



UNIVERSAL 320/320 R
Benchtop Centrifuges
classic/cooled

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. Microtitre 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
 - Microtitre 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).

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.

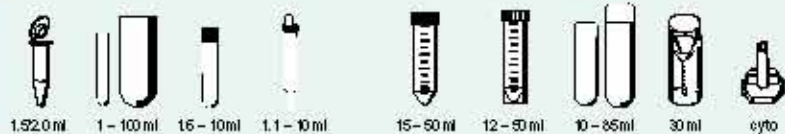
Quick overview of rotors and suitable accessories. The figures highlighted under the arrows refer to the pages where technical and ordering details are listed.

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
microtitre 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 microtitre tubes (0.2 - 2.0 ml)	21,382



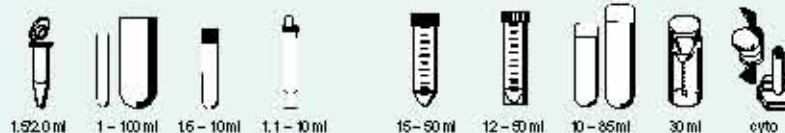
Swing-out rotor 4-place
 $n = 5,000 \text{ min}^{-1}$
 max. RCF 4,193
Cat. No. 1494



→
Page 6-8



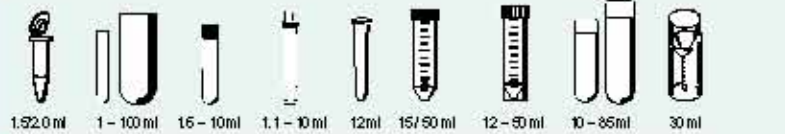
Swing-out rotor 4-place
 $n = 4,000 \text{ min}^{-1}$
 max. RCF 2,665
Cat. No. 1624



→
Page 9-10



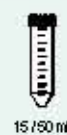
Swing-out rotor 4-place
 $n = 4,500 \text{ min}^{-1}$
 max. RCF 3,328
Cat. No. 1324



→
Page 11-13



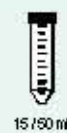
Swing-out rotor 6-place
 $n = 4,000 \text{ min}^{-1}$
 max. RCF 2,701
Cat. No. 1619



→
Page 13



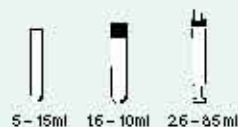
Swing-out rotor 8-place
 $n = 5,000 \text{ min}^{-1}$
 max. RCF 3,857
Cat. No. 1617



→
Page 13



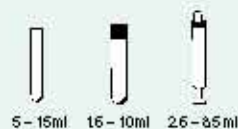
Swing-out rotor 12-place
 $n = 5,000 \text{ min}^{-1}$
 max. RCF 4,193
Cat. No. 1628



→
Page 13



Swing-out rotor 8-place
 $n = 4,000 \text{ min}^{-1}$
 max. RCF 2,415
Cat. No. 1611



→
Page 14

ROTORS AND ACCESSORIES



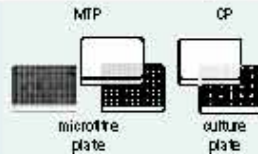
**Swing-out rotor
2-place** $\pm 90^\circ$
n = 4,000 min⁻¹
max. RCF 2,218
Cat. No. 1460



→
**Page
14**



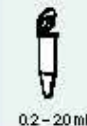
**Swing-out rotor
4-place** $\pm 90^\circ$
n = 4,000 min⁻¹
max. RCF 1,896
Cat. No. 1645



→
**Page
15**



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



0.2 – 20 ml

→
**Page
15**



auto-
clavable
optional with
biocontainment

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



0.2 – 20 ml

→
**Page
15**



auto-
clavable
with bio-
containment

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

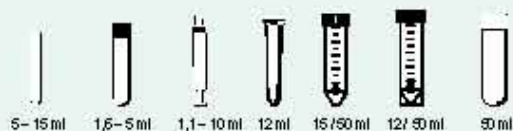


0.2 – 20 ml

→
**Page
16**



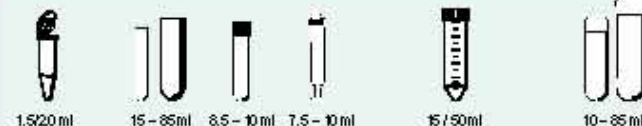
**Angle rotor
8-place** $\pm 45^\circ$
n = 4,500 min⁻¹
max. RCF 3,283
Cat. No. 1418



→
**Page
16**



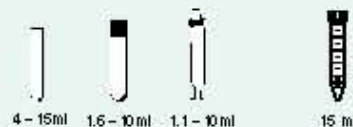
**Angle rotor
6-place** $\pm 35^\circ$
n = 9,000 min⁻¹
max. RCF 9,509
Cat. No. 1620 A



→
**Page
17**



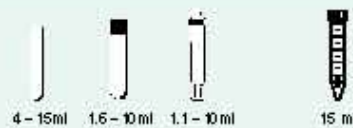
**Angle rotor
12-place** $\pm 35^\circ$
n = 6,000 min⁻¹
max. RCF 4,146
Cat. No. 1613



