

Universal Centrifuges

■ Z 446

■ Z 446 K



HERMLE
LABORTECHNIK

4 x 750 ml

Z 446

Z 446 K



Specifications

- Maintenance-free induction drive
- Microprocessor with large LCD display
- Motor driven lid lock
- Automatic rotor identification system with over speed protection, immediately upon rotor insertion
- Active imbalance identification and cut off (rotor-specific)
- CFC-free refrigeration system
- A large variety of rotors and accessories
- Audible signal at the end of each run with several melody options
- Noise level < 65 dBA (depend on rotor)
- Manufactured according to international safety regulations, i. e. IEC 61010
- Stainless steel chamber

These high-volume centrifuges Z 446 and Z 446 K achieve a throughput of 68 x 15 ml conical tubes or 28 x 50 ml conical tubes at a max. RCF of 3434/4346 xg. If higher speeds are required, we also offer e.g. an angle rotor with a max. RCF of 16022 xg for 10 x 50 ml. The fixed-angle and swing-out rotors are suitable for almost all applications in everyday use in clinical, industrial and research laboratories.

Technical Data

max. speed: 16000 rpm
max. RCF: 24325 xg / 26328 xg
max. volume: 4 x 750 ml
speed range: 200 - 16000 rpm
Temperature range
Z 446 K: -20°C to 40°C
Running time: 59 min 50 s / 10 s increments
99 h 59 min / 1 min increments

Dimensions:
Z 446: 54 cm x 39 cm x 67 cm (WxHxD)
Z 446 K: 73 cm x 39 cm x 67 cm (WxHxD)

Weight:
Z 446: 79 kg
Z 446 K: 111 kg

Power input:
Z 446: 640 W
Z 446 K: 1630 W

Order numbers:
Z446: 316.00 V01 - Z446, 230 V / 50 - 60 Hz
316.00 V02 - Z446, 120 V / 50-60 Hz
Z446K: 317.00 V01 - Z446 K, 230 V / 50 - 60 Hz
317.00 V02 - Z446 K, 120 V / 50-60 Hz



Distinct Control Panel

- Simple one handed operation
- Easy to program with gloves on
- Foil keyboard
- Permanent indication of preset and actual values
- Selection of speed in both rpm and g-force, with increments of 10
- 10 acceleration and deceleration rates, possibility of unbraked deceleration
- Temperature range from -20°C bis 40°C with 1°C increments
- Pre-cooling program
- Standstill cooling
- Pre-selection of the running time from 10 s to 99 h 59 min or continuous
- Storage of up to 99 runs including rotor
- Quick-key for short runs

Accessories Z 446 and Z 446 K

Rotor/Bucket	Adapter		
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Order No.:
221.36 V02
Swing out rotor 4 place
Angle: 0-90°



616.102
PC-Screw cap
for round bucket 616.100



616.112
PC-Lid
for rectangular bucket 616.110



Order No.:
616.100
Round bucket



Acceleration in s: 47/483
Deceleration in s: 49/1287
Acceleration in s: 55/551
Deceleration in s: 54/1501
max. speed: 4000/4500 rpm
max. RCF: 3434/4346 xg
max. radius: 19,2 cm
Temp. at max. speed: 4°C

616.111
Removing aid
for rectangular bucket 616.110



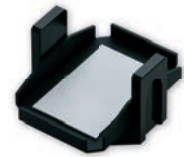
Order No.:
616.110
Rectangular bucket
for Microtitre plates



Acceleration in s: 47/483
Deceleration in s: 49/1287
Acceleration in s: 55/551
Deceleration in s: 54/1501
max. speed: 4000/4500 rpm
max. RCF: 3130/3961 xg
max. radius: 17,5 cm
max. loading height: 80 mm
max. loading weight: 640 g
Temp. at max. speed: 4°C

