von Stoffen oder Stoffgemischen mit einer höheren Dichte als 1,2 kg/dm<sup>3</sup>".

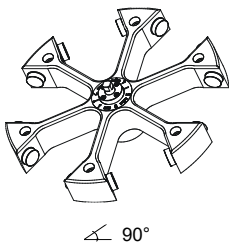
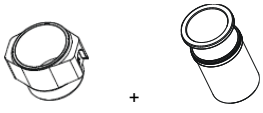
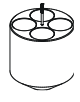

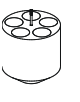
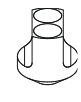
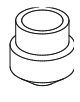
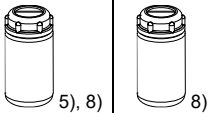
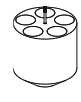
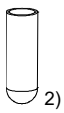




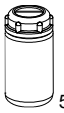
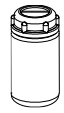



- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature (only with cooling centrifuges)
- 2) Observe the tube manufacturer's instructions.
- 4) 4255-P: special surface treatment for highest hygienic requirements
- 5) 4255 cannot be closed with the lid
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 11) Maximum load 800g. With a load higher than 800g the speed has to be reduced, see label on the bucket. Calculation of the reduced speed see chapter "Centrifugation of materials or mixtures of materials with a density higher than 1.2 kg/dm<sup>3</sup>".

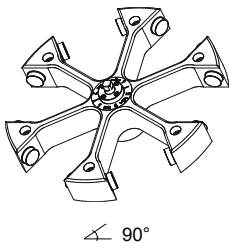






4176	4579-A + 4255 / 4255-P <sup>4)</sup>									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 +									
	max. Laufzyklen / max. cycles: 30000									
	max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RPKM)									
	---									
	4434 									
	---	---	---	---	---	---	---	---		
	 5)		 <sup>2)</sup>					---		
Kapazität / capacity	ml	10	8	4 - 5,5	9 - 10	4 - 7	5 - 10	---		
Maße / dimensions	Ø x L	mm	15 x 102	16 x 80	16 x 81	15 x 75	16 x 92	16 x 75	16 x 100	---
Anzahl p. Rotor / number p. rotor		114							---	
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5886								
Radius / radius	mm	260								
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	4								

4176	4579-A + 4255 / 4255-P <sup>4)</sup>									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle$ 90°  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 +									
	max. Laufzyklen / max. cycles: 30000									
	max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RPM)									
	---									
	4435		4437		4438		4438 + 0726			
										
	---	---	---	---	---	---	---			
							 <sup>2)</sup>			
Kapazität / capacity	ml	2,6 - 2,9	4,9	1 - 5	4 - 7	15	25	30	25	
Maße / dimensions	Ø x L	mm	13 x 65	13 x 90	13 x 75	13 x 100	17 x 120	25 x 90	25 x 110	24 x 100
Anzahl p. Rotor / number p. rotor		126			72		42		42	
Drehzahl / speed	RPM	4500								
RZB / RCF	<sup>2)</sup>	5750			6022		5818		5615	
Radius / radius	mm	254			266		257		248	
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C <sup>1)</sup>	4								

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur (nur bei Kühlzentrifuge)
- 2) Angaben des Röhrchenherstellers beachten.
- 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche
- 5) 4255 nicht mit Deckel verschließbar

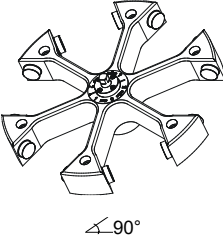
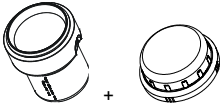













- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature (only with cooling centrifuges)
- 2) Observe the tube manufacturer's instructions.
- 4) 4255-P: special surface treatment for highest hygienic requirements
- 5) 4255 cannot be closed with the lid

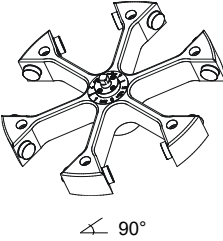
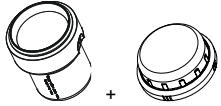










