

Anexa nr. 51 Centrifugă de laborator (32 tuburi) 150930**Rotofix 32 A, rotor 1418, 8x adaptoare 1467, Andreas Hettich, Germania****DM000739303**

Specificații solicitate	Specificații oferite
Centrifugă de laborator (32 tuburi) Cod 150930 Descriere Centrifugele de laborator sunt destinate pentru a centrifuga sângele. Parametrul Specificația Viteza de rotație Minimală, rpm reglabilă Maximală, rpm ≥ 3500 Setări setarea vitezei Capacitatea Tipul tuburilor tuburi de 10 - 15 ml Numărul de tuburi 32 unitati Timer Diapazon minim de timp 1 - ≥ 60 min Incrementarea ≤ 1 min Securitatea Blocarea capacului în timpul lucrului obligatoriu Indicatori Indicarori vizual și acustic obligatoriu Debalansare obligatoriu Pornire/oprire obligatoriu Capac deschis obligatoriu Display Digital obligatoriu Nivelul de zgomot ≤ 65 dB obligatoriu Fereastra, orificiu sau alt acces, necesar pentru efectuarea procedurii de verificare periodica, conform normelor si standartelor in vigoare obligatoriu	Centrifugă de laborator (32 tuburi) Cod 150930 Descriere Centrifugele de laborator sunt destinate pentru a centrifuga sângele. Parametrul Specificația Viteza de rotație Minimală, rpm reglabilă de la 500 rpm Maximală, rpm 6000, sau 4000 rpm cu rotorul(1418) ofertat Setări setarea vitezei Capacitatea Tipul tuburilor tuburi de 10 - 15 ml Numărul de tuburi 32 unitati. 8 adaptoare 1467 incluse in setul ofertat Timer Diapazon minim de timp 1 - 99 min, sau continuu Incrementarea 1 min Securitatea Blocarea capacului în timpul lucrului obligatoriu Indicatori Indicarori vizual și acustic obligatoriu Debalansare obligatoriu Pornire/oprire obligatoriu Capac deschis obligatoriu Display Digital obligatoriu Nivelul de zgomot 52 dB obligatoriu Fereastra pentru efectuarea procedurii de verificare periodica, conform normelor si standartelor in vigoare obligatoriu

Benchtop centrifuges

ROTOFIX 32 A

Rugged and indispensable

For decades, the ROTOFIX 32 A has set the standard in daily lab routine thanks to its versatility and solid construction. The benchtop centrifuge spins sample volumes up to 6 x 94 ml, 40 blood collection tubes or 8 x 50 ml conical tubes with a simple user interface. Hettich's cytology rotors are compatible with most existing funnel/slide systems and have bio-containment lids.



■ Highlights

- RPM: 500 - 6,000 min⁻¹
Adjustable in increments of 100
- max. RCF: 4,226
- max. capacity: 4 x 100 ml / 6 x 94 ml
- choice of 9 rotors
- easy operation with keypad
- 2 individual deceleration stages
- IVDR-conform according to regulation (EU) 2017/746

■ Features










- metal housing and lid
- viewing port in the lid
- one-hand lid lock
- lid dropping protection
- emergency lid lock release
- stainless steel chamber
- automatic rotor recognition
- brushless drive
- error display
- imbalance monitoring and switch-off
- control panel with actual values of all parameters
- auditory message after completion of the centrifugation run

Technical data

ROTOFIX 32 A	
voltage *)	208 – 240 V 1 ~
frequency	50 – 60 Hz
consumption	300 VA
emission, immunity	EN/IEC 61326-1, class B
max. capacity	4 x 100 ml / 6 x 94 ml
max. RPM	6,000 min ⁻¹
max. RCF	4,226
running time	1–99 min, ∞ continuous run, short cycle mode (impulse button)
dimensions (WxDxH)	366x430x257 mm
weight	approx. 23 kg
noise level	52 dB (A) with rotor 1628
Cat. No.	1206
100 – 127 V 1 ~ / 50 – 60 Hz *)	1206-01
emission, immunity	FCC class B

*) Other voltages on request.

Available rotors

SWING-OUT ROTORS		angle	max. RPM	max. capacity	Cat. No.	page
	swing-out rotor, 4-place	90°	4,000 min ⁻¹	4x100 ml	1624	3
	swing-out rotor, 4-place	90°	4,000 min ⁻¹	4x100 ml	1324	6
	swing-out rotor, 6-place	90°	4,000 min ⁻¹	6x50 ml	1619	8
	swing-out rotor, 8-place	45°	4,000 min ⁻¹	8x50 ml	1617	8
	swing-out rotor, 8-place	90°	4,000 min ⁻¹	8x15 ml	1611	9
	swing-out rotor, 12-place	55° / 60° / 80°	4,000 min ⁻¹	12x15 ml	1628	9
ANGLE ROTORS						
	angle rotor, 8-place	45°	4,000 min ⁻¹	8x50 ml	1418	10
	angle rotor, 6-place	35°	6,000 min ⁻¹	6x85 ml	1620A	11
	angle rotor, 12-place	35°	6,000 min ⁻¹	12x15 ml	1613	12

Swing-out rotor, 4-place | 1624



Rotor	
max. RPM max. RCF	4,000 min ⁻¹ 2,451
max. capacity	4 x 50 ml
run-up run-down, braked in sec	22 25
angle max. noise level	90° 55 dB (A)
Cat. No.	1624



	tubes ²⁾											
Vessels												
capacity in ml	5	5	6	7	9	9	15	15	20	25	45	50
Ø x L in mm	12 x 75	12 x 75	12 x 82	12 x 100	14 x 100	14 x 100	17 x 100	17 x 100	21 x 100	24 x 100	31 x 100	34 x 100
max. RCF ²⁾	2,218	2,164	2,343	2,343	2,308	2,415	2,308	2,451	2,361	2,451	2,361	2,451
radius in mm	124	121	131	131	129	135	129	137	132	137	132	137
	with decanting aid		with decanting aid	with decanting aid		+ 0701						
Carrier												
boring Ø x L in mm	12 x 75	13.5 x 65	12.5 x 71.5	12.5 x 71.5	14.6 x 74	14.6 x 78	17.6 x 71.5	17.6 x 78	21.5 x 74	26 x 78	32 x 74	35 x 78
vessels per rotor	16	68	16	16	20	40	16	28	8	8	4	4
Cat. No.	1369-91	1372	1369-92	1369-92	1370	1741	1369	1742	1346	1745	1345	1746

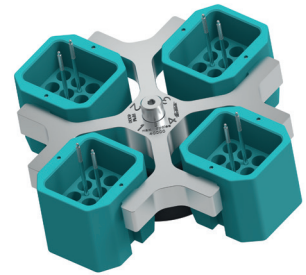
	blood collection / urine vessels								-	cyto chambers
Vessels										
capacity in ml	1.1-1.4	2.6-3.4	4-5.5	4.9	1.6-5	4-7	4-7	8.5-10	30	1-8
Ø x L in mm	8 x 66	13 x 65	15 x 75	13 x 90	13 x 75	16 x 75	13 x 100	16 x 100	26 x 95	simple / multiple
max. RCF ²⁾	2,415	2,325	2,325	2,451	2,325	2,325	2,451	2,451	2,451	1,646
radius in mm	135	130	130	137	130	130	137	129	137	92
	+ 0701	+ 0716	+ 0716		+ 0716	+ 0716				
Carrier										
boring Ø x L in mm	14.6 x 78	17.6 x 78	17.6 x 78	14.6 x 78	17.6 x 78	17.6 x 78	13.5 x 78	17.6 x 71.5	26 x 78	-
vessels per rotor	40	28	28	40	28	28	28	16	8	4
Cat. No.	1741	1742	1742	1741	1742	1742	1739	1369-4)	1745	1660











CYTO Cyto system available for this model. More information on page 184

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.
 4) Please remove the spacer.
 20) Vacutainers made of glass may not be used.


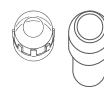
Swing-out rotor, 4-place | 1624

Rotor		Bucket	
max. RPM max. RCF	4,000 min ⁻¹ 1,968	Cat. No.	1366
max. capacity	48 x 4 ml		
run-up run-down, braked in sec	22 25		
angle max. noise level	90° 56 dB (A)		
Cat. No.	1624		
































	microliter tubes	Rhesus	tubes ²⁾		
Vessels					
capacity in ml	1.5	2.0	1	3	4
Ø x L in mm	11 x 38	11 x 38	6 x 45	10 x 60	12 x 60
max. RCF ²⁾	1,968	1,968	1,950	1,932	1,932
radius in mm	110	110	109	108	108
Adapter					
boring Ø x L in mm	11.5 x 38	11.5 x 38	6.5 x 23	10.5 x 23	12.5 x 44
vessels per rotor	36	36	120	48	48
Cat. No.	5277	5277	1357	1327	1326

Swing-out rotor, 4-place | 1624


Rotor		Bucket	
max. RPM max. RCF	4,000 min ⁻¹ 2,665	Lid bioseal ⁵⁾	1492
max. capacity	4 x 100 ml	Cat. No.	1481
run-up run-down, braked in sec	22 25		
angle max. noise level	90° 55 dB (A)		
Cat. No.	1624		



	Pediatric	microtubes	Rhesus	tubes ²⁾											
Vessels															
capacity in ml	0,5	1,5	2,0	1	3	5	6	7	9	15	25	50	85	100	
Ø x L in mm	10.7 x 46	11 x 38	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	38 x 101	44 x 100	
max. RCF ²⁾	2,379	2,451	2,451	2,594	2,630	2,558	2,558	2,558	2,540	2,540	2,433	2,415	2,612	2,558	
radius in mm	133	135	135	145	147	141	141	141	142	142	136	135	146	143	
Adapter															
boring Ø x L in mm	11.2 x 38	11.2 x 38	11.2 x 38	6.5 x 34	10.5 x 43	13.4 x 48	13.4 x 48	13.4 x 48	17.6 x 89	17.6 x 89	25.2 x 77	35.2 x 77	38.5 x 92	45.9 x 98	
vessels per rotor	20	20	20	108	36	20	20	20	16	16	4	4	4	4	
Cat. No.	1351	1351	1351	1339	1343	1383	1383	1383	1329	1329	1330	1331	1396	0761	

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































— Swing-out rotor, 4-place | 1624









Rotor	
max. RPM max. RCF	4,000 min ⁻¹ 2,665
max. capacity	4 x 100 ml
run-up run-down, braked in sec	22 25
angle max. noise level	90° 55 dB (A)
Cat. No.	1624



Bucket	
Lid bioseal ⁵⁾	1492
Cat. No.	1481



	blood collection / urine vessels								tubes with screw cap							
Vessels																
capacity in ml	1.1–1.4	2.7–3	2.6–4.9	4–8.5	9–10	10	1.6–7	4–10	15	50	12	25	30	50	10	
Ø x L in mm	8 x 66	11 x 66	13x65/90	15x75/92	16x92	15x102	13x75/100	16x75/100	17x120	29x115	17 x 100	25 x 90	25 x 110	29 x 115	16 x 80	
max. RCF ²⁾	2,540	2,558	2,558	2,576	2,540	2,665	2,558	2,522	2,665	2,665	2,665	2,343	2,665	2,665	2,522	
radius in mm	142	143	143	144	142	149	143	141	149	149	149	131	149	149	141	
Adapter																
boring Ø x L in mm	9x49	13.4x48	13.4x48	15.6x47	17.6x91	17.6x91	13.4x48	16.5x56	17x90	30x90	17x80	26x72	26x80	29.5x80	16.5x56	
vessels per rotor	28	20	20	16	16	16	20	16	4	4	4	4	4	4	16	
Cat. No.	1457	1383	1383	1459	1329	1329⁴⁾	1383	1348	1347	1384	6311	1363	1365	6318	1348	

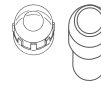
	tubes with screw cap			0534 ⁶⁾ chrome bath tubes
Vessels				
capacity in ml	30	50	85	30
Ø x L in mm	26 x 95	29x107	38x106	44x105
max. RCF ²⁾	2,451	2,630	2,612	2,540
radius in mm	137	147	146	142
Adapter				 Spacer
boring Ø x L in mm	26 x 83	29 x 93	38.5 x 92	45.9 x 98
vessels per rotor	4	4	4	4
Cat. No.	4417	4416	1396	0765

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, bucket 1490 cannot be closed with lid 1492.
 4) Please remove spacer.
 5) Tested by TÜV in conformity with DIN EN 61010, section 2-020.
 6) A rubber stopper for closing the tube for agitating or mixing is available under Cat. No. 0535. The tube may not be centrifuged with the stopper.