→
**Page
17**



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



→
**Page
18**



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



capillary

→
**Page
18**



**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

→
**Page
19**



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



cyto

→
**Page
19**

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

ROTORS AND ACCESSORIES

Swing-out rotor, 4-place
































± 90°

n = 5,000 min⁻¹
max. RCF 4,193

illustrated with carriers 1425

Cat. No. (without carriers) **1494**

capacity in ml	1.5	2.0	1	3	6	6	7	9	15	25	50	100	suspension for cyto accessories
Ø x L in mm	11 x 38		6 x 45	10 x 60	12 x 75	12 x 82	12 x 100	14 x 100	17 x 100	24 x 100	34 x 100	44 x 100	
Cat. No.	2078	0536	Rhesus	-	0553²⁾	0501²⁾	0578²⁾	0500²⁾	0518²⁾	0519²⁾	0521²⁾	0526²⁾	cyto chambers³⁾
 carrier Cat. No. 1425													
Cat. No.	1444	1436	1432	1433	1438	1434	1431	1431	1435	1436	1437	1437	1452
boring Ø x L in mm	11.5 x 38		6.5 x 34	10.5 x 40	13.4 x 50	12.7 x 60		17.5 x 84		25.5 x 84	35.5 x 84	45.5 x 85	-
tubes per rotor	36		144	56	28	48		28		8	4	4	4
max. RCF ²⁾	3,885		3,959	3,913				3,801				2,739	
radius in mm	139		142	140				136				98	
run-up in sec	30												
run-down in sec, braked	32												
temperature in °C ¹⁾	-10												

capacity in ml	2.6-3.4	2.7-3	4-5.5	4.5-5	4.9	7.5-8.5	9-10	1.6-5	4-7	4-7	8.5-10	15	50	50
Ø x L in mm	13 x 65	11 x 66	15 x 75	11 x 92	13 x 90	15 x 92	16 x 92	13 x 75	13 x 100	16 x 75	16 x 100	17 x 120	29 x 115	29 x 115
Cat. No.	blood collection/urine tubes											0509	0513	-
 carrier Cat. No. 1425														
Cat. No.	1438	1441	1438	1441	1438	1441	1439	1438	1441	1441	1442	1442	1443	1737
boring Ø x L in mm	13.4 x 60	16.5 x 60	13.4 x 60	16.5 x 60	17 x 45	13.4 x 60		16.5 x 60		16.5 x 60	17 x 90	30 x 90	30 x 90	
tubes per rotor	28						16	28				4		
max. RCF ²⁾	3,913										4,081			
radius in mm	140										145			
run-up in sec	30													
run-down in sec, braked	32													
temperature in °C ¹⁾	-10													

¹⁾ Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.

²⁾ Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote ²⁾ is 4,000.

³⁾ When using these tubes, carrier 1427 cannot be closed with lid 1421.

ROTORS AND ACCESSORIES



illustrated with carriers 1427

Swing-out rotor Cat. No. (without carriers) 1494

capacity in ml	1.5/2.0		1	3	5	6	7	9	15	25	50	1.1–1.4	2.6–3.4	2.7–3	4–5.5	
Ø x L in mm	11x38		6x45	10x60	12x75	12x82	12x100	14x100	17x100	24x100	34x100	8x66	13x65	11x66	15x75	
Cat. No.	2078/0536	-	Rhesus	-	0553 ²⁾	0501 ²⁾	0578 ²⁾	0500 ²⁾	0518 ²⁾	0519 ²⁾	0521 ²⁾	blood collection/urine tubes				
lid Cat. No. 1421																
carrier Cat. No. 1427																
Cat. No.	5277	5273	1357	1327	1732	5229	5230	5237	5231	5232	5233	5278	1732	5229	5279	
boring Ø x L in mm	11.5x38	13.7x38	6.5x23	10.5x23	13.4x58	12.5x44	12.4x87	15x73	17.8x87	25.5x87	35.5x87	9x41	13.4x58	12.5x44	15.6x41	
tubes per rotor	36	48	120	48	32	48	48	24		8	4	48	32	48	20	
max. RCF ²⁾	4,109	4,053	4,081	4,053	4,025	4,053	3,941					4,109	4,025	4,053	4,109	
radius in mm	147	145	146	145	144	145	141					147	144	145	147	
run-up in sec	30															
run-down in sec, braked	32															
temperature in °C ¹⁾	-7															

capacity in ml	4.5–5	4.9	7.5–8.5	9–10	1.6–5	4–7		8.5–10	15	50	25	30	50
Ø x L in mm	11x92	13x90	15x92	16x92	13x75	13x100	16x75	16x100	17x120	29x115	25x90	25x110	29x115
Cat. No.	blood collection/urine tubes								0509	0513	-	-	-
lid Cat. No. 1421													
carrier Cat. No. 1427													
Cat. No.	5230	1732	5279	5271 ⁴⁾	1732	5271	5231	5275	5276	1731	5272	5233 ⁴⁾	
boring Ø x L in mm	12.4x87	13.4x58	15.6x41	17x66	13.4x58	17x66	17.8x87	17x90	30x90	25.5x72	25.5x85	35.5x87	
tubes per rotor	48	32	20		32	20	24	4		8	4	4	
max. RCF ²⁾	3,941	4,025	4,109	3,969	4,025	3,969	3,941	4,165	4,053	3,969	4,025	4,053	
radius in mm	141	144	147	142	144	142	141	149	145	142	144	145	
run-up in sec	30												
run-down in sec, braked	32												
temperature in °C ¹⁾	-7												

⁴⁾ Please remove the inserts.


































⁵⁾ Please ask for our detailed cyto brochure.


































