

There are good reasons why we have called these centrifuges UNIVERSAL. Their excellent performance and comprehensive range of accessories enable them to carry out virtually any centrifuging task. In the low speed range, the UNIVERSAL 320 and 320 R process standard tubes up to a volume of 100 ml, microtitre plates, conical tubes with screw cap, blood collection tubes and cyto accessories. Microlitre tubes can be accelerated to an RCF of 21,382. Centrifuge tubes taking higher volumes (up to 85 ml) also profit from the extraordinary motor power of the UNIVERSAL 320 / 320 R. At an RCF of 9,509, bacteria and yeast sediment quickly and easily.



UNIVERSAL 320 classic

Cat. No. 1401

PERFORMANCE

- High RCF
 - 85 ml tubes up to 9,509
 - 15 ml tubes up to 16,582
 - Microlitre tubes up to 21,382
- Extremely short run-up and run-down times

DESIGN

- Metal housing
- Metal lid
- Stainless steel centrifuging chamber
- Viewing port in the lid

USER-FRIENDLINESS

- Powered lid-locking
- Quick-entry foil keypad
- Easily exchangeable rotors
- 10 programmable memories

REFRIGERATION (UNIVERSAL 320 R)

- Infinitely variable setting from – 20 °C to + 40 °C
- Fast cool function

SAFETY

- Lid locking and holding during rotor run
- Emergency lid-lock release
- Motor-overheating protection
- Chamber-overheating protection (with the UNIVERSAL 320 R)
- Imbalance switch-off
- Automatic rotor recognition
- Lid dropping protection

OPTIONS

As options, the UNIVERSAL 320 R is also available

- with connection to an external refrigerated/heating circulator (provided by the customer) – **Cat. No. 1406-50** (without internal cooling unit). Depending on circulator performance, the centrifuge can heat or cool within a range of 0 °C to 90 °C,
- with connection for flushing with nitrogen – **Cat. No. 1406-20** (without monitoring and controlling system).

OPERATION AND CONTROL

The display panel and all controls on the UNIVERSAL 320 and 320 R centrifuges have been designed ergonomically. Information on the display is clearly positioned and perfectly legible.


During centrifugation, the actual parameter values are indicated. Nine acceleration and braking ramps, or unbraked run-down, can be pre-selected. Ramp 9 always corresponds to the shortest possible run-up or run-down time. The stored parameter combination remains in the memory even after the centrifuge has been switched off.

By entering the rotor radius r/mm , the centrifuge calculates and indicates the rotational speed RPM or the relative centrifugal force RCF.


The twist knob allows quick and easy entry or changing of the parameters.

DIGITAL DISPLAY AND CONTROL PANEL

KEYPAD

	Precooling (UNIVERSAL 320 R)
RCF	Change-over from RPM to RCF indication
SELECT	Selection of parameters
START	Starts centrifugation /
IMPULS	Short cycle mode
STOP	Stops centrifugation manually /
OPEN	Opens the lid

ENTRY OF THE PARAMETERS

P	Entry of the program number, 10 programmable memories
T/°C	Entry of the temperature in increments of 1 within a range of - 20 °C to + 40 °C (UNIVERSAL 320 R)
RCF	Entry in increments of 10
RPM	Entry in increments of 10
r/mm	Entry of the radius in mm
t/min	Entry of the centrifuging time in minutes and seconds (max. 99 min : 59 sec)
	Entry of the acceleration ramp 1-9 Entry of the braking ramp 1-9



UNIVERSAL 320 R control panel
(N Plus control panel)



UNIVERSAL 320 R cooled

Cat. No. 1406

ROTORS AND ACCESSORIES

UNIVERSAL 320 / 320 R centrifuges accommodate rotors and accessories for virtually every centrifuging task required in industrial, research and clinical laboratories.

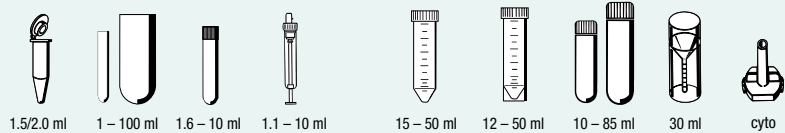
Quick overview of rotors and suitable accessories. The figures highlighted under the arrows refer to the pages where technical and ordering details are listed.

Tubes / plates	Max. capacity
standard tubes	32 x 15 ml or 4 x 100 ml
hematocrit capillaries	24
conical tubes with screw cap	32 x 15 ml or 8 x 50 ml
microtitre plates	10
filter plates	2
cyto suspensions	8
blood collection tubes	48
round-bottom tubes with screw cap	6 x 85 ml
microlitre tubes	30 x 1.5/2.0 ml

Rotors	Max. RCF
swing-out rotor	4,193
swing-out rotor for conical tubes with screw cap	3,857
swing-out rotor for microtitre and culture plates	2,218
swing-out rotor for 8 cyto suspensions	2,218
angle rotor for round-bottom tubes with screw cap (6 x 85 ml)	9,509
angle rotors (12-, 24- or 30-place) for microlitre tubes (0.2 – 2.0 ml)	21,382



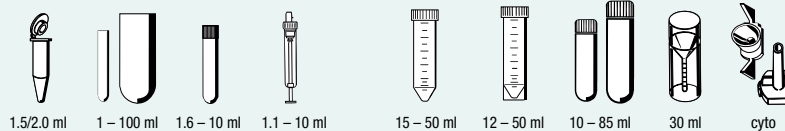
Swing-out rotor 4-place
 n = 5,000 min⁻¹
 max. RCF 4,193
Cat. No. 1494