Swing-out rotor, 4-place | 1324



Rotor	
max. RPM max. RCF	4,000 min ⁻¹ 2,630
max. capacity	4 x 100 ml
run-up run-down, braked in sec	27 30
angle max. noise level	90° 55 dB (A)
Cat. No.	1324



Bucket	
Lid bioseal ⁵⁾	1492
Cat. No.	1490



	Pediatric			microliter tubes										Rhesus	tubes ²⁾			
Vessels																		
capacity in ml	0.5	1.5	2.0	1	3	4	5	6	7	9	15	25	50	85	100			
Ø x L in mm	10.7x46	11x38	11x38	6x45	10x60	10x88	12x75	12x82	12x100	14x100	17x100	24x100	34x100	38x101	44x100			
max. RCF ²⁾	2,343	2,415	2,415	2,558	2,594	2,594	2,522	2,522	2,522	2,504	2,504	2,397	2,379	2,576	2,522			
radius in mm	131	135	135	143	145	145	141	141	141	140	140	134	133	144	141			
Adapter																Spacer		
boring Ø x L in mm	11.2x38	11.2x38	11.2x38	6.5x34	10.5x43	10.5x43	13.4x48	13.4x48	13.4x48	17.6x91	17.6x91	25.2x87	35.2x87	38.5x92	45.9x100.5			
vessels per rotor	20	20	20	108	36	36	20	20	20	16	16	4	4	4	4			
Cat. No.	1351	1351	1351	1339	1343	1343	1383	1383	1383	1329	1329	1330	1331	1396	0761			

	blood collection / urine vessels													-
Vessels														
capacity in ml	1.1-1.4	2.6-3.4	4.9	2.7-3	4.5-5	4-5.5	7.5-8.2	9-10	10	1.6-5	4-7	4-7	8.5-10	15
Ø x L in mm	8 x 66	13x65	13x90	11x66	11x92	15x75	15x92	16x92	15x102	13x75	13x100	16x75	16x100	17x120
max. RCF ²⁾	2,540	2,522	2,522	2,522	2,522	2,540	2,540	2,504	2,630	2,522	2,522	2,486	2,486	2,630
radius in mm	142	141	141	141	141	142	142	140	147	141	141	139	139	147
Adapter														
boring Ø x L in mm	9x47	13.4x45	13.4x45	13.4x45	13.4x45	15.6x47	15.6x47	17.6x91	17.6x91	13.4x45	13.4x45	16.5x56	16.5x56	17x90
vessels per rotor	28	20	20	20	20	16	16	16	16	20	20	16	16	4
Cat. No.	1457	1383	1383	1383	1383	1459	1459	1329	1329⁴⁾	1383	1383	1348	1348	1347

	tubes with screw cap										0534 ⁶⁾
Vessels											
capacity in ml	15	50	12	25	30	50	10	30	50	85	30
Ø x L in mm	17x120	29 x 115	17 x 100	25 x 90	25 x 110	29 x 115	16 x 80	26 x 95	29x107	38x106	44x105
max. RCF ²⁾	2,630	2,630	2,630	2,308	2,630	2,630	2,486	2,415	2,594	2,576	2,504
radius in mm	147	147	147	129	147	147	135	145	145	144	140
Adapter											Spacer
boring Ø x L in mm	17x107	30x90	17x80	26x72	26x80	29.5x80	16.5x56	26x83	29x93	38.5x92	45.9x100.5
vessels per rotor	12	4	4	4	4	4	16	4	4	4	4
Cat. No.	1356	1384	6311	1363	1365	6318	1348	4417	4416	1396	0765

— Swing-out rotor, 4-place | 1324



Rotor

max. RPM max. RCF	4,000 min ⁻¹ 2,612
max. capacity	4x50 ml
run-up run-down, braked in sec	27 30
angle	90° 56 dB (A)
Cat. No.	1324



Bucket

Cat. No.	1398
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Vessels

	tubes ²⁾					blood collection / urine vessels								
capacity in ml	5	6	7	9	15	2.6-3.4	2.7-3	4.5-5	4.9	9-10	10	1.6-5	4-7	4-7
Ø x L in mm	12x75	12x82	12x100	14x100	17x100	13x65	11x66	11x92	13x90	16x92	15x102	13x75	13x100	16x75
max. RCF ²⁾	2,486	2,486	2,486	2,522	2,522	2,486	2,486	2,486	2,486	2,522	2,522	2,486	2,486	2,397
radius in mm	139	139	139	141	141	139	139	139	139	141	141	139	139	134



Adapter

boring Ø x L in mm	13.4x57.5	13.4x57.5	13.4x57.5	17.5x81	17.5x81	13.4x57.5	13.4x57.5	13.4x57.5	13.4x57.5	17.5x81	17.5x81	13.4x57.5	13.4x57.5	17.5x81
vessels per rotor	20	20	20	16	16	20	20	20	20	16	16	20	20	16
Cat. No.	1486	1486	1486	1482A	1482A	1486	1486	1486	1486	1482A	1482A	1486	1486	1482A

tubes with screw cap

Vessels

capacity in ml	15	50	12	50
Ø x L in mm	17 x 120	29 x 115	17 x 100	29 x 115
max. RCF ²⁾	2,612	2,576	2,522	2,576
radius in mm	146	144	141	144



Adapter

boring Ø x L in mm	17x100	30x98	17.5x81	30x98
vessels per rotor	16	4	16	4
Cat. No.	1483A	1484	1482A	1484⁴⁾

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.
4) Please remove spacer.

— Swing-out rotor, 6-place | 1619



Rotor

max. RPM max. RCF	4,000 min ⁻¹ 2,701
max. capacity	6x50 ml
run-up run-down, braked in sec	22 25
angle max. noise level	90° 54 dB (A)

Cat. No.	1619
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tubes with screw cap



Vessels

capacity in ml	15	50
Ø x L in mm	17 x 120	29 x 115
max. RCF ²⁾	2,701	2,701
radius in mm	151	151



Adapter

boring Ø x L in mm	17 x 84	30 x 87.5
vessels per rotor	6	6

Cat. No.	1462-A	-
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— Swing-out rotor, 8-place | 1617



Rotor

max. RPM max. RCF	4,000 min ⁻¹ 2,469
max. capacity	8 x 50 ml
run-up run-down, braked in sec	22 25
angle max. noise level	45° 53 dB (A)

Cat. No.	1617
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tubes with screw cap



Vessels

capacity in ml	15	50
Ø x L in mm	17 x 120	29 x 115
max. RCF ²⁾	2,469	2,469
radius in mm	138	138



Adapter

boring Ø x L in mm	17 x 84	30 x 94.5
vessels per rotor	8	8

Cat. No.	1462-A	-
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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.

Swing-out rotor, 8-place | 1611



Rotor	
max. RPM max. RCF	4,000 min ⁻¹ 2,415
max. capacity	8 x 15 ml
run-up run-down, braked in sec	22 25
angle max. noise level	90° 53 dB (A)
Cat. No.	1611

	tubes ²⁾					blood collection / urine vessels								
Vessels														
capacity in ml	5	6	7	10	15	2.6-3.4	2.7-3	4-5.5	4.5-5	7.5-8.2	1.6-5	4-7	4-7	8.5-10
Ø x L in mm	12/13x75	12x82	12x100	13x100	17x100	13x65	11x66	15x75	11x92	15x92	13x75	13x100	16x75	16x100
max. RCF ²⁾	1,914	1,914	2,415	2,415	2,415	1,914	1,914	1,914	2,415	2,415	1,914	2,415	1,914	2,415
radius in mm	107	107	135	135	135	107	107	107	135	135	107	135	107	135
Bucket														
boring Ø x L in mm	13x53	13x53	13.2x81	13.2x81	17.5x81	13 x 53	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	17.5 x 81
vessels per rotor	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Cat. No.	1131-A	1131-A	1643	1643	1644	1131-A	1131-A	1132-A	1643	1644	1131-A	1643	1132-A	1644

Swing-out rotor, 12-place | 1628



Rotor	
max. RPM max. RCF	4,000 min ⁻¹ 2,683
max. capacity	12 x 15 ml
run-up run-down, braked in sec	22 25
angle max. noise level	55° / 60° / 80° 52 dB (A)
Cat. No.	1628

	tubes ²⁾		blood collection / urine vessels						
Vessels									
capacity in ml	5	15	2.6-3.4	2.7-3	4-5.5	7.5-8.2	1.6-5	4-7	8.5-10
Ø x L in mm	12/13x75	17x100	13x65	11x66	15x75	15x92	13x75	16x75	16x100
max. RCF ²⁾	2,236	2,683	2,236	2,236	2,254	2,683	2,236	2,254	2,683
radius in mm	125	150	125	125	126	150	125	126	150
Bucket									
boring Ø x L in mm	13.2x53	17.5x79	13.2x53	13.2x53	17.5x53	17.5x79	13.2x53	17.5x53	17.5x79
vessels per rotor	12	12	12	12	12	12	12	12	12
Cat. No.	1127-A	1621	1127-A	1127-A	1122	1621	1127-A	1122	1621

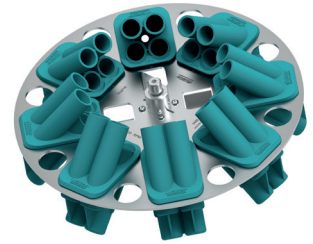
2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

— Angle rotor, 8-place | 1418



Rotor

max. RPM max. RCF	4,000 min ⁻¹ 2,612
max. capacity	8x50 ml
run-up run-down, braked in sec	36 43
angle max. noise level	45° 53 dB (A)
Cat. No.	1418



	tubes ²⁾		blood collection / urine vessels					tubes with screw cap				
Vessels												
capacity in ml	5	12	1.1–1.4	2.6–3.4	2.7–3	9–10	1.6–5	15	50	15	50	50
∅ x L in mm	12x75	17x100	8 x 66	13x65	11x66	16x92	13x75	17x120	29x115	17x100	29x115	29x107
max. RCF ²⁾	2,182	2,540	2,182	2,182	2,182	2,540	2,182	2,594	2,486	2,540	2,486	2,486
radius in mm	122	142	122	122	122	142	122	145	139	142	139	139
+	+ 1054-A	+ 0716	+ 1054-A	+ 1054-A	+ 1054-A	+ 0716	+ 1054-A	+ E2109	+ E2110-A	+ 0716		
Carrier												
boring ∅ x L in mm	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	30.2x92	17.4x91	30.2x92	30.2x92
vessels per rotor	32	32	32	32	32	32	32	32	8	32	8	8
Cat. No.	1467	1467	1467	1467	1467	1467	1467	1467	1468	1467	1468	1468

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.