ROTORS AND ACCESSORIES



illustrated with carriers 1430 and lids 1382

Swing-out rotor Cat. No. (without carriers) 1494

capacity in ml	1.5	2.0	1	3	5/6/7	9	15	25	50	85	100	1.1-1.4	2.7-5	2.6-4.9	4-8.5	
Ø x L in mm	11x38		6x45	10x50	12x75/82/100		14x100	17x100	24x100	34x100	38x101	44x100	8x65	11x66/92	13x65/90	15x75/92
Cat. No.	2078	0536	Pfhesus	-	0553 ¹⁾ /0501 ²⁾ /0578 ³⁾	0500 ²⁾	0518 ²⁾	0519 ²⁾	0521 ²⁾	0549	0526 ²⁾	blood/urine tubes				
 carrier Cat. No. 1430																
																
Cat. No.	1351	1329	1343	1383	1329	1330	1331	1396	0761	1457	1383	1459	1457	1383	1459	1459
boring Ø x L in mm	11.2x38		6.5x34	10.5x43	13.4x48		17.5x91	25.2x87		35.2x87	38.5x92	45.6x98	9x47	13.4x48		15.6x47
tubes per rotor	20		108	36	20		16	4				28	20		16	
max. RCF ²⁾	3,857		4,081	4,137	4,025		3,997	3,829	3,801	4,109	4,025	4,053	4,025		4,053	
radius in mm	138		146	148	144		143	137	136	147	144	145	144		145	
run-up in sec	30															
run-down in sec, braked	32															
temperature in °C ¹⁾	-10															

capacity in ml	9-10	10	1.6-7	4-10	15	30	50	12	25	30	50	10	30	50	85	30
Ø x L in mm	15x92	15x102	13x75/100	15x75/100	17x120	25x110	29x115	17x100	25x90	25x110	29x115	16x80	25x95	29x107	38x105	44x105
Cat. No.	blood/urine tubes				0509	-	0513	-	-	-	-	-	0545	0546	0547	0534 ⁴⁾
 carrier Cat. No. 1430																
																
Cat. No.	1329	1329 ⁴⁾	1383	1348	1347	1365	1384	6311	1363	1365	6318	1348	4417	4416	1396	0765
boring Ø x L in mm	17.6x91		13.4x48	16.5x56	17x90	25x80	30x90	17x80	25x72	25x80	29.5x80	16.5x55	25x83	29x93	38.5x92	45.6x98
tubes per rotor	16		20	16	4						16	4			4	
max. RCF ²⁾	3,997	4,193	4,025		4,193				3,689	4,193	4,025	3,857	4,137	4,109	3,997	
radius in mm	143	150	144		150				132	150	144	138	148	147	143	
run-up in sec	30															
run-down in sec, braked	32															
temperature in °C ¹⁾	-10															

¹⁾ Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.

²⁾ Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote ³⁾ is 4,000.

⁴⁾ Please remove the inserts.

ROTORS AND ACCESSORIES

Swing-out rotor, 4-place
















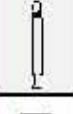





± 90°







n = 4,000 min⁻¹
max. RCF 2,665

illustrated with carriers 1369

Cat. No. (without carriers) **1624**

capacity in ml	5	6	7	9	15	20	25	45	50	1.1–1.4	4–5.5
∅ x L in mm	12 x 75	12 x 82	12 x 100	14 x 100	17 x 100	21 x 100	24 x 100	31 x 100	34 x 100	8 x 66	15 x 75
Cat. No.	0553²⁾	0501²⁾	0578²⁾	0500²⁾	0518²⁾	-	0519²⁾	-	0521²⁾	blood/urine tubes	
 rotor Cat. No. 1624											
Cat. No.	1369-91	1372	1369-92	1370	1741	1369	1742	1346	1745	1345	1746
boring ∅ x L in mm	11.5 x 64.4	13.5 x 66	11.5 x 71.5	14.6 x 74	14.6 x 78	17.6 x 74	17.6 x 78	21.5 x 74	25 x 78	32 x 74	35 x 78
tubes per rotor	16	68	16	20	40	16	28	8	4	40	28
max. RCF ²⁾	2,067	2,164	2,308	2,415	2,308	2,451	2,361	2,451	2,361	2,451	2,326
radius in mm	116	121	129	136	129	137	132	137	132	137	136
run-up in sec	20										
run-down in sec, braked	25										
temperature in °C ¹⁾	-17			-15	-17	-19	-17	-15	-17	-15	-19

capacity in ml	4.9	1.5–5	4–7	8.5–10	30	suspensions for cyto accessories
∅ x L in mm	13 x 90	13 x 75	16 x 75	16 x 100	25 x 95	
Cat. No.	blood collection/urine tubes				0545	cyb chambers²⁾
 rotor Cat. No. 1624						
Cat. No.	1741	1742	1369	1745	1660	1680
boring ∅ x L in mm	14.6 x 78	17.6 x 78	17.6 x 74	26 x 78	-	-
tubes per rotor	40	28	16	8	4	4
max. RCF ²⁾	2,451	2,326	2,308	2,451	1,545	1,467
radius in mm	137	130	129	137	92	82
run-up in sec	20					
run-down in sec, braked	25					
temperature in °C ¹⁾	-15	-19	-17	-15	-16	-17

capacity in ml	1.5	2.0	1	3	4
∅ x L in mm	11 x 38		6 x 45	10 x 60	12 x 60
Cat. No.	2078	0536	Rhesus	-	-
 carrier Cat. No. 1366					
Cat. No.	5277	1357	1327	1326	
boring ∅ x L in mm	11.5 x 38	6.5 x 23	10.5 x 23	12.5 x 44	
tubes per rotor	36	120	48		
max. RCF ²⁾	1,968	1,960	1,932		
radius in mm	110	109	108		
run-up in sec	20				
run-down in sec, braked	25				
temperature in °C ¹⁾	-17				

¹⁾ Please ask for our detailed cyto brochure.

²⁾ A rubber stopper for closing the tube is available under Cat. No. 0536.

The tube may not be centrifuged with the stopper. The stopper only serves to close the tube for agitating or mixing.