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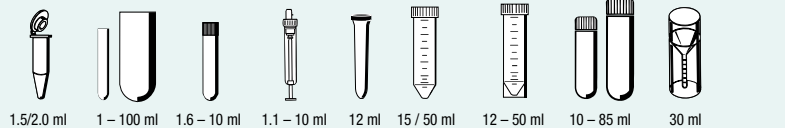
Swing-out rotor 4-place
 n = 4,000 min⁻¹
 max. RCF 2,665
Cat. No. 1624



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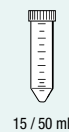
Swing-out rotor 4-place
 n = 4,500 min⁻¹
 max. RCF 3,328
Cat. No. 1324



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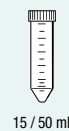
Swing-out rotor 6-place
 n = 4,000 min⁻¹
 max. RCF 2,701
Cat. No. 1619



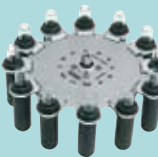
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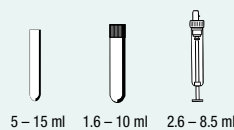
Swing-out rotor 8-place
 n = 5,000 min⁻¹
 max. RCF 3,857
Cat. No. 1617



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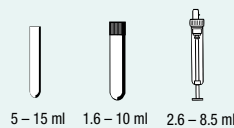
Swing-out rotor 12-place
 n = 5,000 min⁻¹
 max. RCF 4,193
Cat. No. 1628



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Swing-out rotor 8-place
 n = 4,000 min⁻¹
 max. RCF 2,415
Cat. No. 1611

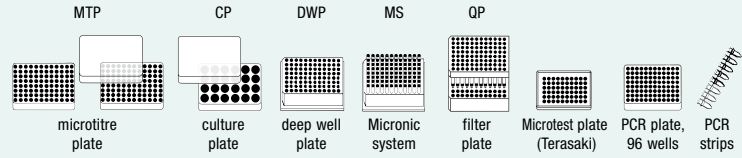


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ROTORS AND ACCESSORIES



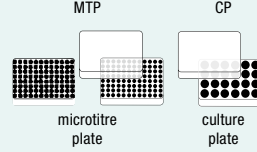
**Swing-out rotor
2-place** $\sphericalangle 90^\circ$
n = 4,000 min⁻¹
max. RCF 2,218
Cat. No. 1460



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**Swing-out rotor
4-place** $\sphericalangle 90^\circ$
n = 4,000 min⁻¹
max. RCF 1,896
Cat. No. 1645



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**Angle rotor
12-place** $\sphericalangle 45^\circ$
n = 15,000 min⁻¹
max. RCF 16,602
Cat. No. 1612



0.2 – 2.0 ml

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auto-
clavable
optional with
biocontainment



**Angle rotor
24-place** $\sphericalangle 40^\circ$
n = 15,000 min⁻¹
max. RCF 21,382
Cat. No. 1420-B



0.2 – 2.0 ml

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auto-
clavable
with bio-
containment



**Angle rotor
30-place** $\sphericalangle 45^\circ$
n = 14,000 min⁻¹
RCF 21,255
Cat. No. 1689-A

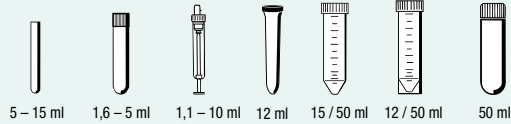


0.2 – 2.0 ml

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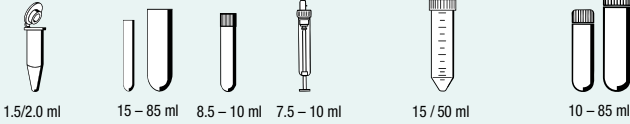
**Angle rotor
8-place** $\sphericalangle 45^\circ$
n = 4,500 min⁻¹
max. RCF 3,283
Cat. No. 1418



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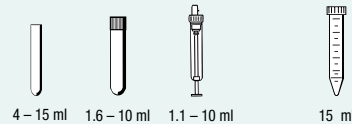
**Angle rotor
6-place** $\sphericalangle 35^\circ$
n = 9,000 min⁻¹
max. RCF 9,509
Cat. No. 1620 A



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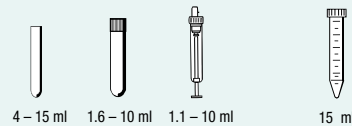
**Angle rotor
12-place** $\sphericalangle 35^\circ$
n = 6,000 min⁻¹
max. RCF 4,146
Cat. No. 1613



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**Angle rotor
12-place** $\sphericalangle 35^\circ$
n = 12,000 min⁻¹
max. RCF 16,582
Cat. No. 1615



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**Hematocrit rotor
24-place**
n = 15,000 min⁻¹
max. RCF 21,382
Cat. No. 1650



capillary

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**Cyto rotor
6-place**
n = 4,000 min⁻¹
max. RCF 2,039
Cat. No. 1626

Detailed information on our comprehensive range of cyto accessories is provided in a separate brochure. We will be pleased to send one to you on request.



cyto

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**Cyto rotor
8-place**
n = 4,000 min⁻¹
max. RCF 2,218
Cat. No. 1648



cyto

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Additional tubes e.g. stool tubes or spin columns on request.