Angle rotor, 6-place | 1620A



Rotor

max. RPM max. RCF	6,000 min ⁻¹ 4,226
max. capacity	6 x 85 ml
run-up run-down, braked in sec	19 22
angle max. noise level	35° 53 dB (A)
Cat. No.	1620A



	Pediatric			microliter tubes				tubes ²⁾				blood collection / urine vessels			tubes with screw cap			
Vessels																		
capacity in ml	0.5	1.5	2.0	3	15	50	94	7.5-8.2	9-10	10	8.5-10	15	50	50	10			
Ø x L in mm	10.7 x 46	11 x 38	11 x 38	10 x 60	17 x 100	34 x 100	38 x 102	15 x 92	16 x 92	15 x 102	16 x 100	17 x 120	29 x 115	29 x 115	16 x 80			
max. RCF ²⁾	4,105	4,105	4,105	4,105	3,904	4,146	4,226	3,904	3,904	3,904	3,904	3,985	3,985	3,985	3,904			
radius in mm	102	102	102	102	97	103	105	97	97	97	97	99	99	99	97			
Adapter																		
boring Ø x L in mm	11.4 x 39	11.4 x 39	11.4 x 39	11.4 x 39	17.5 x 91.5	35 x 89.3	38.6 x 90.2	17.5 x 91.5	17.5 x 91.5	17.5 x 91.5	17.5 x 91.5	17 x 106	29.8 x 96.7	-	16.5 x 74			
vessels per rotor	24	24	24	24	6	6	6	6	6	6	6	6	3	6	12			
Cat. No.	1449	1449	1449	1449	1451	1463	-	1451	1451	1451	1451	1466	1454	1646⁸⁾	1448			

tubes with screw cap

Vessels			
capacity in ml	30	50	85
Ø x L in mm	26 x 95	29 x 107	38 x 106
max. RCF ²⁾	3,824	4,025	4,226
radius in mm	95	100	105
Adapter			
boring Ø x L in mm	26 x 85	29 x 92	38.6 x 90.2
vessels per rotor	6	6	6
Cat. No.	1447	1446	-

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.
 8) Adapter (Set), 6-place: for conical 50 ml tubes with screw cap.

Angle rotor, 12-place | 1613



Rotor

max. RPM max. RCF	6,000 min ⁻¹ 4,146
max. capacity	12 x 15 ml
run-up run-down, braked in sec	13 15
angle max. noise level	35° 55 dB (A)
Cat. No.	1613



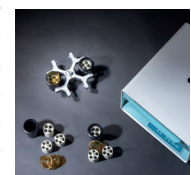
	Pediatric	tubes ²⁾					blood collection / urine vessels							
Vessels														
capacity in ml	0.5	4	5	6	15	1.1-1.4	2.6-3.4	2.7-3	4.5-5	4.9	7.5-8.2	9-10	10	
Ø x L in mm	10.7 x 46	10 x 88	12/13 x 75	12 x 82	17 x 100	8 x 66	13 x 65	11 x 66	11 x 92	13 x 90	15 x 92	16 x 92	15 x 102	
max. RCF ²⁾	2,777	3,502	3,300	3,300	4,146	3,300	3,300	3,300	4,146	4,146	4,146	4,146	4,146	
radius in mm	69	87	82	82	103	82	82	82	103	103	103	103	103	
Adapter														
boring Ø x L in mm	11 x 35	11.5 x 67.5	13.5 x 60	13.5 x 60	17.7 x 88	13.5 x 60	13.5 x 60	13.5 x 60	17.7 x 88	17.7 x 88	17.7 x 88	17.7 x 88	17.7 x 88	
vessels per rotor	12	12	12	12	12	12	12	12	12	12	12	12	12	
Cat. No.	2 x 1063-6 (6 pcs.)	6305	1054-A	1054-A	-	1054-A	1054-A	1054-A	-	-	-	-	-	

	blood collection / urine vessels			-
Vessels				
capacity in ml	1.6 - 5	8	8.5 - 10	15
Ø x L in mm	13 x 75	16 x 125	16 x 100	17 x 120
max. RCF ²⁾	3,300	4,146	4,146	4,146
radius in mm	82	103	103	103
Adapter				
boring Ø x L in mm	13.5 x 60	17.7 x 88	17.7 x 88	17.7 x 88
vessels per rotor	12	6	12	6
Cat. No.	1054-A	-	-	-

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.

Packages

ROTOFIX 32 A BLOOD TUBE PACKAGE 1*	number of vessels	volume (ml)	size (mm)	RPM	RCF
- 1 x ROTOFIX 32 A centrifuge	1206	20	1.6 - 7	4,000	2,558
- 1 x Swing-out rotor, 4-place	1624	16	4 - 10	4,000	2,522
- 4 x bucket	1481				
- 4 x lid (bioseal)	1492				
- 4 x adapter, 5-place	1383				
- 4 x adapter, 4-place	1348				
1206SET1					



Certifications / Registrations

Product certification:



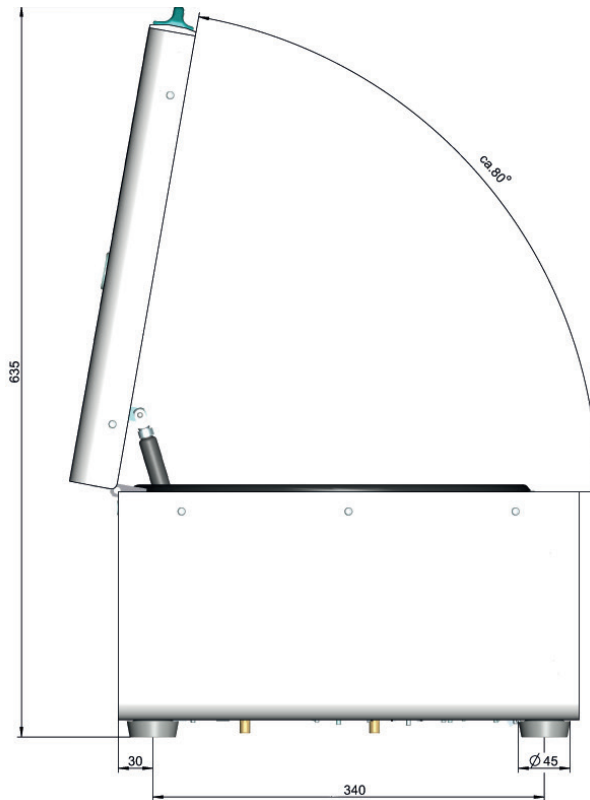
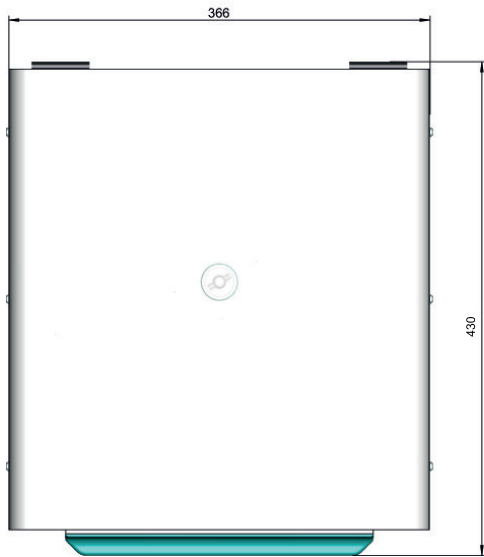
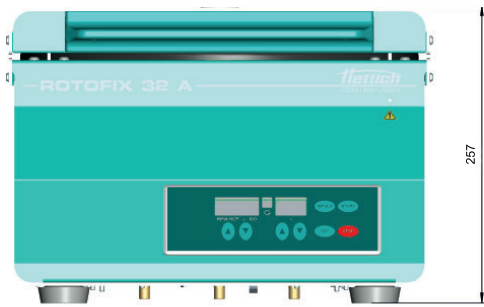
Product registration:



Company certifications:



Dimensions



Déclaration de conformité UE

EU Declaration of conformity

du fabricant

of the manufacturer

Andreas Hettich GmbH • Föhrenstrasse 12 • D-78532 Tuttlingen • Germany
SRN: DE-MF-000010680

Par la présente, nous déclarons sous notre responsabilité, sans participation d'un organisme notifié, que le dispositif désigné :

We hereby declare under our responsibility without involvement of a notified body that the designated device:

Type de dispositif **Centrifugeuse de paillasse**
Nom **ROTOFIX 32 A**
UDI-DI de base **040506740100129P**
GMDN **36465**
Classification **Dispositif de diagnostic in vitro, classe A (annexe VIII, règle 5)**
Conformément au **règlement (UE) 2017/746 annexe IX**

Type of device **benchtop centrifuges**
Name **ROTOFIX 32 A**
Basic UDI-DI **040506740100129P**
GMDN **36465**
Classification **in vitro diagnostic, class A (Annex VIII, Rule 5)**
according to **Regulation (EU) 2017/746 Annex IX**

avec les accessoires évalués comme conformes au dispositif d'après la liste d'accessoires de la documentation technique correspondante, satisfait aux dispositions pertinentes du règlement (UE) 2017/746 relatif aux dispositifs de diagnostic in vitro.

and its accessories, which are listed in the related technical documentation and whose conformity has been assessed together with the device, complies with the relevant provisions of the Regulation (EU) 2017/746 on in vitro diagnostic devices.

utilisation conforme aux dispositions

L'appareil **ROTOFIX 32 A** est un dispositif médical de diagnostic in vitro conformément au règlement relatif aux dispositifs médicaux de diagnostic in vitro (UE) 2017/746.

L'appareil est une centrifugeuse non automatique destinée à séparer les composants d'échantillons liquides d'origine humaine par la force centrifuge.

La centrifugeuse est spécifiquement destinée à la préparation d'échantillons dans le cadre de procédures de diagnostic in vitro et garantit la fonctionnalité des dispositifs médicaux de diagnostic in vitro ultérieurs, conformément à leur destination prévue. Elle constitue ainsi un élément indispensable dans la préparation des échantillons et l'aide au diagnostic.

La centrifugeuse ne peut être utilisée que par du personnel qualifié, dans des salles de laboratoire fermées de laboratoires et cliniques.

Intended use

The **ROTOFIX 32 A** is an in vitro diagnostic device in accordance with the Regulation on *in vitro* diagnostic medical devices (EU) 2017/746 .

The device is a non-automatic centrifuge for separating the components of liquid samples of human origin using centrifugal force.

The centrifuge is specifically intended for sample preparation in *in vitro* diagnostic procedures and ensures the functionality of downstream *in vitro* diagnostic devices within the scope of their intended purpose. It is therefore an indispensable part of sample preparation and diagnostic support.

The centrifuge may only be operated by qualified personnel in laboratories and clinics in closed laboratory rooms.

Le dispositif satisfait également aux dispositions applicables des directives et règlements européens suivants

- 2011/65/UE « Directive RoHS »
(sans intervention d'un organisme notifié)
- (CE) 1907/2006 « Règlement REACH »
(sans intervention d'un organisme notifié)

Normes appliquées:

voir la liste des normes appliquées qui fait partie de la documentation technique.

The device also complies to the applicable provisions of the following European directives, ordinances and standards

- 2011/65/EC "RoHS Directive"
(without involvement of a notified body)
- (EC) 1907/2006 „Regulation on REACH“
(without involvement of a notified body)

Standards applied:

See the list of applied standards that forms part of the technical documentation.