ROTORS AND ACCESSORIES



illustrated with carriers 1381 and lids 1382

Swing-out rotor Cat. No. (without carriers) 1624

capacity in ml	1.5	2.0	1	3	5/5/7	9	15	25	50	85	100	1.1-1.4	2.7-5	2.6-4.9	4-8.5	
Ø x L in mm	11 x 38		6 x 45	10 x 60	12 x 75/82/100		14 x 100	17 x 100	24 x 100	34 x 100	38 x 101	44 x 100	8 x 65	11 x 66/92	13 x 65/90	6 x 75/92
Cat. No.	2078	0536	Phebus	-	0553 ¹⁾ /0501 ²⁾ /0578 ²⁾	0500 ²⁾	0518 ²⁾	0519 ²⁾	0521 ²⁾	0549	0526 ²⁾	blood/urine tubes				
lid Cat. No. 1382																
carrier Cat. No. 1381																
Cat. No.	1351	1339	1343		1383	1329	1330	1331	1396	0761	1457	1383	1459			
boring Ø x L in mm	11.2 x 38		6.5 x 34	10.5 x 43	13.4 x 48		17.5 x 91		25.2 x 87		35.2 x 87		38.5 x 92		46.6 x 98	
tubes per rotor	20		108	36	20		15		4				28		20	16
max. RCF ²⁾	2,451		2,594	2,630	2,568		2,540		2,433	2,415	2,612	2,568	2,576	2,568	2,576	
radius in mm	137		145	147	143		142		135	135	145	143	144	143	144	
run-up in sec	20															
run-down in sec, braked	25															
temperature in °C ¹⁾	-15															

capacity in ml	9-10	10	1.5-7	4-10	15	50	12	25	30	50	10	30	50	85	30	
Ø x L in mm	16 x 92	15 x 102	13 x 75/100	16 x 75/100	17 x 120	29 x 115	17 x 100	25 x 90	25 x 110	29 x 115	16 x 80	26 x 95	29 x 107	38 x 105	44 x 105	
Cat. No.	blood/urine tubes				0509	0513	-	-	-	-	-	0545	0546	0547	0534 ³⁾	
lid Cat. No. 1382																
carrier Cat. No. 1381																
Cat. No.	1329	1329 ⁴⁾	1383	1348	1347	1384	6311	1363	1365	6318	1348	4417	4416	1396	0765	
boring Ø x L in mm	17.5 x 91		13.4 x 48	16.5 x 56	17 x 90	30 x 90	17 x 80	25 x 72	25 x 80	29.5 x 80	16.5 x 56	25 x 83	29 x 93	38.5 x 92	45.6 x 98	
tubes per rotor	16		20	16	4				16				4			
max. RCF ²⁾	2,540	2,566	2,568	2,622	2,666		2,343		2,666		2,522	2,451	2,630	2,612	2,540	
radius in mm	142	149	143	141	149		131		149		141	137	147	145	142	
run-up in sec	20															
run-down in sec, braked	25															
temperature in °C ¹⁾	-15															

¹⁾ Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.

²⁾ Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote ³⁾ is 4,000.

⁴⁾ Please remove the inserts.

ROTORS AND ACCESSORIES

Swing-out rotor, 4-place



± 90°

n = 4,500 min⁻¹
max. RCF 3,328

illustrated with carriers 1398

Cat. No. (without carriers) **1324**

capacity in ml	1.5	2.0	1	3	4	5	6	7	9	15	25	50	85	100
∅ x Lin mm	11x38		6x45	10x60	10x88	12x75	12x82	12x100	14x100	17x100	24x100	34x100	38x101	44x100
Cat. No.	2078	0536	Rhesus	-	-	0553²⁾	0501²⁾	0578²⁾	0500²⁾	0518²⁾	0519²⁾	0521²⁾	0549	0526²⁾
lid Cat No. 1382														
carrier Cat No. 1390														
Cat. No.	1351	1339	1343			1383		1329	1330	1331	1396		0761	
boring ∅ x Lin mm	11.2x38	6.5x34	10.5x43			13.4x48		17.5x91	25.2x87	35.2x87	38.5x92	46.6x100.5		
tubes per rotor	20	108	36			20		16	4					
max. RCF ²⁾	3,056	3,237	3,283			3,192		3,170	3,034	3,011	3,260	3,192		
radius in mm	135	143	145			141		140	134	133	144	141		
run-up in sec	27													
run-down in sec, braked	30													
temperature in °C ¹⁾	-6													

capacity in ml	1.1-1.4	2.6-3.4	4.9	2.7-3	4.5-5	4-5.5	7.5-8.5	9-10	10	1.6-5	4-7	4-7	8.5-10
∅ x Lin mm	8x65	13x65	13x90	11x65	11x92	15x75	15x92	16x92	16x102	13x75	13x100	16x75	16x100
Cat. No.	blood collection/urine tubes												
lid Cat No. 1382													
carrier Cat No. 1390													
Cat. No.	1457		1383			1459	1329	1329⁴⁾		1333		1348	
boring ∅ x Lin mm	9x47		13.4x48			15.5x47	17.5x91			13.4x48		16.5x56	
tubes per rotor	28		20			16				20		16	
max. RCF ²⁾	3,215		3,192			3,215	3,170	3,328		3,192		3,147	
radius in mm	142		141			142	140	147		141		139	
run-up in sec	27												
run-down in sec, braked	30												
temperature in °C ¹⁾	-6												






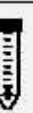




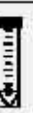
















²⁾ A rubber stopper for closing the tube is available under Cat. No. 0536.
The tube may not be centrifuged with the stopper. The stopper only serves to close the tube for agitating or mixing.