4176	4579-A + 4255 / 4255-P <sup>4)</sup>							
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 + max. Laufzyklen / max. cycles: 30000							
	max. Beladung / max. load: 800g (4500 RPM), 1000g (4020 RPM), 1200g (3670 RPM)							
	---							
	4439	4440	4441	4442	4443	5127		SK 61.98
								
---	Falcon®	Falcon®	---	---	---	5127	---	
 2)	 5)	 5)	 2)	 2)	 5), 8)	 8)	 5)	
Kapazität / capacity ml	50	225	175	50	100	290	250	50
Maße / dimensions Ø x L mm	34 x 100	61 x 137	61 x 118	29 x 115	44 x 100	62 x 137	61 x 122	29 x 115
Anzahl p. Rotor / number p. rotor	24	6	30	12	6	6	6	30
Drehzahl / speed RPM	4500							
RZB / RCF <sup>2)</sup>	5705	6294	5999	5683	6113	6113	6113	5796
Radius / radius mm	252	278	265	251	270	270	270	256
 9 (97%) sec				125				
 9 sec				197				
Temperatur / temperature °C <sup>1)</sup>	4							

4176	4572	---						
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 --- max. Laufzyklen / max. cycles: 19000 (4500 RPM), 45000 (3300 RPM) 90000 (2700 RPM) --- max. Beladung / max. load: 1440 g --- ---							
	4493				---	---	---	---
	 --- --- --- ---				---	---	---	---
	---	---	---	---	---	---	---	---
 1-5	 4-7	---	---	---	---	---	---	
Kapazität / capacity ml	1 – 5	4 – 7	---	---	---	---	---	
Maße / dimensions Ø x L mm	13 x 75	13 x 100	---	---	---	---	---	
Anzahl p. Rotor / number p. rotor	336		---	---	---	---	---	
Drehzahl / speed RPM	4500		---	---	---	---	---	
RZB / RCF <sup>2)</sup>	5522		---	---	---	---	---	
Radius / radius mm	244		---	---	---	---	---	
 9 (97%) sec	125		---	---	---	---	---	
 9 sec	197		---	---	---	---	---	
Temperatur / temperature °C <sup>1)</sup>	10		---	---	---	---	---	

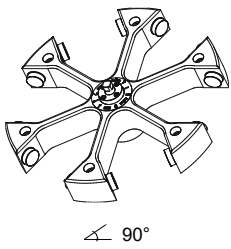
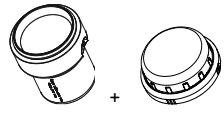
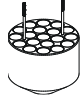
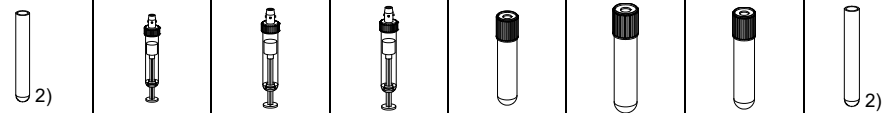









- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur (nur bei Kühlzentrifuge)
- 2) Angaben des Röhrchenherstellers beachten.
- 3) Gefäß nur belastbar bis RZB 700
- 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche
- 5) 4255 nicht mit Deckel verschließbar
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.

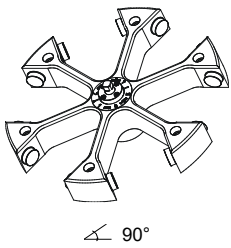
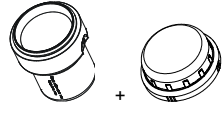
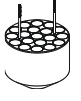
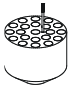
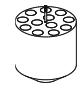


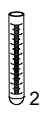

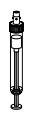







- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature (only with cooling centrifuges)
- 2) Observe the tube manufacturer's instructions.
- 3) tube will not stand RCF values exceeding 700
- 4) 4255-P: special surface treatment for highest hygienic requirements
- 5) 4255 cannot be closed with the lid
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.