Tuttlingen, 25.10.2025



Ralf Ledda
Gérant, Chief Executive Officer



La présente déclaration de conformité est valable du 25/10/2025

This declaration of conformity is valid from 25.10.2025

Operating instructions

ROTOFIX 32 A



Translation of the original operating instructions



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1 About this document

1.1 Use of this document

- Read this document carefully and in full before commissioning the device for the first time.
Observe other enclosed instruction sheets where necessary.
- This document is part of the device and must be kept within easy reach.
- This document must be included if the device is passed on to a third party.
- The current version of the document in the available languages can be found on the manufacturer's website: ➔ <https://www.hettichlab.com/de/download-center/>







1.2 Gender reference

The employed masculine or feminine language form is to facilitate reading. In the spirit of equal treatment, corresponding terms apply in principle to all genders and do not imply any valuation.

1.3 Symbols and labels in this document

General symbols

The following markers are used in this document to highlight instructions, results, listings, references and other elements:

Marker	Explanation
1.  2.  3.  ... 	Step-by-step instructions
	Results of action steps
	References to sections of the document and other applicable documents
■ ... ■ ...	Listings without a fixed order
<i>[Buttons]</i>	Controls (for example: buttons, switches)
<i>'Indicator'</i>	Indicator elements (for example: signal lights, screen elements)

2 Safety

2.1 Intended use

Intended use

The centrifuge **ROTOFIX 32 A** is an in vitro diagnostic medical device according to the In Vitro Diagnostic Medical Devices Regulation (EU) 2017/746.

The device is used to separate samples of human origin into their constituent parts for subsequent further processing. The user can set each of the variable physical parameters within the limits set by the device.

The centrifuge may only be used by qualified personnel in closed laboratories. The centrifuge is only intended for the use referred to above. Intended use also includes observing all instructions in the user manual and compliance with inspection and maintenance. Any other use or use beyond this scope is considered improper. Andreas Hettich GmbH shall not be liable for any damage arising from such non-compliant use.

Non-intended use

- The centrifuge is not suitable for use in explosive or radioactive, or biologically or chemically-contaminated atmospheres.
- The user must take appropriate actions when centrifuging hazardous substances or mixtures of substances that are toxic, radioactive or contaminated with pathogenic microorganisms.
The manufacturer generally recommends using only centrifuge tubes with special screw caps designed for use with hazardous substances. Use sealable centrifuge tubes with a biosafety system for materials of risk groups 3 and 4.
- The manufacturer does not recommend centrifugation of flammable or explosive materials.
- The manufacturer does not recommend centrifugation of materials that react chemically with one another with high activation energy.

Foreseeable misuse

The manufacturer recommends using only accessories approved that it has approved for the intended purpose.

Only operate the centrifuge under supervision.

2.2 Personnel requirements

Required qualifications

The user has read the Operating Manual in full and familiarised themselves with the device.



NOTICE

Damage to the device by unauthorised personnel

- Tampering with and modifications to devices by unauthorised persons are at the operating organisation's own risk and will result in the loss of all warranty and liability claims.

Trained user

The user has been educated and trained in laboratory work and is able to carry out the work assigned to them, and to recognise and prevent potential hazards independently.

Personal protective equipment

Lack of personal protective equipment or unsuitable personal protective equipment increases the risk of impaired health and injury.

- Only use personal protective equipment that is in proper condition.
- Only use personal protective equipment that is adapted to the person (correct size, for example).
- Observe instructions on other protective equipment for specific activities.

2.3 Operator's responsibility



Follow the instructions in this document for proper and safe use of the device.

Keep the user manual for future reference.

Provide information

- Following the instructions in this document will help:
 - To avoid dangerous situations.
 - To minimise repair costs and downtime.
 - To increase the reliability and service life of the device.
- The operator is responsible for compliance with company regulations, standards and national laws.
- Note and keep the revision of the document separate from the document. If lost, the document can be replaced in the correct revision.
- Keep the user manual available at the place where the device is used.
- Pass the user manual on to the buyer when the device is sold.

Personnel training

Lack of knowledge when working with the device may result in serious injury or death.

- Instruct personnel on their tasks and the associated risks in accordance with the instruction.

2.4 Safety instructions



Reporting of events and incidents

In the event of incidents or notifiable events involving the device or its accessories, these must be reported to the manufacturer and, where applicable, to the competent authority where the user and/or the patient is registered.

Manufacturer:

Andreas Hettich GmbH

Föhrenstrasse 12

78532 Tuttlingen, Germany

Phone: +49 7461 705 0

E-mail: info@hettichlab.com



DANGER

Risk of contamination

Inadequate cleaning or failure to observe the cleaning instructions can lead to contamination risks.

- Observe national and local regulations on safety and accident prevention.
- Observe cleaning instructions.
- Wear personal protective equipment when cleaning the device.
- Comply with laboratory regulations (e.g. TRBAs, the German Protection against Infection Act, hygiene plan) for handling biological agents.

**DANGER****Risk of fire and explosion**

Risk of accidents, injuries or damage to property due to fire or explosion.

- Observe regulations and directives for handling chemicals and hazardous substances.
- Do not use corrosive chemicals.
- Do not use dangerous chemicals.
- Do not use corrosive extraction agents.
- Do not use strong acids.

**WARNING****Risk of injury**

Inadequate or late maintenance can result in injuries.

- Observe maintenance intervals.
- Check the device for visible damage or defects.
If any visible damage or defects are present, immediately remove the device from service and inform a service technician.

 **WARNING****Risk of electric shock**

Liquids that penetrate the device may cause electric shocks.

- The device must be protected from external contact with liquids.
- Do not pour any liquids inside the device.
- The original transport packaging must be used when transporting the device.

 **WARNING****Contamination with hazardous substances and substance mixtures**

Observe the following actions for substances and substance mixtures that are toxic, radioactive and/or contaminated with pathogenic microorganisms:

- As a rule, use only centrifuge tubes with special screw caps for hazardous substances.
- Use sealable centrifuge tubes with a biosafety system for materials of risk groups 3 and 4.
- If no biosafety system is used, the device is not micro-biologically tight in the sense of standard EN / IEC 61010-2-020.
- Contact the manufacturer if necessary.


WARNING
Risk of injury and device damage due to the rotor

A loose rotor can cause injuries and device damage.

- Check that the rotor is firmly seated.
- Follow maintenance intervals.


CAUTION
Risk of injury

Long hair and clothing can get caught in the rotor during manual movement.

- Tie long hair back.
- Do not allow garments to hang in the centrifuging chamber.


NOTICE
Damage

Incorrect voltage or frequency.

- Only operate the device according to the specifications on the rating plate.
Compliance with the instructions for use.


NOTICE
Damage

Aborting the program early can cause damage to the device and samples.

- Do not switch off, perform an emergency release or pull out the mains plug.

3 Device overview

3.1 Technical data

Manufacturer	Andreas Hettich GmbH D-78532 Tuttlingen	
Model	ROTOFIX 32 A	
Type	1206 1206-34	1206-01 1206-33
Mains voltage ($\pm 10\%$)	208-240 V 1~	100-127 V 1~
Mains frequency	50-60 Hz	50-60 Hz
power consumption	300 VA	300 VA
Power consumption	1.4 A	3.0 A
max. capacity	4 x 100 ml / 32 x 15 ml	
max. permissible density	1.2 kg/dm ³	

max. speed (RPM)	6000	
max. acceleration (RCF)	4226	
max. kinetic energy	3160 Nm	
Obligation to perform checks (DGUV Rules 100-500) (valid only in Germany)	No	
Ambient conditions (EN / IEC 61010-1):		
Installation site	indoors only	
Altitude	up to 2000 m above sea level	
Ambient temperature	2 °C to 40 °C	
Humidity	maximum relative humidity 80% for temperatures up to 31 °C, decreasing linearly to 50% relative humidity at 40 °C.	
Overvoltage category (IEC 60364-4-443)	II	
Pollution level	2	
Device protection class	I not suitable for use in potentially explosive atmospheres.	
EMC:		
Emitted EM interference, EM interference immunity	EN / IEC 61326-1 Class B	FCC Class B
Noise level (rotor-dependent)	≤57 dB(A)	
Dimensions:		
Width	366 mm	
Depth	430 mm	
Altitude	257 mm	
Weight	approx. 23 kg	

Rating plate

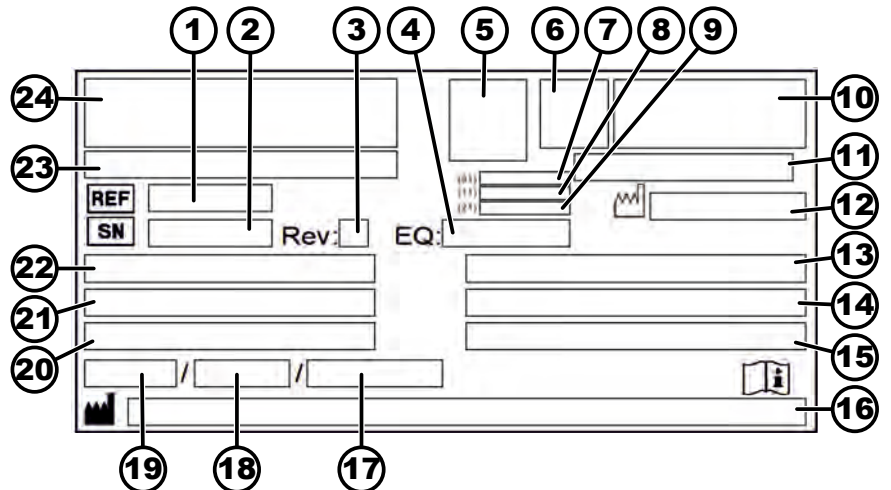


Fig. 1: Rating plate

- 1 Item number
- 2 Serial number
- 3 Revision
- 4 Equipment number
- 5 Data matrix code
- 6 any labelling indicating whether medical device or in vitro diagnostic medical device
- 7 Global Trade Item Number (GTIN)
- 8 Date of manufacture
- 9 Serial number
- 10 any EAC mark, CE mark
- 11 Country of manufacture
- 12 Date of manufacture
- 13 Mains frequency
- 14 Maximum kinetic energy
- 15 Maximum permissible density
- 16 Manufacturer's address
- 17 any Coolant circuit pressure
- 18 any Coolant capacity
- 19 any Coolant type
- 20 Revs per minute
- 21 Performance values
- 22 Mains voltage
- 23 any Device designation
- 24 Manufacturer's logo


3.2 Certifications and logos


Certifications



ISO 9001

Quality management system in accordance with ISO 9001

 <p>ISO 14001 Certified Environmental Management System www.tuvsud.com/ms-cert</p>	<p>ISO 14001 Environmental management in accordance with ISO 14001</p>
--	--

 <p>Certified Quality System ISO 13485 mdc</p>	<p>EN ISO 13485 Quality management in accordance with ISO 13485</p>
--	---

Logos

 <p>MADE IN GERMANY</p>	<p>Made in Germany Device was developed and made in Germany.</p>
--	--

3.3 European registration


Device conformity Device conformity according to EU directives.




Single Registration Number SRN: DE-MF-000010680

Basic-UDI-DI	Basic-UDI-DI	Device assignment
	040506740100129P	ROTOFIX 32 A (in vitro diagnostic medical device)

3.4 Important labels on the packaging

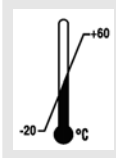
	<p>TOP This is the correct upright position of the shipping container for transport and/or storage.</p>
---	--

	<p>FRAGILE GOODS The contents of the shipping container are fragile, so it must be handled with care.</p>
---	--



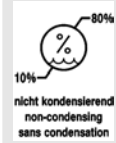
PROTECT FROM MOISTURE

Protect the transport packaging from moisture and keep it in a dry environment.