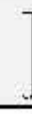






























ROTORS AND ACCESSORIES



carrier 1398 with adapter 1483
and conical 15 ml tubes with screw cap 0509

Swing-out rotor 1324

capacity in ml	15	30	50	12	25	30	50	10	30	50	85	30	
Ø x L in mm	17 x 120	25 x 110	29 x 115	17 x 100	25 x 90	25 x 110	29 x 115	16 x 80	25 x 95	29 x 107	38 x 106	44 x 105	
Cat. No.	0509	-	0513	-	-	-	-	-	0545	0546	0547	0534 ³⁾	
 lid Cat. No. 1382 carrier Cat. No. 1390													 chrome bathtube
													 rubber insert
Cat. No.	1347	1356	1365	1384	6311	1363	1365	6318	1348	4417	4416	1396	0765
boring Ø x L in mm	17x90	17 x 107	25x80	30x90	17 x 80	25x72	25x80	29,5x80	16,5x56	25x83	29x93	38,5x92	46,6 x 100,5
tubes per rotor	4	12	4				16				4		
max. RCF ²⁾	3,328		3,328		2,920	3,328		3,147	3,056	3,283	3,260	3,170	
radius in mm	147		147		129	147		139	136	145	144	140	
run-up in sec	27												
run-down in sec, braked	30												
temperature in °C ¹⁾	-6												

capacity in ml	5	6	7	9	15	2,5-3,4	2,7-3	4-5,5	4,5-5	4,9	9-10	10	1,5-5	4-7	4-7	12
Ø x L in mm	12x75	12x82	12x100	14x100	17 x 100	13x65	11x65	15x75	11x92	13x90	16x92	15x102	13x75	13x100	16x75	17 x 102
Cat. No.	0553 ²⁾	0501 ²⁾	0578 ²⁾	0500 ²⁾	0518 ²⁾	blood collection/urine tubes										
 carrier Cat. No. 1398																
																
Cat. No.	1486	1486	1482A	1486	1482A	1486	1482A	1486	1482A	1486	1482A	1486	1482A	1486	1482A	1487
boring Ø x L in mm	13,4 x 57,5		17,5 x 81		13,4 x 57,5		17,5 x 81		13,4 x 57,5		17,5 x 81		13,4 x 57,5		17,5 x 74	
tubes per rotor	20		16		20		16		20		16		20		12	
max. RCF ²⁾	3,147		3,192		3,147		2,875		3,147		3,192		3,147		3,102	
radius in mm	139		141		139		127		139		141		139		137	
run-up in sec	27															
run-down in sec, braked	30															
temperature in °C ¹⁾	-6															

- 1) Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.
- 3) When using these tubes, carrier 1390 cannot be closed with lid 1382.

ROTORS AND ACCESSORIES

Swing-out rotor, 6-place



✶ 90°

n = 4,000 min⁻¹
max. RCF 2,701

Cat. No. (with carriers) 1619

Swing-out rotor, 8-place



✶ 45°

n = 5,000 min⁻¹
max. RCF 3,857

Cat. No. (with carriers) 1617






Swing-out rotor, 12-place









✶ 55°
(with carriers 1127)
✶ 60°
(with carriers 1122)
✶ 80°
(with carriers 1621)


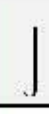









n = 5,000 min⁻¹
max. RCF 4,193

Cat. No. (without carriers) 1628

capacity in ml	15	50	12	50
∅ x L in mm	17 x 120	29 x 115	17 x 100	29 x 115
Cat. No.	0509	0513	-	-
 carrier Cat No. 1398				
Cat. No.	1483 A	1484	1482 A	1484 ⁴⁾
boring ∅ x L in mm	17 x 100	30 x 98	17.5 x 81	30 x 98
tubes per rotor	15	4	16	4
max. RCF ²⁾	3,305	3,260	3,192	3,260
radius in mm	145	144	141	144
run-up in sec	27			
run-down in sec, braked	30			
temperature in °C ¹⁾	-5			

capacity in ml	15	50
∅ x L in mm	17 x 120	29 x 115
Cat. No.	0509	0513
 rotor Cat No. 1619		
Cat. No.	1462-A	-
boring ∅ x L in mm	17 x 84	30 x 87.5
tubes per rotor	6	
max. RCF ²⁾	2,701	
radius in mm	151	
run-up in sec	20	
run-down in sec, braked	22	
temperature in °C ¹⁾	-15	

capacity in ml	15	50
∅ x L in mm	17 x 120	29 x 115
Cat. No.	0509	0513
 rotor Cat No. 1617		
Cat. No.	1462-A	-
boring ∅ x L in mm	17 x 84	30 x 94.5
tubes per rotor	8	
max. RCF ²⁾	3,857	
radius in mm	138	
run-up in sec	20	
run-down in sec, braked	19	
temperature in °C ¹⁾	-10	

capacity in ml	5	10	15	2.6-3.4	2.7-3	4-5.5	7.5-8.5	1.5-5	4-7	8.5-10
∅ x L in mm	12 x 75	17 x 70	17 x 100	13 x 65	11 x 65	15 x 75	15 x 92	13 x 75	16 x 75	16 x 100
Cat. No.	0553 ³⁾	2079	0518 ³⁾	blood collection/urine tubes						
 rotor Cat No. 1628										
Cat. No.	1127	1122	1621	1127	1122	1621	1127	1122	1621	
boring ∅ x L in mm	13.2 x 53	17.5 x 53	17.5 x 79	13.2 x 53	17.5 x 53	17.5 x 79	13.2 x 53	17.5 x 53	17.5 x 79	
tubes per rotor	12									
max. RCF ²⁾	3,494	3,522	4,193	3,494	3,522	4,193	3,494	3,522	4,193	
radius in mm	125	125	150	125	125	150	125	125	150	
run-up in sec	15									
run-down in sec, braked	15									
temperature in °C ¹⁾	-15	-10	-10	-15	-15	-10	-15	-15	-10	

⁴⁾ Please remove the inserts.