4176	4547-B + 5621										
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g										
	---		4449		4430		4432				
	---										
	0512	4239	Corning	Corning	Nalgene	Nunc	---	---			
	 8)	 8)									
	Kapazität / capacity	ml	750	1000	500	250	175	200	1,5	2,0	
	Maße / dimensions	Ø x L	mm	97 x 152	96 x 176	96 x 147	60 x 162	61,5 x 139,2	60 x 130	11 x 38	11 x 38
	Anzahl p. Rotor / number p. rotor		6	6	6	6	6	6	6	6	
	Drehzahl / speed	RPM	4500								
	RZB / RCF	<sup>2)</sup>	6384	6384	6384	6384		5886			
Radius / radius	mm	282	282	282	282		260				
 9 (97%)	sec	125									
 9	sec	197									
Temperatur / temperature	°C <sup>1)</sup>	9									

4176	4547-B + 5621										
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   $\sphericalangle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g										
	4433				4434						
											
	---	---	---	---	---	---	---	---			
	 2)	 2)			 2)	---		---			
	Kapazität / capacity	ml	5	7	2,7 - 3	4,5 - 5	9	---	10	---	
	Maße / dimensions	Ø x L	mm	12 x 75	12 x 100	11 x 66	11 x 92	14 x 100	---	16 x 80	---
	Anzahl p. Rotor / number p. rotor		180				114				
	Drehzahl / speed	RPM	4500								
	RZB / RCF	<sup>2)</sup>	5841				5977				
Radius / radius	mm	258				264					
 9 (97%)	sec	125									
 9	sec	197									
Temperatur / temperature	°C <sup>1)</sup>	9									

- |  |  |
|--|--|
| 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur     | 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature |
| 2) Angaben des Röhrchenherstellers beachten.   | 2) Observe the tube manufacturer's instructions.   |
| 4) 4255-P: spezielle Oberflächenbehandlung für höchste hygienische Ansprüche                       | 4) 4255-P: special surface treatment for highest hygienic requirements                             |
| 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen. | 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.        |

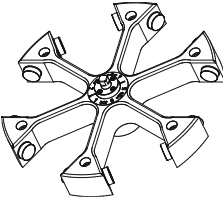
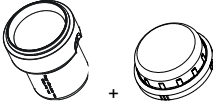















4176	4547-B + 5621								
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 - 5RPM)	 max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g								
	4434								
									
	---								
	 2)							 2)	
Kapazität / capacity	ml	8	4 - 5,5	7,5 - 8,2	9 - 10	4 - 7	8	5 - 10	12
Maße / dimensions	∅ x L	mm	16 x 81	15 x 75	15 x 92	16 x 92	16 x 75	16 x 125	16 x 101
Anzahl p. Rotor / number p. rotor		114							
Drehzahl / speed	RPM	4500							
RZB / RCF	2)	5977							
Radius / radius	mm	264							
 9 (97%)	sec	125							
 9	sec	197							
Temperatur / temperature	°C 1)	9							

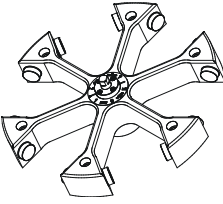
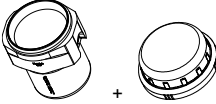










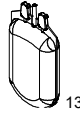
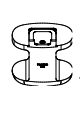
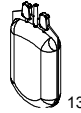


4176	4547-B + 5621									
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	 max. Laufzyklen / max. cycles: 30000 max. Beladung / max. load: 1200 g									
	4434		4435				4437		4438 + 0726	
										
	---									
		 2)	 2)						 2)	
Kapazität / capacity	ml	10	15	2,6 - 2,9	4,9	1 - 5	4 - 7	15	25	
Maße / dimensions	∅ x L	mm	15 x 102	17 x 100	13 x 65	13 x 90	13 x 75	13 x 100	17 x 120	24 x 100
Anzahl p. Rotor / number p. rotor		114			126			72	42	
Drehzahl / speed	RPM	4500								
RZB / RCF	2)	5977			5841			6090	5728	
Radius / radius	mm	264			258			269	253	
 9 (97%)	sec	125								
 9	sec	197								
Temperatur / temperature	°C 1)	9								

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur  
 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature  
 2) Observe the tube manufacturer's instructions.