TEMPERATURE LIMITATION

The shipping container must be stored, transported and handled within the indicated temperature range (-20 °C to +60 °C).



HUMIDITY LIMITATION

The shipping container must be stored, transported and handled within the indicated air humidity range (10 % to 80 %, non-condensing).



STACK LIMITATION BASED ON QUANTITY

Maximum number of identical packages that may be stacked on the lowest package, "n" standing for the number of packages allowed. The lowest package is not included in "n".

3.5 Important labels on the device



The signs on the device must not be removed or covered, or have anything pasted over them.



Attention, general danger area.

Ensure you read the instructions for commissioning and operation and observe the safety instructions before using the device.



Biohazard warning.



Direction of rotation of the rotor.

The orientation of the arrow indicates the rotor's direction of rotation.



Symbol for the separate collection of electrical and electronic equipment, in accordance with Directive 2012/19/EU (WEEE).

Use in European Union countries, Norway and Switzerland.

3.6 Operating and indicator elements

3.6.1 Control

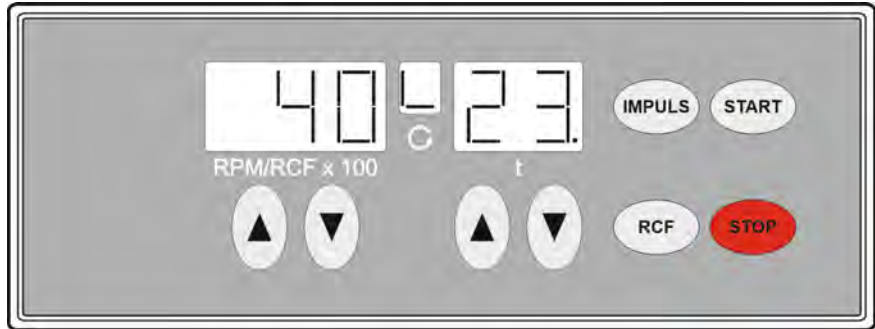


Fig. 2: Control

3.6.2 Indicator elements

Fig. 3: 'Lid closed' indicator



- The indicator appears when the lid is closed.
- If the 'Lid closed' and 'Lid open' indicators flash alternately, further operation of the centrifuge is only possible after opening the lid once.

Fig. 4: 'Lid open' indicator



- The indicator appears when the lid is open.

Fig. 5: 'Rotation' indicator



- The indicator light rotates when the rotor is turning.

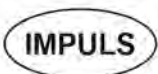
3.6.3 Controls

Fig. 6: [Mains switch]



- Switch the device on and off.

Fig. 7: [IMPULSE] button



- Short-term centrifugation. The centrifugation run takes place as long as the button is being pressed.
- Display the brake level and centrifuging radius.

Fig. 8: [RCF] button



- Relative centrifugal force, parameter RCF. The relative centrifugal force (RCF) is displayed for as long as the button is pressed.

Fig. 9: [START] button



- Start centrifugation run.



Fig. 10: [STOP] button

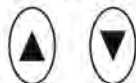
RPM/RCFx100


Fig. 11: [RPM/RCFx100] button



Fig. 12: [t] button

- End the centrifugation run.
The rotor ramps down to a stop at the preselected brake level.
- Save the brake level and centrifuging radius.

- A numerical value from 500 RPM to the maximum rotor speed can be set.
Adjustable in increments of 100 (RPM = displayed value x 100).
- Display the brake level and centrifuging radius.

- Enter runtime.
Adjustable from 1 to 99 minutes in 1 minute increments.
- Centrifuging radius.
Input in centimetres. Adjustable from 5 to 16 centimetres, in 1 centimetre increments.
- Brake level 0 or 1.
Level 1 = short ramp-down time
Level 0 = long ramp-down time.

3.7 Original spare parts

Use only original spare parts from the manufacturer and approved accessories.

3.8 Scope of delivery

The following accessories are supplied with the centrifuge:

- 1 Release pin
- 1 hex key (SW5 x 100)
- 1 grease for the trunnions

- 1 power cable
- 2 Fuse links
- 1 user manual
- 1 instruction sheet, transport lock

Rotors and the corresponding accessories are supplied depending on the order.

3.9 Returns

An original Return Material Authorisation (RMA) form from the manufacturer must always be requested for a return. Secure and reliable acceptance and booking in of the goods with the manufacturer is not possible without an original RMA form from the manufacturer. The Return Material Authorisation (RMA) form contains a Declaration of No Objection (UBE), which must be completed in full and enclosed with the return.

If the device and/or accessories are returned to the manufacturer, the complete return shipment must be cleaned and decontaminated by the sender. If returns are not cleaned and/or decontaminated or are insufficiently cleaned and/or decontaminated, this will be performed by the manufacturer and charged to the sender.

The original transport locks must be attached for return shipment, see → Chapter 4 'Transport and storage' on page 16. The device must be shipped in its original packaging.

4 Transport and storage

4.1 Transport and storage conditions

Transport conditions



NOTICE

Damage

The device may be damaged if it is not secured during transport.

- Secure the transport locks before transport.
- Observe the transport instructions.



NOTICE

Danger due to condensation in the event of temperature differences

Moisture may damage electrical components.

- Ensure that all surfaces are dry prior to commissioning or maintenance.
- If the temperature changes, wait until the device or component has become acclimatised.
- Prevent moisture from penetrating into sensitive components.
- If moisture forms, switch off the device immediately and allow it to dry properly.

- Before transporting, fasten the transport lock and disconnect the device from the mains socket.
- The transport temperature must be between -20 °C and +60 °C.
- Humidity must not be condensing. Humidity must be between 10% and 80%.
- Be aware of the weight of the device.
- When transporting using a transport aid (e.g., a pallet truck), the transport aid must be able to carry at least 1.6 times the transport weight of the device.
- Secure the device to prevent it tipping over and falling down during transport.
- Never transport the device sideways or upside down.

Storage conditions

- The device must be stored in the original packaging.
- Only store the device in dry rooms.
- The storage temperature must be between -20 °C and +60 °C.
- Humidity must not be condensing. Humidity must be between 10% and 80%.

4.2 Fastening the transport lock

Personnel:

- Trained user

The lid is closed.

The mains cable is disconnected from the device.

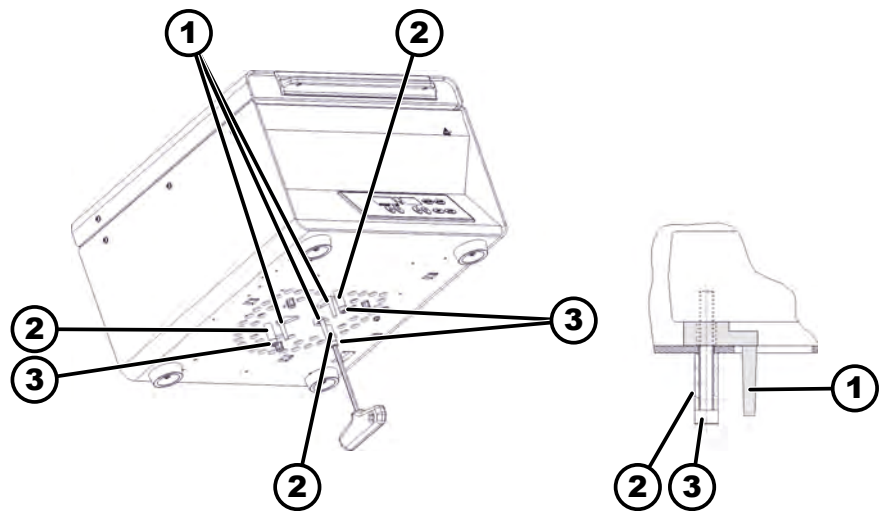


Fig. 13: Transport lock

- 1 Transport lock
- 2 Spacer sleeves
- 3 Screws

1. Tilt the device on the back of the device.
2. Insert 3 transport locks (1).
3. Screw in 3 screws (3) with spacer sleeves (2).

5 Commissioning

5.1 Unpacking the centrifuge



CAUTION

Danger of crushing due to parts falling out of the transport packaging.

- Keep the device balanced during the unpacking process.
- Only open the packaging at the points provided for this purpose.



CAUTION

Risk of injury from lifting heavy loads.

- Provide an adequate number of helpers.
- Note the weight. See → Chapter 3.1 'Technical data' on page 9.



NOTICE

Damage to the device due to improper lifting.

- Do not lift the centrifuge by the control panel or the control panel holder.

Personnel:

- Trained user

1. If present: Remove the packaging tapes.

2. ➤ Lift the box up and remove the padding.
3. ➤ Remove the accessories and store them safely.
4. ➤ Place the device on a stable and level surface.

5.2 Removing the transport lock

Personnel:

- Trained user

The lid is closed.

The mains cable is disconnected from the device.

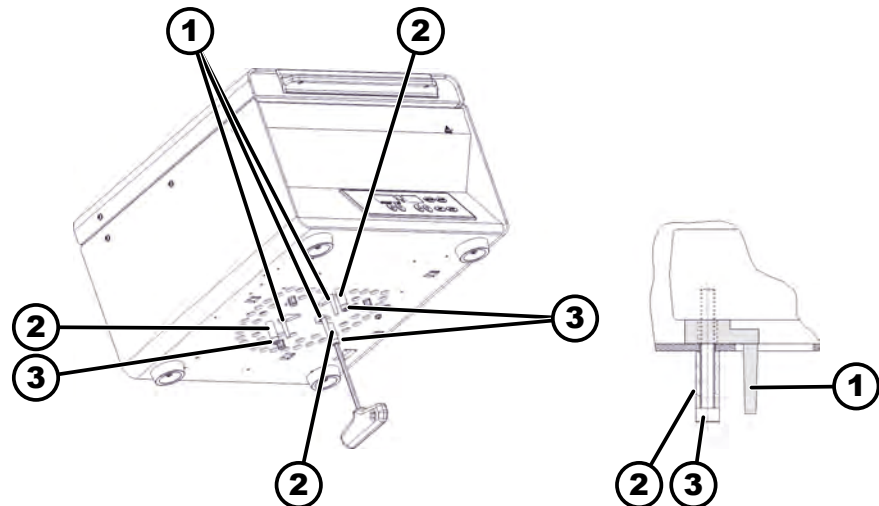


Fig. 14: Transport lock

- 1 Transport lock
- 2 Spacer sleeves
- 3 Screws

1. ➤ Tilt the device on the back of the device.
2. ➤ Unscrew 3 screws (3) with spacer sleeves (2).
3. ➤ Remove 3 transport locks (1) and store them safely.
4. ➤ Keep the screws, spacer sleeves and transport lock in a safe place.

5.3 Setting up and connecting the centrifuge

Setting up the centrifuge



WARNING

Risk of injury

Due to insufficient clearance from the centrifuge.

- As per EN / IEC 61010-2-020, no persons, hazardous materials or objects may be present within a safety zone of 300 mm around the centrifuge during a centrifugation run.
- Maintain a distance of 300 mm from the ventilation slots and ventilation openings of the centrifuge.
- The centrifuge's ventilation openings must never be blocked.

**CAUTION****Risk of crushing and damage**

Changes in position caused by vibration may cause the device to fall.

- Place the device on a stable and level surface.
- Select an installation area that is capable of bearing the weight of the device.
- Observe national and local regulations on safety and accident prevention.

**NOTICE****Damage**

Any deviation from the external temperature conditions will result in damage to the samples and device.

- Comply with the maximum and minimum permissible ambient temperatures.
- Avoid placing the device next to heat sources.
- Do not place the device in direct sunlight.
- Protect the device from frost.
- Maintain the required clearance around the device.