Adapters for rectangular bucket
on request

Order No.:
616.120
Microtitre carrier



Acceleration in s: 47/482
Deceleration in s: 49/1287
Acceleration in s: 55/551
Deceleration in s: 54/1501
max. speed: 4000/4500 rpm
mac. RCF: 2754/3486 xg
max. radius: 15,4 cm
max. loading height: 72 mm
max. loading weight: 310 g
Temp. at max. speed: -3°C

Volume	750 ml	500 ml	250 ml	225 ml	175 ml	100 ml	50 ml	50 ml	50 ml	30 ml	15 ml	15 ml	15 ml	10 ml	7 ml
ø in mm	98	98	62	61	61	41,5	29	29	29	26	17	17	17	16	13
Round bucket															
Length min./max. (mm)	152	114	135	137	118	102/123	116	116	102/123	102/123	121	121	97/120	70/121	98/119
Tubes per rotor	4	4	4	4	4	12	20	28	28	32	56	68 ¹	72	84	128
Radius correction (cm)	0	0	0,4	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,3	0,5	0,4	0,6
Order No. Adapter	without	without	716.024	716.100	716.100	716.023	716.101	716.102	716.021	716.020	716.103	716.104	716.018	716.015	716.016

¹ 2-level

	Vacutainer				Sarstedt								
Volume	1,8 - 5 ml	4 - 7 ml	5 ml	6 - 10 ml	1,1 - 4 ml	2 - 3 ml	3,5 - 5 ml	2,6 - 2,9 ml	2,7 - 4,3 ml	4,9 ml	4,0 - 5,5 ml	7,5 - 8,2 ml	9 - 10 ml
ø in mm	13	13	16	16	8	11	11	13	13	13	15	15	16
Round bucket													
Length min./max. (mm)	75	100	75	100	66	66	92	65	75	90	75	92	92
Tubes per rotor	84	84	72	72	152	84	84	84	84	84	72	72	72
Radius correction (cm)	0,3	0,3	0,3	0,3	0,4	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Order No. Adapter	716.106	716.106	716.105	716.105	716.109	716.106	716.106	716.106	716.106	716.106	716.105	716.105	716.105

Order No.:
221.16 V03



Swing out rotor 2 x 3 Microtitreplates
Angle: 0-90°

Acceleraton in s: 27/249
Deceleration in s: 23/488
max. speed: 4500 rpm
max. RCF: 2716 xg
max. radius: 12 cm
max. loading height: 63 mm
max. loading weight: 310 g
Temp. at max. speed: -8°C

Order No.:
706.000
Tube rack
48 x 1,5 ml (2,0 ml)
Reaction tubes

Order No.:
221.17 V07



Angle rotor 30 x 1,5/2,0 ml
Angle: 45°

Acceleration in s: 23/221
Deceleration in s: 30/561
max. speed: 15000 rpm
max. RCF: 23643 xg
max. radius: 9,4 cm
max. ø: 11 mm
Temp. at max. speed: 3°C

Order No.:	Tube rack	ø (mm)	Length (min./max.)
without	1 x 2,0 ml	11	40
without	1 x 1,5 ml	11	40
704.005	1 x 0,5 ml	8	45
704.004	1 x 0,4/0,2 ml PCR	6	45

Accessories Z 446 and Z 446 K

Rotor/Bucket

Order No.:
220.86 V02
Swing out rotor 4 place
Angle: 0-90°



Adapter

610.000
Rectangular bucket



Acceleration in s: 26/252
Deceleration in s: 28/560
Acceleration in s: 30/273
Deceleration in s: 31/626
max. speed: 4500/5000 rpm
max. RCF: 3894/4807 xg
max. radius: 17,2 cm
Temp. at max. speed: 4°C

611.000
Round bucket



Acceleration in s: 26/250
Deceleration in s: 27/415
Acceleration in s: 30/277
Deceleration in s: 30/526
max. speed: 4500/5000 rpm
max. RCF: 3894/4807 xg
max. radius: 17,2 cm
Temp. at max. speed: 0°C