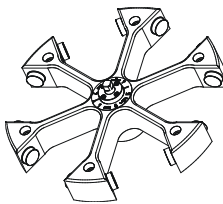

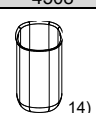

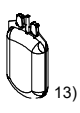
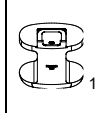
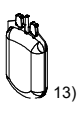




<b>4176</b>  <b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	<b>4547-B + 5621</b>																	
																		
	max. Laufzyklen / max. cycles: 30000																	
	max. Beladung / max. load: 1200 g																	
	4438		4439		4440		4441		4442		4443							
																		
	---		---		---		---		---		5127							
																		
	Kapazität / capacity ml		25		30		50		225		175		50		100		250	
	Maße / dimensions $\varnothing$ x L mm		25 x 90		25 x 110		34 x 100		61 x 137		61 x 118		29 x 115		44 x 100		62 x 122	
Anzahl p. Rotor / number p. rotor		42		24		6		6		30		12		6		6		
Drehzahl / speed RPM		---		---		---		---		---		---		---		4500		
RZB / RCF <sup>2)</sup>		5909		5773		6384		6090		5750		6203		---		---		
Radius / radius mm		261		255		282		269		254		274		---		---		
 9 (97%)		sec		---		125		---		---		---		---		---		
 9		sec		---		197		---		---		---		---		---		
Temperatur / temperature $^\circ\text{C}^{1)}$		---		---		---		---		---		---		---		9		

<b>4176</b>  <b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)	<b>4547-B + 5621</b>								<b>4523-A</b>											
																				
	max. Laufzyklen / max. cycles: 30000								max. Laufzyklen / max. cycles: 10000 (4500 RPM) 20000 (4000 RPM) 30000 (3500 RPM)											
	max. Beladung / max. load: 1200 g								max. Beladung / max. load: 1200 g											
	4443		---		SK 20.16		SK 61.98		4548		4516-A		---							
			---										---							
	---		---		Flasche / bottle		---		4-fach / 4-times		3-fach / 3-times		4-fach / 4-times		1-fach / 1-times		4589-A		1-fach / 1-times	
			---														---		---	
	Kapazität / capacity ml		290		---		375		50		500   450		500   750		---		1000			
	Maße / dimensions $\varnothing$ x L mm		62 x 137		---		65 x 145,5		29 x 115		---		---		---		---			
Anzahl p. Rotor / number p. rotor		6		---		---		30		6		6		---		6				
Drehzahl / speed RPM		---		---		---		---		---		---		---		4500				
RZB / RCF <sup>2)</sup>		6203		---		6294		5886		6316		6475		6520		---				
Radius / radius mm		274		---		278		260		279		286		288		---				
 9 (97%)		sec		---		---		125		---		---		---		---				
 9		sec		---		---		197		---		---		---		---				
Temperatur / temperature $^\circ\text{C}^{1)}$		---		---		---		---		---		---		---		9				

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 12) Ausgleichseinsatz. Handhabung siehe in Kapitel "Beladen des Rotors".
- 13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 12) Compensation insert. For handling see chapter "Loading the rotor".
- 13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".

4176	4523-A		---	---	---	---	---
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>    $\angle 90^\circ$  max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)			---	---	---	---	---
	max. Laufzyklen / max. cycles: 10000 (4500 RPM) 20000 (4000 RPM) 30000 (3500 RPM)		---	---	---	---	---
	max. Beladung / max. load: 1200 g ---		---	---	---	---	---
	4508      SK 03.18		---	---	---	---	---
	 14)			---	---	---	---
4-fach / 4-times    1-fach / 1-time    4589-A    1-fach		---	---	---	---	---	
 13)  12)  13)		---	---	---	---	---	
Kapazität / capacity      ml	500   750	---	300	---	---	---	---
Maße / dimensions $\varnothing \times L$ mm	---	---	---	---	---	---	---
Anzahl p. Rotor / number p. rotor	6		6	---	---	---	---
Drehzahl / speed                  RPM	4500		---	---	---	---	---
RZB / RCF                            2)	6475		6271	---	---	---	---
Radius / radius                    mm	286		277	---	---	---	---
 9 (97%)                            sec	125		---	---	---	---	---
 9    sec	197		---	---	---	---	---
Temperatur / temperature      °C 1)	9		---	---	---	---	---

1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur

2) Angaben des Röhrchenherstellers beachten.