Personnel:

- Trained user

1. Place the device on a stable and level surface.
2. Maintain a distance of 300 mm around the device.
3. Comply with the ambient conditions in the technical data (→ *Chapter 3.1 'Technical data' on page 9*).

Connecting the centrifuge**NOTICE****Damage**

Property damage caused by unauthorised personnel.

- Do not allow persons without the appropriate authorisation to perform any work on or make changes to devices.
- Only authorised personnel may carry out maintenance and repairs.
- Obtain the manufacturer's approval or guidance before carrying out any work on the device.

**NOTICE****Danger due to condensation in the event of temperature differences**

Moisture may damage electrical components.

- Ensure that all surfaces are dry prior to commissioning or maintenance.
- If the temperature changes, wait until the device or component has become acclimatised.
- Prevent moisture from penetrating into sensitive components.
- If moisture forms, switch off the device immediately and allow it to dry properly.

Personnel:

- Trained user

1. ➤ A type B residual current circuit breaker must be used if the device is additionally protected with a residual current circuit breaker in the building installation.

When using a different type, the residual current circuit breaker may either not switch off the unit if there is a fault on the unit, or it may switch off the unit even though there is no fault on the unit.

2. ➤ Check whether the mains voltage and mains frequency match the specification on the rating plate.
3. ➤ Connect the device to a standard mains socket using the mains cable.

5.4 Switching the centrifuge on and off.

Switching the centrifuge on

Personnel:

- Trained user

- Set the mains switch to */I/*.

➡ The buttons flash, depending on the centrifuge type.

The last centrifugation data used is displayed.

Switching off the centrifuge

The rotor is stationary.

- Set the mains switch to */0/*.

6 Operation

6.1 Opening and closing the lid

Opening the lid

Personnel:

- Trained user

The centrifuge is switched on.

The rotor is stationary.

1. ➤ Swivel the handle strip on the lid upwards.

➡ The 'Lid open' indicator appears.

2. ➤ Open the lid.

Closing the lid



NOTICE

Damage to the device caused by the lid slamming.

- Close the lid slowly.
- Do not slam the lid.

Personnel:

- Trained user

- Close the lid and swivel the handle strip downwards
 - ➡ The 'Lid closed' indicator appears.

6.2 Removing and installing the rotor

Removing the rotor with a clamping nut

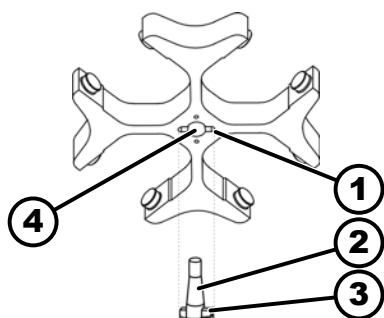


Fig. 15: Rotor installation and removal

- 1 Groove
- 2 Motor shaft
- 3 Driver
- 4 Hole

Personnel:

- Trained user

1. ➤ Open the lid.
2. ➤ Loosen the rotor clamping nut using the supplied spanner.
 - ➡ After passing the working point for lifting the rotor, the rotor detaches from the cone of the motor shaft (2).
3. ➤ Turn the clamping nut until the rotor can be lifted off the motor shaft.
4. ➤ Remove the rotor.

Installing the rotor with a clamping nut

Personnel:

- Trained user

The lid is open.

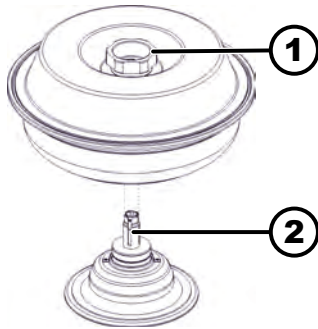
1. ➤ Clean the motor shaft (2) and rotor hole (4).
2. ➤ Lightly grease the motor shaft (2), see ➡ Chapter 8.2 'Instructions for cleaning and disinfection' on page 31.
3. ➤ Place the rotor vertically on the motor shaft (2).
 - The driver (3) of the motor shaft must be in the groove (1) of the rotor. The orientation of the groove is marked on the rotor.
4. ➤ Hand-tighten the rotor clamping nut using the supplied spanner.
5. ➤ Check that the rotor is firmly seated.

Removing the rotor without a clamping nut

Removing the rotor

Personnel:

- Trained user

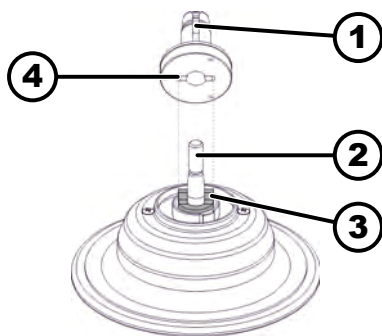


→ Hold the rotor by the rotary handle (1) of the lid and lift it off the hub (2).

Fig. 16: Rotor installation and removal

- 1 Rotary handle
- 2 Hub

Removing the hub



1. → Open the lid.
2. → Unscrew the clamping nut.
 - After passing the working point for lifting the rotor, the hub (1) detaches from the cone of the motor (2).
3. → Remove the hub.

Fig. 17: Hub installation and removal

- 1 Hub
- 2 Motor shaft
- 3 Driver
- 4 Groove

Installing the rotor without a clamping nut

Installing the hub

Personnel:

- Trained user

1. → Open the lid.
2. → Clean the motor shaft (2) and rotor hole.
3. → Lightly grease the motor shaft (2), see → Chapter 8.2 'Instructions for cleaning and disinfection' on page 31.
4. → Place the hub (1) vertically on the motor shaft (2).
The driver (3) of the motor shaft must be in the groove (4) of the hub.
Check that the hub is firmly seated.
5. → Hand-tighten the clamping nut of the hub using the supplied hex key.
6. → Check that the hub is firmly seated.

Installing the rotor

1. → Clean the hub (2).
2. → Lift the rotor by the rotary handle and place it vertically on the hub (2).
3. → Push the rotor down as far as it will go.

6.3 Inserting and removing buckets

Inserting buckets



NOTICE

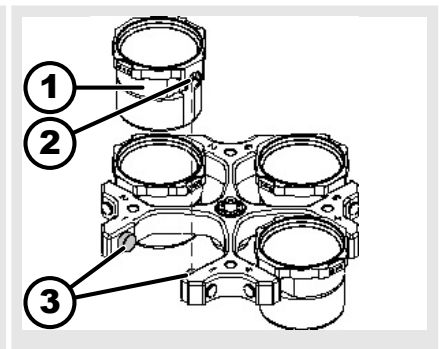
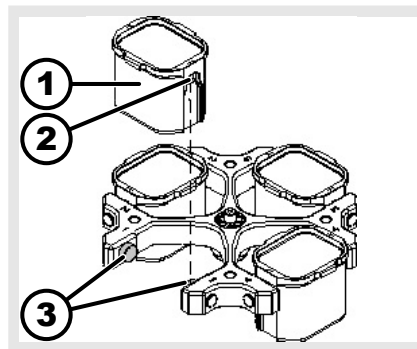
Damage to the device due to imbalances caused by incorrect loading of the rotor.

- Load all swing-out rotor locations with the same buckets.



Buckets marked with the number of the rotor location may only be used there.

Buckets marked with a set number may only be used together.



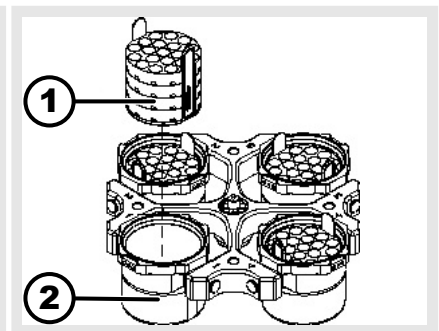
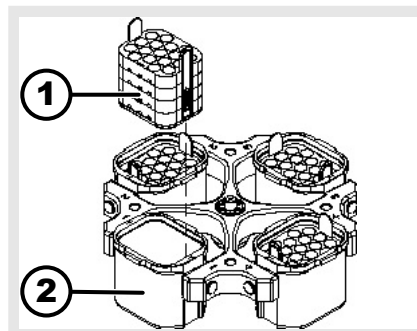
1. Check that the rotor is firmly seated.
2. Grease the trunnions (3).
3. Insert the bucket (1) into the rotor from above. The trunnions (3) must be in the grooves (2).
4. Push the bucket (1) down as far as it will go.

Removing the bucket

- Pull the bucket (1) vertically upwards out of the rotor.

6.4 Inserting and removing adapters

Inserting



the adapter

- Insert the adapter (1) vertically into the bucket (2) from above.

removing

- Remove the adapter (1) vertically upwards out of the bucket (2).

Adapter with positioning pin

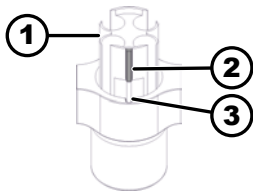


Fig. 18: Adapter with positioning pin

- 1 Inserting
- 2 Positioning pin
- 3 Inserting

the groove

➔ Insert the adapter (1) into the bucket
The positioning pin (2) must be in the groove (3) of the bucket.

removing

➔ Remove the adapter (1) vertically upwards out of the bucket.

6.5 Loading

Filling centrifuge tubes



WARNING

Risk of injury from contaminated sample material.

Contaminated sample material escapes from the sample tube during centrifugation.

- Use centrifuge tubes with special screw caps for hazardous substances.
- For risk group 3 and 4 materials, use a biosafety system in addition to the sealable centrifuge tubes (see WHO's 'Laboratory Biosafety Manual').



NOTICE

Damage to the device due to highly corrosive substances.

Highly corrosive substances may impair the mechanical strength of rotors, buckets and accessories.

- Do not centrifuge highly corrosive substances.



Standard glass centrifuge tubes can be loaded up to RCF 4000 (DIN 58970 part 2).

Personnel:

- Trained user

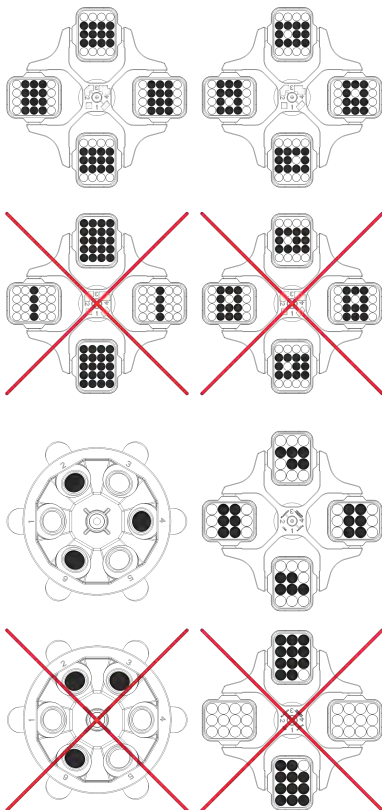
- ➔ Fill centrifuge tubes outside the centrifuge.

The maximum capacity of the centrifuge tubes specified by the manufacturer must not be exceeded.

With angle rotors, the centrifuge tubes must only be filled to the extent that no liquid can be ejected from the tubes during the centrifugation run.

It must be ensured that there is a uniform fill level in the tubes in order to keep the weight differences in the centrifuge tubes as low as possible.

Loading swing-out rotors



Loading the angle rotors

Personnel:

- Trained user

1. ➔ Check that the rotor is firmly seated.
2. ➔ The centrifuge tubes must be distributed symmetrically across all rotor locations.

The weight of the permissible filling capacity is indicated on each rotor. The weight must not be exceeded.

No liquid must be allowed to enter the buckets and the centrifuging chamber when loading the buckets and swinging them out during the centrifugation run.