Volume	250 ml	225 ml	100 ml	85 ml	80 ml	50 ml	50 ml	50 ml	25 ml	15 ml	15 ml	7 ml	5 ml
ø in mm	62	61	40	38	44	34	29	28,5	24	17	17	13	13
Rectangular bucket Length min./max. (mm)	100/120	138	90/120	90/125	90/120	90/115	116	90/120	90/115	120	85/120	90/100	55/75
Tubes per rotor	4	4	4	4	4	8	8	8	20	24	48	80	80
Radius correction (cm)	0,3	0,4	0,6	0,4	0,6	0,6	0,4	0,4	0,6	0,3	0,7	0,6	0,6
Order No. adapter	710.000	710.001	710.002	710.003	710.004	710.005	710.007	710.006	710.009	710.011	710.010	710.013	710.014

Round bucket Length min./max. (mm)	122	138	114	80/120	85/110	85/120	116	95/130	85/120	120	105/120	100	55/75
Tubes per rotor	4	4	4	4	4	4	4	4	8	16	28	48	48
Radius correction (cm)	0,1	0,2	0,2	0,2	0,7	0,7	0,3	0,2	0,5	-/	0,5	0,5	0,5
Order No. adapter	without rack	713.009	713.010	713.011	711.003	711.004	711.006	711.005	711.007	711.009	711.008	711.010	711.011

Volume	Vacutainer				Sarstedt			
	1,8 - 5 ml	4 - 7 ml	5 ml	6 - 10 ml	2 - 5 ml 3,5-5 ml	4,9 ml	4 - 5,5 ml 7,5 - 8,2 ml	9 - 10 ml
ø in mm	13	13	16	16	11	13	15	16,5
Rectangular bucket Length min./max. (mm)	75	100	75	100	66/92	90	75/92	92
Tubes per rotor	56	56	48	48	60	60	48	32
Radius correction (cm)	0,4	0,4	0,4	0,7	0,6	0,4	0,4	0,4
Order No. adapter	710.016	710.017	710.015	710.010	710.022	710.021	710.020	710.019

Round bucket Length min./max. (mm)	75	100	75	100	66/92	90	75/92	92
Tubes per rotor	32	32	28	28	48	48	28	20
Radius correction (cm)	0,2	0,2	0,2	0,5	0,5	0,5	0,7	0,2
Order No. adapter	713.002	713.003	713.001	711.008	713.004	713.006	713.005	713.007

Order No.:
221.08 V04
Swing out rotor
4 place
Angle: 90°



625.100
PC-Screw cap for round
bucket

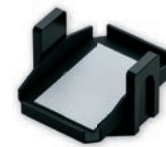


Order No.:
625.004
Round bucket



Acceleration in s: 35/320
Deceleration in s: 34/751
max. speed: 4500 rpm
max. RCF: 4210 xg
max. radius: 18,6 cm
Temp. at max. speed: 0°C

Order No.:
625.020
Mikrotitre carrier



Acceleration in s: 34/319
Deceleration in s: 33/727
max. speed: 4500 rpm
max. RCF: 3327 xg
max. radius: 14,7 cm
max. loading height: 63 mm
max. loading weight: 310 g
Temp. at max. speed: -2°C





Volume	Vacutainer									Sarstedt		
	500 ml ²	250 ml	50 ml	50 ml ²	15 ml	1,5/2,0 ml	1,8 - 5 ml	4 - 7 ml	5 ml	6 - 10 ml	2,6 - 2,9 ml 2,7 - 4,3 ml 4,9 ml	4 - 5,5 ml 7,5 - 8 ml 9 - 10 ml
ø in mm	80	62	28,5	28,5	16	11	13	13	16	16	13	16
Length min./max. (mm)	126	110/130	120	120	120	42	75	100	75	100	65/90	75/92
Tubes per rotor	4	4	20	28	48	100	88	88	76	76	76	56
Radius correction (cm)	0,9	0,6	0,4	0,4	0	6,4	3,8	1,4	0,2	1,7	0,1	0,2
Order No. adapter	625.004	625.003	625.002	625.001	625.000	625.013	625.009	625.014	625.023	625.010	625.008	625.007