12) Ausgleichseinsatz. Handhabung siehe in Kapitel "Beladen des Rotors".

13) Ausgleichsgewichte Set (4566) erhältlich. Handhabung siehe in Kapitel "Beladen des Rotors".

14) Einsatz mit Schlitz für Bänder zur Fixierung der Blutbeutel.

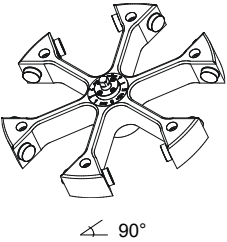
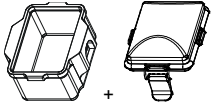

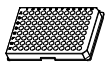

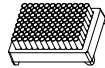

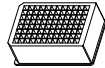

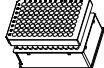


1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature

2) Observe the tube manufacturer's instructions.

12) Compensation insert. For handling see chapter "Loading the rotor".

13) Balance weights set (4566) available. For handling see chapter "Loading the rotor".

14) Insert with slots for straps for fixing the blood bags

4176		SK 06.07 + 5629								
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 RPM) 60000 (4000 RPM) 80000 (3500 RPM)										
		max. Laufzyklen / max. cycles: 30000 (4500 RPM), 60000 (4000 RPM), 80000 (3500 RPM)								
		max. Beladung / max. load: 700 g ---								
		<b>4626</b> 								
		MTP	MTP	MS	CP	DWP	Microtest- platten / plate Terasaki	QP	---	
									---	
Maße / dimensions TxBxH / DxWxH	mm	86x128x15	86x128x17,5	86x128x46	86x128x22	86x128x44,5	59x84x11	86x128x83	---	
Anzahl p. Rotor / number p. rotor		36	30	6	24	6	12	6	---	
Drehzahl / speed	RPM								4500	---
RZB / RCF	<sup>2)</sup>								5139	---
Radius / radius	mm								227	---
 9 (97%)	sec								125	---
 9	sec								197	---
Temperatur / temperature	°C <sup>1)</sup>								- 3	---

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur  
 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature  
 2) Observe the tube manufacturer's instructions.

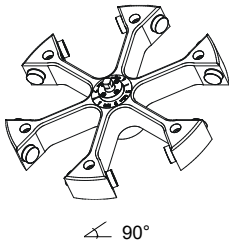
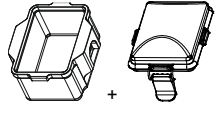





MTP Mikrotiterplatte /  
Microtitre plate

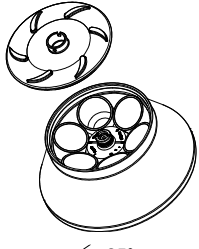
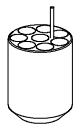
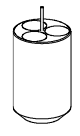
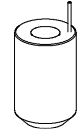
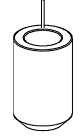
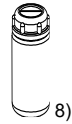





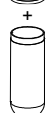

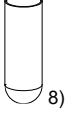

CP Kulturplatte /  
Culture plate

DWP Deep Well Platte /  
Deep well plate

MS Micronic System /  
Micronic system

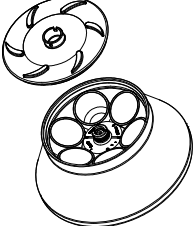
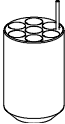