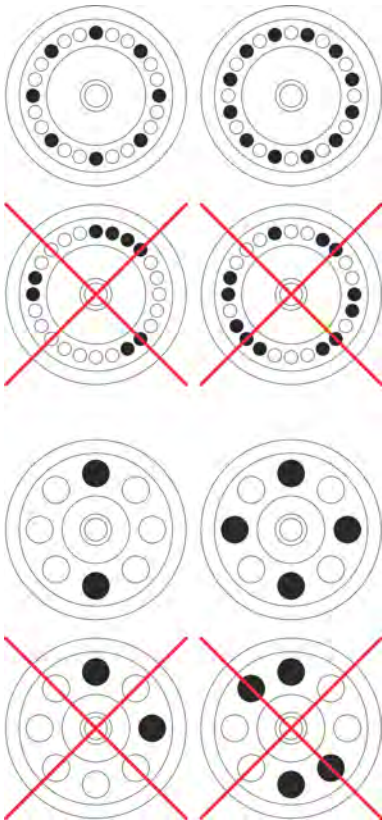
For containers with rubber inserts, there must always be the same number of rubber inserts under the centrifuge tubes.

All rotor locations must be filled with the same buckets. Certain buckets are marked with the number of the rotor location. The buckets must only be inserted in the corresponding rotor location.

Buckets marked with a set number (e.g. S001/4) may only be used in the set.

Personnel:

- Trained user



1. ➤ Check that the rotor is firmly seated.
2. ➤ The centrifuge tubes must be distributed evenly over all locations on the rotor.

No liquid must be allowed to enter the rotor and the centrifuging chamber when loading the rotor.

With rotors, the centrifuge tubes must only be filled to the extent that no liquid can be ejected from the tubes during the centrifugation run.

The weight of the permissible filling capacity is indicated on each rotor. The weight must not be exceeded.

6.6 Opening and closing the biosafety system

6.6.1 Explanation

The user must take appropriate actions when centrifuging hazardous substances or mixtures of substances that are toxic, radioactive or contaminated with pathogenic microorganisms.

Centrifuge tubes with special screw caps for hazardous substances must always be used.

For materials of risk group 3 and 4, a biosafety system must be used in addition to the sealable centrifuge tubes (see the World Health Organisation's "Laboratory Biosafety Manual").

In a biosafety system, a bioseal (sealing ring) prevents droplets and aerosols from escaping.

If the bucket of a biosafety system is used without the lid, the sealing ring must be removed from the bucket to prevent damage to the sealing ring during the centrifugation run.

Damaged biosafety systems are no longer microbiologically tight.

If no biosafety system is used, a centrifuge is not microbiologically tight in the sense of the EN / IEC 61010-2-020 standard.

Storage of biosafety systems

Biosafety systems must only be stored with the lid open to avoid damage to the sealing rings during storage.

6.6.2 Lid with screw cap

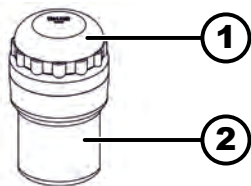


Fig. 19: Biosafety system

- 1 Lid
- 2 Bucket

Closing

1. Place the lid (1) centrally on the bucket (2).
2. Turn the lid (1) clockwise until it is tightly closed.

Opening

1. Turn the lid (1) anticlockwise until it is open.
2. Remove the lid (1) from the bucket (2).

6.7 Centrifugation

6.7.1 Centrifugation in continuous operation

Personnel:

- Trained user

1. Use the $[RPM/RCF \times 100]$ buttons to set the desired speed.
2. Use the $[t]$ buttons to set the time to zero.
 - "--" is displayed.
3. Press the $[START]$ button.

- The centrifugation run is started.

The 'Rotation' indicator light rotates while the rotor is turning.

Timing starts at 0. The first minute is counted up in seconds, then the time is displayed in minutes. A dot flashes next to the number if the time is displayed in minutes.

The rotor speed or the resulting RCF value and the elapsed time are displayed during the centrifugation run.

4. Press the $[STOP]$ button to cancel the centrifugation run.

Ramp-down takes place with the set brake level. The brake level is displayed.


An audible signal sounds when the rotor comes to a standstill.

6.7.2 Centrifugation with time preselection

Personnel:


- Trained user

1. Use the $[RPM/RCF \times 100]$ buttons to set the desired speed.
2. Use the $[t]$ buttons to set the desired time.

3.  Press the *[START]* button.
 - The centrifugation run is started.

The 'Rotation' indicator light rotates while the rotor is turning.

The time is displayed in minutes. The last minute is counted down in seconds. A dot flashes next to the number if the time is displayed in minutes.



The rotor speed or the resulting RCF value and the remaining time are displayed during the centrifugation run.
4.  Ramp-down takes place with the selected brake level after the time has elapsed or if the centrifugation run is cancelled by pressing the *[STOP]* button.

An audible signal sounds when the rotor comes to a standstill.

6.7.3 Short-term centrifugation


Personnel:

- Trained user

1.  Use the *[RPM/RCF x 100]* buttons to set the desired speed.
2.  Press and hold the *[IMPULSE]* button.
 - The centrifugation run is started.

The 'Rotation' indicator light rotates while the rotor is turning.

Timing starts at 0. The first minute is counted up in seconds, then the time is displayed in minutes. A dot flashes next to the number if the time is displayed in minutes.




The rotor speed and the elapsed time are displayed during the centrifugation run.
3.  Release the *[IMPULSE]* button to end the centrifugation run.
 - Ramp-down takes place with the set brake level. The brake level is displayed.

An audible signal sounds when the rotor comes to a standstill.



7 Software operation

7.1 Centrifugation parameters

7.1.1 Set the brake level

1.  Switch off the mains switch.
2.  Press and hold down the ▲ *[RPM/RCF x 100]* button and the *[IMPULSE]* button simultaneously.
3.  Switch on the mains switch and release the buttons.
 - Press the ▲ *[RPM/RCF x 100]* button repeatedly until the speed indicator shows the machine version and the time indicator shows the brake level set (and/or '0' or '1').

The machine version is set ex works and cannot be changed.

The machine version is set ex works and cannot be changed.
4.  Use the *[t]* buttons to set the desired brake level.
 - Level 1 = short ramp-down time.
 - Level 0 = long ramp-down time.
5.  Press the *[STOP]* button to save the settings.

7.1.2 Relative centrifugal force, RCF

The relative centrifugal force RCF is dependent on the speed and the centrifuging radius.

The relative centrifugal force RCF is stated as a multiple of the acceleration due to gravity (g).

The relative centrifugal force RCF is a dimensionless numerical value and is used to compare the separation and sedimentation performance.

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



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

RCF = relative centrifugal force

RPM = Speed

r = centrifuging radius in mm = distance from the centre of the axis of rotation to the bottom of the centrifuge tube.

Display of the relative centrifugal force (RCF)

1.  Press and hold the *[RCF]* button during the centrifugation run.
 - Relative centrifugal force (RCF) is displayed.
2.  Release the *[RCF]* button.
 - The speed is displayed.

7.1.3 Centrifugation of substances or mixtures of substances with a density higher than 1.2 kg/dm³

The density of the substances or mixtures of substances must not exceed 1.2 kg/dm³ during centrifugation at maximum speed. The maximum permissible speed must be reduced for substances or substance mixtures with a higher density. The permissible speed can be calculated using the following formula:

$$\text{Reduced speed } (n_{red}) = \sqrt{\frac{1,2}{\text{Greater density [kg/dm}^3\text{]}}} * \text{maximum speed [RPM]}$$

For example: Maximum speed 4000 RPM, density 1.6 kg/dm³

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

If, in exceptional cases, the maximum load indicated on the bucket is exceeded, the speed must also be reduced. The permissible speed can be calculated using the following formula:

$$\text{Reduced speed } (n_{red}) = \sqrt{\frac{\text{maximum load [g]}}{\text{actual load [g]}}} * \text{maximum speed [RPM]}$$









For example: Maximum speed 4000 RPM, maximum load 300 g, actual load 350 g

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

Please contact the manufacturer if you are not sure.

7.1.4 Centrifuging radius

The centrifuging radius must be entered in centimetres.

1.  Switch off the mains switch.
2.  Press and hold down the  *[RPM/RCF x 100]* button and the *[IMPULSE]* button simultaneously.
3.  Switch on the mains switch and release the buttons.
4.  Press the  *[RPM/RCF x 100]* button repeatedly until the centrifuging radius and 'rd' are displayed.
5.  Use the *[t]* buttons to set the desired centrifuging radius.
6.  Press the *[STOP]* button to save the settings.

7.2 Rotor detection

- Rotor detection is performed after starting a centrifugation run.
- If the rotor has been changed, the centrifugation run is cancelled after rotor detection. The rotor code (rot) is displayed.
- If the maximum speed of the rotor used is less than the set speed, the speed is limited to the maximum rotor speed.

7.3 Machine Menu

7.3.1 Audible signal









7.3.1.1 General

The audible signal sounds:

- after a problem occurs in the 2 s interval.
- after completion of the centrifugation run and rotor standstill in the 30 s interval.

Opening the lid or pressing any button stops the audible signal.

7.3.1.2 Setting an audible signal

1.  Switch off the mains switch.
2.  Press and hold down the  *[RPM/RCF x 100]* button and the *[IMPULSE]* button simultaneously.
3.  Switch on the mains switch and release the buttons.
4.  Press the  *[RPM/RCF x 100]* button repeatedly until 'BEL 1' or 'BEL 0' is displayed.
5.  Use the *[t]* buttons beneath the time indicator to set '0' or '1'.
0 = audible signal disabled.
1 = audible signal enabled.
6.  Press the *[STOP]* button to save the settings.

8 Cleaning and care

8.1 Overview table

Chap.	Task to execute	if required	daily	weekly	Annually	Page
8	Cleaning and care					30
8.3	Cleaning					32
8.3	Cleaning the device		X			32
8.3	Cleaning biosafety systems			X		32
8.3	Cleaning accessories			X		32
8.4	Disinfection					32
8.4	Disinfecting the device	X				33
8.4	Disinfecting the accessories	X				33
8.5	Maintenance					33
8.5	Greasing the rubber seal of the centrifuging chamber			X		33
8.5	Greasing the rubber seal of the biosafety system			X		33
8.5	Trunnion greasing			X		34
8.5	Checking the accessories			X		34
8.5	Checking the biosafety system			X		34
8.5	Centrifuging chamber damage inspection				X	34
8.5	Greasing the motor shaft				X	34
8.5	Accessories with a limited service life	X				34
8.5	Replacing centrifuge tubes	X				34

8.2 Instructions for cleaning and disinfection



DANGER

Risk of contamination

Inadequate cleaning or failure to observe the cleaning instructions can lead to contamination risks.

- Observe national and local regulations on safety and accident prevention.
- Observe cleaning instructions.
- Wear personal protective equipment when cleaning the device.
- Comply with laboratory regulations (e.g. TRBAs, the German Protection against Infection Act, hygiene plan) for handling biological agents.








- The device and its accessories must not be cleaned in dishwashers.
- Only perform hand cleaning and liquid disinfection.
- The water temperature must not exceed 25 °C.
- To prevent any corrosion due to use of detergents or disinfectants, it is essential to follow the special application instructions provided by the manufacturers of the detergent or disinfectant.

Disinfectant:




- Surface disinfectant (not disinfectant for hands or instruments)
- Ethanol as the sole active substance.
Do not use an ethanol-propanol mixture to disinfect the viewing window in the lid of the device.
- Concentration is not less than 30 %
- pH: 6 – 8
- Non-corrosive

8.3 Cleaning




Cleaning the device

1.  Open the lid.
2.  Switch off the device and disconnect it from the power supply.
3.  Remove accessories.
4.  Clean the centrifuge housing and the centrifuging chamber with soap or a mild detergent and a damp cloth.
5.  Remove any detergent residues with a damp cloth after using detergents.
6.  The surfaces must be dried immediately after cleaning.
7.  Dry the centrifuging chamber with an absorbent cloth if condensation forms.