³⁾ A rubber stopper for closing the tube is available under Cat. No. 0635.

The tube may not be centrifuged with the stopper. The stopper only serves to close the tube for agitating or mixing.

ROTORS AND ACCESSORIES

Swing-out rotor, 8-place

Swing-out rotor, 2-place



↻ 90°

n = 4,000 min⁻¹
max. RCF 2,415

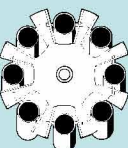















Cat. No. (without carriers) **1611**

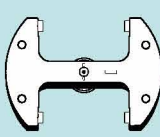

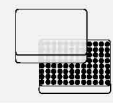
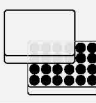








↻ 90°

n = 4,000 min⁻¹
max. RCF 2,218

Cat. No. (without carriers) **1460**

capacity in ml	5	6	7	10	15	2.6–3.4	2.7–3	4–5.5	4.5–5	7.5–8.5	1.6–5	4–7	4–7	8.5–10			
Ø x L in mm	12 x 75	12 x 82	12 x 100	17 x 70	13 x 100	17 x 100	13 x 65	11 x 66	15 x 75	11 x 92	15 x 92	13 x 75	13 x 100	16 x 75	16 x 100		
Cat. No.	0553²⁾	0501²⁾	0578²⁾	2079	-	0518²⁾	blood collection/urine tubes										
 rotor Cat. No. 1611																	
Cat. No.	1131	1643	1132	1643	1644	1131	1132	1643	1644	1131	1643	1132	1644	1131	1643	1132	1644
boring Ø x L in mm	13 x 53	13.2 x 81	17.5 x 53	13.2 x 81	17.5 x 81	13 x 53	17.5 x 53	13.2 x 81	17.5 x 81	13 x 53	13.2 x 81	17.5 x 53	13.2 x 81	17.5 x 53	17.5 x 81		
tubes per rotor	8																
max. RCF ²⁾	1,914	2,415	1,914	2,415	2,415	1,914	2,415	1,914	2,415	1,914	2,415	1,914	2,415	1,914	2,415		
radius in mm	107	135	107	135	135	107	135	107	135	107	135	107	135	107	135		
run-up in sec	20																
run-down in sec, braked	20																
temperature in °C ¹⁾	-16																

D x W x H in mm	86 x 128 x 15/17.5	86 x 128 x 22	86 x 128 x 44.5	86 x 128 x 46	86 x 128 x 83	59 x 84 x 11	82 x 124 x 20	-	
capacity in ml	-							0.2	
Cat. No.	MTP		CP	DWP	MS	QP	Microtest plate (Terasaki)	PCR plate, 96 wells	PCR strips
 rotor Cat. No. 1460									
Cat. No.	1453-A							1453-A + 1485	
boring Ø x L in mm	-								
plates/strips pro rotor	10	8	6	2	2	2	4	2	24 x 8
max. RCF ²⁾	2,218								
radius in mm	124								
run-up in sec	40								
run-down in sec, braked	45								
temperature in °C ¹⁾	-6								

¹⁾ Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.

²⁾ Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote ²⁾ is 4,000.

⁷⁾ For centrifugation at high speeds, we recommend to use form-fitting, phenol-resistant adapters 2031.

⁸⁾ Tested by the TÜV in conformity with DIN EN 61010, section 2-020.

ROTORS AND ACCESSORIES

Swing-out rotor, 4-place



±90°

n = 4,000 min⁻¹
max. RCF 1,896

Cat. No. (without carriers) **1645**

Angle rotor, 12-place



±45°

n = 15,000 min⁻¹
max. RCF 16,602

Cat. No. **1612**

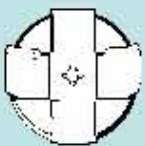

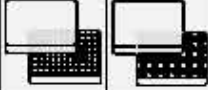
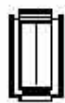
Angle rotor, 24-place





















±40°

n = 15,000 min⁻¹
max. RCF 21,382

Cat. No. **1420-B**

D x W x H in mm	86 x 128 x 15/17.5	86 x 128 x 22
Cat. No.	MTP	CP
		
rotor Cat. No. 1645		
Cat. No.	4345	
boring ∅ x L in mm	-	
plates per rotor	4	
max. RCF ²⁾	1,896	
radius in mm	106	
run-up in sec	20	
run-down in sec, braked	19	
temperature in °C ¹⁾	- 16	

capacity in ml	0.2	0.4	0.5	0.8	1.5	2.0
∅ x L in mm	6 x 18	6 x 45	8 x 30	8 x 45	11 x 38	
Cat. No.	-	-	-	-	2078	0536
 lid incl.						
rotor Cat. No. 1612						
Cat. No.	2024		2023		2031⁷⁾	-
boring ∅ x L in mm	6 x 40		8 x 40		10.2 x 19	11.4 x 39
tubes per rotor	12					
max. RCF ²⁾	16,602					
radius in mm	66					
run-up in sec	25					
run-down in sec, braked	23					
temperature in °C ¹⁾	- 10					

capacity in ml	0.2	0.4	0.5	0.8	1.5	2.0
∅ x L in mm	6 x 18	6 x 45	8 x 30	8 x 45	11 x 38	
Cat. No.	-	-	-	-	2078	0536
 lid incl.						
rotor Cat. No. 1420-B						
Cat. No.	2024		2023		2031⁷⁾	-
boring ∅ x L in mm	6 x 40		8 x 40		10.2 x 19	11.2 x 42.6
tubes per rotor	24					
max. RCF ²⁾	21,382					
radius in mm	85					
run-up in sec	25					
run-down in sec, braked	24					
temperature in °C ¹⁾	- 4					