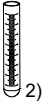





QP Filterplatte /  
Filter plate

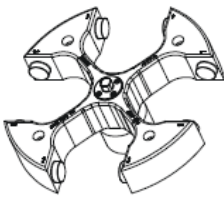















4176		SK 06.07 + 5629							
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>   max. Laufzyklen / max. cycles: 30000 (4500 - 4001 RPM) 60000 (4000 - 3501 RPM) 80000 (3500 - 50 RPM)									
		max. Laufzyklen / max. cycles: 30000 (4500 - 4001 RPM), 60000 (4000 - 3501 RPM), 80000 (3500 - 50 RPM)							
		max. Beladung / max. load: 700 g ---							
		<b>4626 + 1485</b> 							
		PCR-Platte 96-fach / PCR-plate 96 times	PCR-Strips	---	---	---	---	---	---
				---	---	---	---	---	---
Kapazität / capacity	ml	---	8 x 0,2	---	---	---	---	---	---
Maße / dimensions TxBxH / DxWxH	mm	82x124x20	---	---	---	---	---	---	---
Anzahl p. Rotor / number p. rotor		6	72	---	---	---	---	---	---
Drehzahl / speed	RPM	4500	---	---	---	---	---	---	---
RZB / RCF	<sup>2)</sup>	5139	---	---	---	---	---	---	---
Radius / radius	mm	227	---	---	---	---	---	---	---
 9 (97%)	sec	125	---	---	---	---	---	---	---
 9	sec	197	---	---	---	---	---	---	---
Temperatur / temperature	°C <sup>1)</sup>	- 3	---	---	---	---	---	---	---

4570		---							
<b>Winkelrotor 6-fach / Angle rotor 6-times</b>   max. Laufzyklen / max. cycles: 15000  Hülsen / reduction (6x inclusive) max. Laufzyklen: 15000 einsetzbar bis / usable until: 5 Jahre / year  mit Bioabdichtung / with bio-containment <sup>9)</sup>		---							
		---							
		---							
		---							
		---	5641	5642	5643	5644			
		---							
		5127	---	---	---	---	---	---	
		 8)			 2)		 + 	 8)	
Kapazität / capacity	ml	250	10	30	25	50	85	94	
Maße / dimensions Ø x L	mm	61,5 x 122	16 x 80	26 x 95	24 x 100	29 x 107	38 x 106	38 x 110	
Anzahl p. Rotor / number p. rotor		6	48	18		6	6		
Drehzahl / speed	RPM	6000							
RZB / RCF	<sup>2)</sup>	5594	5353	5152		4830	4910		
Radius / radius	mm	139	133	128		120	122		
 9 (97%)	sec	64							
 9	sec	69							
Temperatur / temperature	°C <sup>1)</sup>	- 16							

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.
- 8) Bei Temperaturen über 40 °C und/oder geringer Befüllung der Gefäße können sich diese verformen.
- 9) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten.

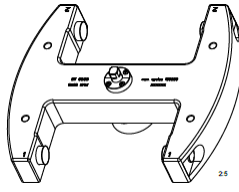
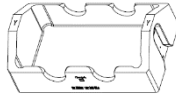
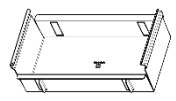



- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.
- 8) At temperatures above 40 °C and/or poor filling of the tubes, these can go out of shape.
- 9) In conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

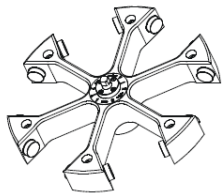
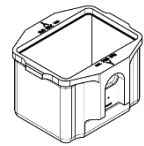

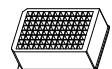


4570		---					
<b>Winkelrotor 6-fach / Angle rotor 6-times</b>  $\angle 25^\circ$ max. Laufzyklen / max. cycles: 15000 Hülsen / reduction (6x inclusive) max. Laufzyklen: 15000 einsetzbar bis / usable until: 5 Jahre / year mit Bioabdichtung / with bio-containment <sup>9)</sup>	---						
	---		---		---		---
	<b>5646</b>	<b>5637</b>	<b>5638</b>	---	---	---	---
				---	---	---	---
	---	---	---	---	---	---	---
	 2)	 2)			---	---	---
Kapazität / capacity	ml	15	15	15	50	---	---
Maße / dimensions $\varnothing \times L$	mm	17 x 100	17 x 100	17 x 120	29 x 115	---	---
Anzahl p. Rotor / number p. rotor		42		30	6	---	---
Drehzahl / speed	RPM	6000			---		
RZB / RCF	<sup>2)</sup>	5313	5152	4830	---	---	---
Radius / radius	mm	132	128	120	---	---	---
 9 (97%)	sec	64			---	---	---
 9	sec	69			---	---	---
Temperatur / temperature	$^\circ\text{C}$ <sup>1)</sup>	- 16			---	---	---