Cleaning biosafety systems

1.  Clean the biosafety system using the detergent and a damp cloth.
2.  Remove any detergent residues with a damp cloth after using detergents.
3.  Dry the accessories immediately after cleaning using a lint-free cloth and oil-free compressed air. Dry all cavities completely using oil-free compressed air.

Cleaning accessories

1.  Clean the accessories using the detergent and a damp cloth.
2.  Remove any detergent residues with a damp cloth after using detergents.
3.  Dry the accessories immediately after cleaning using a lint-free cloth and oil-free compressed air. Dry all cavities completely using oil-free compressed air.

8.4 Disinfection



Disinfection must always be preceded by cleaning of the components concerned.

See → Chapter 8.3 'Cleaning' on page 32



Disinfectant concentration and application time according to the manufacturer's instructions.

Disinfecting the device



CAUTION

Risk of injury due to ingress of water or other liquids.

- Protect the device against external liquids.
- Do not disinfect the device using spray.

1. Open the lid.
2. Switch off the device and disconnect it from the power supply.
3. Remove accessories.
4. Clean the housing and centrifuging chamber using disinfectant.
5. Remove any disinfectant residues with a damp cloth after using disinfectants.
6. The surfaces must be dried immediately after cleaning.

Disinfecting the accessories

1. Disinfect the accessories using the disinfectant.
2. Wet all cavities with bubble-free disinfectant.
3. Remove the disinfectant residues or leave them to dry after using disinfectants.

Autoclaving

The following accessories may be autoclaved at 121 °C / 250 °F (20 min):

- Swing-out rotors
- Aluminium angle rotors
- Metal buckets
- Lid with bioseal
- Inserting

No statement can be made about the resulting degree of sterility.

The lids of the rotors and bucket must be removed before autoclaving.

Autoclaving accelerates the ageing of materials. It may cause changes in colour. After autoclaving, the rotors and accessories are to be visually inspected for damage and any damaged parts are to be replaced immediately.

The sealing ring in question is to be replaced if there are signs of cracking, embrittlement or wear. For lids with non-replaceable sealing rings, the whole lid must be replaced.

The sealing rings must be replaced after autoclaving to ensure the tightness of the biosafety systems.

8.5 Maintenance






Greasing the rubber seal of the centrifuging chamber

- Rub the sealing ring lightly with a rubber care product.



Greasing the rubber seal of the biosafety system

- Rub the sealing ring lightly with a rubber care product.





Trunnion greasing

1.  Remove accessories.
2.  Clean the trunnions.
3.  Remove any detergent residues with a damp cloth after using detergents.
4.  Grease the trunnions and suspension with Hettich Tubenfett 4051.
5.  Excess grease in the centrifuging chamber must be removed.

Checking the accessories

1.  The accessories shall be checked for wear and corrosion damage.
2.  Check that the rotor is firmly seated.






Checking the biosafety system

1.  Visually check all parts of the biosafety system for damage.
2.  Check the correct installation position of the sealing ring(s) of the biosafety system.
3.  Replace the damaged parts of the biosafety system.
4.  Replace the sealing ring in question immediately if there are signs of cracking, embrittlement or wear. For lids with non-replaceable sealing rings, the whole lid must be replaced.

Centrifuging chamber damage inspection

-  Check the centrifuging chamber for damage.

Greasing the motor shaft

1.  Remove accessories.
2.  Clean the motor shaft.
3.  Remove any detergent residues with a damp cloth after using detergents.
4.  Grease the motor shaft with Hettich Tubenfett 4051.
5.  Excess grease in the centrifuging chamber must be removed.

Accessories with a limited service life

The use of certain accessories is time-limited. For safety reasons, the accessories must no longer be used when either the maximum number of permissible run cycles marked on them or the expiry date marked on them has been reached.

- The maximum permissible number of run cycles or the expiry date can be seen on the accessories.

Replacing centrifuge tubes



CAUTION

Risk of injury from broken glass.

Broken glass may cause glass splinters and contaminated liquids to be found inside the centrifuge.

- Wear cut-resistant gloves.
- Wear protective goggles and a face mask.

Broken parts of the tube, glass splinters and spilled centrifuge material must be removed completely in the event of leakage or if a centrifuge tube breaks. Glass splinters that are not removed will cause further glass breakage.

The rubber inserts and the plastic sleeves of the rotors must be replaced after a glass breakage.

Disinfection must be carried out if the material is infectious.

9 Troubleshooting

9.1 Fault description

Customer service must be notified if the fault cannot be rectified based on the fault table. State the centrifuge type and serial number. Both numbers can be seen on the type plate of the centrifuge.

Fault description	Cause	Remedy
no display	No power. Mains input fuses defective.	<ul style="list-style-type: none"> ■ Check the supply voltage. ■ Check the mains input fuse. ■ Set the mains switch to <i>/I/</i>.
-1-	Tacho error. Speed pulse failure.	<ul style="list-style-type: none"> ■ The device must not be switched off while the '<i>Rotation</i>' indicator is lit up and rotating. <p>Wait until the '<i>Lid closed</i>' symbol is displayed (after approx. 100 seconds) and then perform a MAINS RESET.</p>
-2-	Loss of mains power during the centrifugation run. The centrifugation run was not completed.	<ul style="list-style-type: none"> ■ Open the lid and press the <i>[START]</i> button. ■ If required: Repeat the centrifugation run.
-3-	Imbalance. The rotor is unevenly loaded.	<ul style="list-style-type: none"> ■ Open the lid. ■ Check the loading of the rotor. ■ Repeat the centrifugation run.
-4-	Communication. Error in the control section or power section.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
-5-	Overload. Motor or motor control defective.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
-6-	Overvoltage. Mains voltage outside tolerances.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET. ■ Check the mains voltage.
-7-	Overspeed. Error in the power section.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
-8-	Undervoltage. Mains voltage outside tolerances.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET. ■ Check the mains voltage.
-9-	Overtemperature. Overtemperature switch in the motor has tripped.	<ul style="list-style-type: none"> ■ Open the lid using the emergency release. ■ Let the motor cool down.
Version Error	Wrong machine version set. The control section skips to the Settings menu.	<ul style="list-style-type: none"> ■ Use the <i>[t]</i> buttons to set the number 7 . ■ Press the <i>[STOP]</i> button to save the settings. ■ Perform a MAINS RESET.

Fault description	Cause	Remedy
no speed indicator. Machine version set in the time indicator.	Version Error. Wrong machine version set. The control section skips to the Settings menu.	<ul style="list-style-type: none"> ■ Use the <i>[t]</i> buttons to set the number 7 . ■ Press the <i>[STOP]</i> button to save the settings. ■ Perform a MAINS RESET.
-c-	Controller watchdog. Error in the power section.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
-d-	Lid lock error.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
-E-	Short circuit in the control section / power section.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
-F-	No rotor detection when starting. No rotor inserted or defective tacho.	<ul style="list-style-type: none"> ■ Perform a MAINS RESET.
rot...	A new rotor has been detected.	<ul style="list-style-type: none"> ■ Press the <i>[START]</i> button.
888888 All indicator segments light up.	-	<ul style="list-style-type: none"> ■ Notify customer service.

9.2 Performing a MAINS RESET

1. ➔ Set the mains switch to *[0]*.
2. ➔ Wait 10 seconds.
3. ➔ Set the mains switch to *[I]*.

9.3 Emergency release

The lid cannot be unlocked by the motor in the event of a power failure. Emergency unlocking by hand must be performed.



! WARNING

Risk of electric shock due to maintenance and servicing work on live device.

- Disconnect the device from the mains before carrying out repairs and maintenance.



WARNING

Danger of cutting and crushing due to moving rotor.

- Do not open the lid until the rotor has stopped.

Personnel:

- Trained user

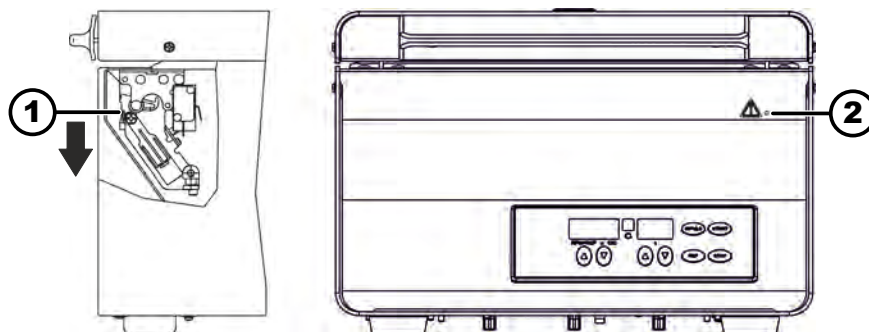


Fig. 20: Emergency release

- 1 Release pin
- 2 Hole

1. Look through the window in the lid to ensure that the rotor is stationary.
2. Insert the release pin (1) horizontally into the hole (2). Push it in until the handle strip can be swivelled upwards when the pin is pressed down.
3. Open the lid.

9.4 Replacing the mains input fuse



! WARNING

Risk of electric shock due to maintenance and servicing work on live device.

- Disconnect the device from the mains before carrying out repairs and maintenance.

Personnel:

- Trained user

The mains fuses are located next to the mains switch.

The mains switch is in switch position [O]

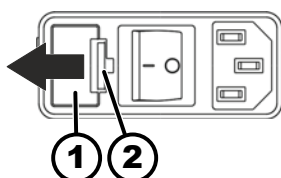


Fig. 21: Mains input fuse

- 1 Fuse holder
- 2 Snap lock

1. Disconnect the mains cable from the device plug.
2. Press the snap lock (2) against the fuse holder (1) and pull it out.
3. Replace the defective mains input fuses.

Only use fuses with the nominal value specified for the type: see the table below.

4. Push in the fuse holder (1) until the snap lock engages.
5. Reconnect the device to the mains.

Model	Type	Fuse	Order no.
ROTOFIX 32 A	1206, 1206-34	T 3.15 AH/250 V	E997
ROTOFIX 32 A	1206-01, 1206-33	T 5 AH/250 V	E914

10 Disposal

10.1 General instructions



The device can be disposed of via the manufacturer.

A Return Material Authorisation (RMA) form must always be requested for a return.

If necessary, contact the Technical Service Department of the manufacturer:

- **Andreas Hettich GmbH**
- Föhrenstraße 12
- 78532 Tuttlingen, Germany
- Phone: +49 7461 705 1400
- E-Mail: service@hettichlab.com



! WARNING

Risk of soiling and contamination

Damage to the environment and health due to improper disposal.

- Observe national and local environmental protection and disposal regulations to ensure proper disposal or recycling. Separate metals, non-metals, composite materials and auxiliary materials by type and dispose of them in an eco-friendly manner.
- The device may only be disassembled and disposed of by trained and authorised service technicians.

The device is intended for the commercial sector ("Business to Business" - B2B).

According to Directive 2012/19/EU, the devices may no longer be disposed of with household waste.

The devices are assigned to the following groups according to the Stiftung Elektro-Altgeräte Register (EAR (German foundation under civil law)):

- Group 5 (small devices)

The crossed-out wheelle bin symbol indicates that the device must not be disposed of with household waste. Regulations governing disposal of such devices may differ in individual countries. If necessary, contact the supplier.



Fig. 22: Household waste ban

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