Optional for rotor 1420-B:



lid Cat. No. **2425**
with bio-containment[®],
autoclavable



lid Cat. No. **2423**
with bio-containment[®],
autoclavable, phenol-resistant

ROTORS AND ACCESSORIES

Angle rotor, 30-place



± 45°

n = 14,000 min⁻¹ with bio-containment[®]
max. RCF 21,255

Cat. No. 1689-A

Angle rotor, 8-place



± 45°

n = 4,500 min⁻¹
max. RCF 3,283

Cat. No. (without adapters) 1418

capacity in ml	0.2	0.4	0.6	0.8	1.5	2.0
∅ x L in mm	6 x 18	6 x 45	8 x 30	8 x 45	11 x 38	
Cat. No.	-	-	-	-	2078	0536
lid with bio-containment [®] incl.						
rotor Cat. No. 1689-A						
Cat. No.	2024	2023	2031 ⁷⁾	-		
boring ∅ x L in mm	6 x 40		8 x 40		10.2 x 19	11.2 x 40.9
tubes per rotor	30					
max. RCF ²⁾	21,255					
radius in mm	97					
run-up in sec	35					
run-down in sec, braked	31					
temperature in °C ¹⁾	0					

capacity in ml	5	15	1.1-1.4	2.6-3.4	2.7-3	9-10	1.5-5	12	15	50	12	50	50		
∅ x L in mm	12 x 75	17 x 100	8 x 66	13 x 65	11 x 66	16 x 92	13 x 75	17 x 102	17 x 120	29 x 115	17 x 100	29 x 115	29 x 107		
Cat. No.	0553 ²⁾	0518 ²⁾	blood collection/urine tubes								0509	0513	-	-	0546
rotor Cat. No. 1418															
Cat. No.	1467	1467	1467		1467	1467	1467	1467	1467	1468	1467	1468			
boring ∅ x L in mm	17.4 x 91	17.4 x 91	17.4 x 91		17.4 x 91	17.4 x 91	17.4 x 91	17.4 x 91	17.4 x 91	30.2 x 92	17.4 x 91	30.2 x 92			
tubes per rotor	32	32	32		32	32	32	32	32	8	32	8			
max. RCF ²⁾	2,752	3,215	2,752		3,215	2,752	3,215	3,283	3,147	3,215	3,215	3,147			
radius in mm	122	142	122		142	122	142	145	139	142	139				
run-up in sec	30														
run-down in sec, braked	31														
temperature in °C ¹⁾	-11														

1) Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.

2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

3) Tested by the TÜV in conformity with DIN EN 61010, section 2-C20.

4) 6-place adapter set for conical 50 ml tubes with screw cap.

ROTORS AND ACCESSORIES

Angle rotor, 6-place



± 35°

n = 9,000 min⁻¹
max. RCF 9,509

Cat. No. 1620 A

Angle rotor, 12-place



± 35°

n = 6,000 min⁻¹
max. RCF 4,146

Cat. No. 1613

capacity in ml	1.5	2.0	15	50	75	85	7.5-8.5	9-10	10	8.5-10	15	50	10	30	50	85	
∅ x Lin mm	11x38		17x100	34x100	35x105	38x101	15x92	16x92	15x102	15x100	17x120	29x115	15x80	25x95	29x107	38x106	
Cat. No.	2078	0536	0518 ²⁾	0521 ²⁾	0548	0549	blood/urine tubes				0509	0513	-	0545	0546	0547	
rotor Cat No. 1620 A																	
Cat. No.	1449	1451	1463	-	-	-	1451				1466	1454	1646 ²⁾	1448	1447	1446	-
boring ∅ x Lin mm	11.4x39	17.5x92	35x89	38.6x90.2	-	-	17.5x92				17x105	29.8x97	-	15.5x74	25x85	29x92	38.5x90.2
tubes per rotor	24	6	6	6	-	-	6				6	3	6	12	6		
max. RCF ²⁾	9,237	8,784	9,327	9,509	-	-	8,784				8,966			8,784	8,603	9,056	9,509
radius in mm	102	97	103	105	-	-	97				99			97	95	100	105
run-up in sec	30																
run-down in sec, braked	30																
temperature in °C ¹⁾	- 11																

capacity in ml	4	5	6	15	1.1-1.4	2.6-3.4	2.7-3	4.5-5	4.9	7.5-10	10	1.6-5	4-7	8-10	15			
∅ x Lin mm	10x88	12x75	12x82	17x100	8x65	13x65	11x65	11x92	13x90	15/16x92	15x102	13x75	13x100	15x100/125	17x120			
Cat. No.	-	0553 ²⁾	0501 ²⁾	0518 ²⁾	blood collection/urine tubes										0509			
rotor Cat No. 1613																		
Cat. No.	6305	1054-A	-	-	1054-A							-	1054-A	1058	-			
boring ∅ x Lin mm	11.5x67.5	13.5x60	17.7x88	-	13.5x60							-	17.7x88	13.5x60	13.5x79	17.7x88		
tubes per rotor	12																	
max. RCF ²⁾	3,502	3,300	4,146	-	3,300							-	4,146	3,300	4,146			
radius in mm	87	82	103	-	82							-	103	82	103			
run-up in sec	15																	
run-down in sec, braked	15																	
temperature in °C ¹⁾	- 15																	