SK 48.06-35		SK 48.06-36						---	
<b>Ausschwingrotor 4-fach / Swing out rotor 4-times</b>  $\angle 90^\circ$ max. Laufzyklen / max. cycles: 30000	 max. Laufzyklen: 30000 2800 RPM max. load 1300g 1000 RPM max. load 2300g ---						---		
	---		---		---		---		
	<b>SK 48.06-3</b>	<b>SK 48.06-4</b>	<b>SK 48.06-7</b>	<b>SK 48.06-11</b>	<b>SK 48.06-12</b>	<b>SK 48.06-13</b>	---	---	
							---	---	
	Kartusche	Kartusche	Kartusche	Kartusche	Kartusche	Kartusche	---	---	
							---	---	
Kapazität / capacity	ml	---	---	---	---	---	---	---	
Maße / dimensions $\varnothing \times L$	mm	18,5 x 91	25,5 x 118	42,5 x 186	18,65 x 95,6	25,6 x 122,4	26 x 180,4	---	
Anzahl p. Rotor / number p. rotor		28	16	8	28	12	12	---	
Drehzahl / speed	RPM	2800						---	
RZB / RCF	<sup>2)</sup>	2375	2375	2323	2375	2375	2375	---	
Radius / radius	mm	271	271	265	271	271	271	---	
 9 (97%)	sec	---						---	
 9	sec	---						---	
Temperatur / temperature	$^\circ\text{C}$ <sup>1)</sup>	7						---	

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.

SK 08.09	SK 08.09-5	---		---		---	
<b>Ausschwingrotor 2-fach / Swing out rotor 2-times</b>  max. Laufzyklen / max. cycles: 100000		---	---	---	---	---	---
	max. Laufzyklen / max. cycles: 20000 max. Beladung / max. load: 1915g	---	---	---	---	---	---
	---	---	---	---	---	---	---
	<b>SK 08.09-4</b>	---	---	---	---	---	---
		---	---	---	---	---	---
	<b>STIWA-Rack</b>	---	---	---	---	---	---
		---	---	---	---	---	---
Kapazität / capacity	ml	---	---	---	---	---	---
Maße / dimensions $\varnothing \times L$	mm	22 x 60 x 220	---	---	---	---	---
Anzahl p. Rotor / number p. rotor		10	---	---	---	---	---
Drehzahl / speed	RPM	3520	---				
RZB / RCF	<sup>2)</sup>	2812	---	---	---	---	---
Radius / radius	mm	203	---	---	---	---	---
 9 (97%)	sec	82	---				
 9	sec	137	---				
Temperatur / temperature	$^{\circ}\text{C}$ <sup>1)</sup>	---	---				

SK 48.08-1	SK 48.08	---		---		---	
<b>Ausschwingrotor 6-fach / Swing out rotor 6-times</b>  max. Laufzyklen / max. cycles: 30000		---	---	---	---	---	---
	max. Laufzyklen / max. cycles: 50000 max. Beladung / max. load: 1130g	---	---	---	---	---	---
	---	---	---	---	---	---	---
	<b>SK 48.08-2</b>	---	---	---	---	---	---
		---	---	---	---	---	---
	<b>Nashua Kits</b>	---	---	---	---	---	---
		---	---	---	---	---	---
Kapazität / capacity	ml	---	---	---	---	---	---
Maße / dimensions $\varnothing \times L$	mm	86 x 128 x 44,5	---	---	---	---	---
Anzahl p. Rotor / number p. rotor		6	---	---	---	---	---
Drehzahl / speed	RPM	3400	---				
RZB / RCF	<sup>2)</sup>	3270	---	---	---	---	---
Radius / radius	mm	253	---	---	---	---	---
 9 (97%)	sec	---	---				
 9	sec	---	---				
Temperatur / temperature	$^{\circ}\text{C}$ <sup>1)</sup>	---	---				

- 1) Tiefste erreichbare Temperatur bei maximaler Drehzahl, 1 h Laufzeit und 20°C Raumtemperatur
- 2) Angaben des Röhrchenherstellers beachten.

- 1) Lowest possible temperature during maximum speed, 1 h running time and 20°C ambient temperature
- 2) Observe the tube manufacturer's instructions.