ROTORS AND ACCESSORIES

Angle rotor, 12-place



± 35°

n = 12,000 min⁻¹
max. RCF 16,582























Cat. No. 1615

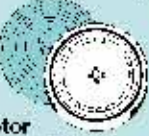

Hematocrit rotor, 24-place



n = 15,000 min⁻¹
max. RCF 21,382

Cat. No. 1650

capacity in ml	4	5	6	15	1.1-1.4	2.6-3.4	2.7-3	4.5-6	4.9	7.5-10	10	1.5-6	4-7	8-10	15
∅ x L in mm	10x88	12x75	12x82	17x100	8x65	13x65	11x65	11x92	13x90	15/16x92	15x102	13x75	13x100	15x100/125	17x120
Cat. No.	-	0553 ²⁾	0501 ²⁾	0518 ²⁾	blood collection/urine tubes										0509
 rotor Cat. No. 1615															
															
Cat. No.	6305	1054-A	-		1054-A							1054-A	1058	-	1647 ¹⁰⁾
boring ∅ x L in mm	11.5x87.5	13.5x60	17.7x88		13.5x60				17.7x88			13.5x60	13.5x79	17.7x88	17x104
tubes per rotor					12							12	12	12	6
max. RCF ²⁾	14,006	13,201	16,582		13,201				16,582			13,201	16,582	16,582	15,456
radius in mm	87	82	103		82				103			82	103	103	96
run-up in sec	40														
run-down in sec, braked	40														
temperature in °C ¹⁾	-2														

standard capillaries, heparinised	basic	mylar-coated	self-sealing and mylar-coated
Cat. No.	2074	1072	1071
 rotor Cat. No. 1650			
	sealing putty		
Cat. No.	2077		-
boring ∅ x L in mm	-		
capillaries per rotor	24		
max. RCF ²⁾	21,382		
radius in mm	85		
run-up in sec	13		
run-down in sec, braked	9		
temperature in °C ¹⁾	-1		

¹⁾ Lowest attainable temperature in precooled refrigerated centrifuges at max. speed. Lower temperatures can be reached by reducing the speed.

²⁾ Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote ²⁾ is 4,000

¹⁰⁾ Set of 6 carriers. For accommodating conical 15 ml tubes with screw cap, remove 6 opposite carriers from rotor No. 1615 and replace them with adapters No. 1647.

ROTORS FOR CYTOLOGY

Rotors No. 1626 and No. 1648 were especially designed for use in cytology. They are recommended for laboratories working exclusively in this area.



Cyto rotor, 6-place

$n = 4,000 \text{ min}^{-1}$
max. RCF 2,039

illustrated with suspensions 1660
and lids 1661 for cyto chambers

Cat. No. 1626 (without suspensions)



Cyto rotor, 8-place

$n = 4,000 \text{ min}^{-1}$
max. RCF 2,218

illustrated with suspensions 1680
for angle chambers

Cat. No. 1648 (with suspensions)

THE HETTICH CYTO SYSTEM

The Hettich Cyto System provides cytologists with an extensive range of accessories to prepare high-quality cyto sediments from the most diverse body fluids.

Benefits of the Hettich Cyto System include:

- Low purchase costs
- Easy assembly
- Valuable time savings
- Optimal cell yield
- Targeted preparation of dry or wet sediments
- First-class customer support

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.

Application notes from our R&D department on the preparation of slides for the cytological examination of various body fluids can be obtained free of charge or downloaded from our homepage www.hettichlab.com

The assembly of a complete cyto insert is really easy



suspension 1660
for cyto chambers



suspension 1680
for angle chambers

UNIVERSAL 320/320 R

TECHNOLOGY

TECHNOLOGY	UNIVERSAL 320		UNIVERSAL 320 R		
	classic		cooled		
Benchtop centrifuge, without rotor					
Power supply ^{*)}	200–240 V 1~	100–127 V 1~	200-240V 1~	240 V 1~	115–127 V 1~
Frequency	50–60 Hz	50–60 Hz	50 Hz	60 Hz	60 Hz
Consumption	400 VA		800 VA		950 VA
Emission	EN / IEC 61326-1, class B	FCC class B	EN / IEC 61326-1, class B		FCC class B
Immunity	EN 61000-6-2	-	EN 61000-6-2		-
 Max. capacity	4x100 ml / 32 x 15 ml				
 Max. RPM (speed)	15,000 min ⁻¹				
 Max. RCF	21,382				
Running time	1 sec – 99 min : 59 sec, ∞ continuous run, short cycle mode (impulse key)				
Dimensions (HxWxD)	346 x 395 x 520 mm		346 x 401 x 695 mm		
Weight	approx. 31 kg		approx. 53 kg		
Refrigeration					
Temperature control, infinitely variable	-		from - 20 to +40 °C		
Cat. No.	1401	1401-01	1406	1406-01	

^{*)} Other voltages on request.



Hettich centrifuges comply with all relevant EU standards in effect and conform to the European level of quality and safety for medical devices. Evidence is provided by national and international test marks such as IEC 61010 or the CE conformity. The ISO 9001:2008, ISO 13485:2003 and 14001:2004 certificates accredited to the company bear witness to the extreme care and responsibility Hettich puts into the manufacturing of centrifuges and their accessories.

Andreas Hettich GmbH & Co. KG

Föhrenstr. 12
D - 78532 Tuttlingen
Germany

www.hettichlab.com
info@hettichlab.com
service@hettichlab.com

Phone +49 (0)7461 / 705 -0
Fax +49 (0)7461 / 705 -122

National Sales: -200
International Sales: -201
National Service: -202
International Service: -203