² only without bucket lid

Accessories Z 446 and Z 446 K

Rotor/Bucket		Adapter			
Order No.: 221.18 V02  Angle rotor 6 x 85 ml Angle: 38°	Acceleration in s: 48/463 Deceleration in s: 46/1654 Acceleration in s: 69/549 Deceleration in s: 67/1307 max. speed: 11000/13000 rpm max. RCF: 15555/21726 xg max. radius: 11,5 cm max. ø: 38 mm Temp. at max. speed: 8°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		707.001	1 x 15 ml	17	103/110
		707.002	1 x 30 ml	25	90/103
		707.003	1 x 50 ml	29	105
		707.004	1 x 50 ml conical	29	118
		707.014	1 x 15 ml conical	17	120
		without	1 x 85 ml	38	113
		707.000	2 x 15 ml	17	95/100
		707.015	1 x 16 ml	18	103/110
Order No.: 221.20 V02  Angle rotor 4 x 85 ml Angle: 30°	Acceleration in s: 50/448 Deceleration in s: 45/1251 Acceleration in s: 61/480 Deceleration in s: 47/1220 max. speed: 15000/16000 rpm max. RCF: 23140/26328 xg max. radius: 9,2 cm max. ø: 38 mm Temp. at max. speed: 7°	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		707.001	1 x 15 ml	17	103/110
		707.002	1 x 30 ml	25	90/103
		707.003	1 x 50 ml	29	105
		707.004	1 x 50 ml conical*	29	118
		707.014	1 x 15 ml conical*	17	120
		without	1 x 85 ml	38	113
		707.000	2 x 15 ml	17	95/100
		707.015	1 x 16 ml	18	103/110
			* only without rotor lid		
Order No.: 221.21 V02  Angle rotor 6 x 250 ml Angle: 28°	Acceleration in s: 66/573 Deceleration in s: 84/1903 max. speed: 8000 rpm max. RCF: 10016 xg max. radius: 14 cm max. ø: 62 mm Temp. at max. speed: -1°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		713.042	1 x 50 ml conical	29	118
		713.030	1 x 50 ml	29	103
		713.028	2 x 30 ml	26	92
		713.025	4 x 15 ml conical	17	120
		713.020	5 x 10 ml	16	80
		713.015	8 x 1,5 ml	11	40
		without	1 x 250 ml	62	122
Order No.: 221.22 V02  Angle rotor 6 x 50 ml Angle: 26°	Acceleration in s: 28/264 Deceleration in s: 32/921 max. speed: 13000 rpm max. RCF: 15869 xg max. radius: 8,4 cm max. ø: 29 mm Temp. at max. speed: -4°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		without	1 x 50 ml	29	95/115
		708.019	1 x 30 ml	25	92/95
		708.003	1 x 16 ml	18	100/105
		708.004	1 x 15 ml	17	100/105
		708.017	1 x 15 ml conical*	17,5	116/125
			* only without rotor lid		
Order No.: 221.28 V02  Angle rotor 20 x 10 ml Angle: 30°	Acceleration in s: 32/305 Deceleration in s: 37/988 max. speed: 12000 rpm max. RCF: 15775 xg max. radius: 9,8 cm max. ø: 16 mm Temp. at max. speed: -2°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		without	1 x 10 ml	16	80
Order No.: 221.51 V02  Angle rotor 4 x 500 ml Angle: 24°	Acceleration in s: 73/575 Deceleration in s: 82/2317 max. speed: 8000 rpm max. RCF: 10367 xg max. radius: 14,5 cm max. ø: 69,5 mm Temp. at max. speed: 0°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		712.001	1 x 250 ml	61,5	195
		712.102	1 x 250 ml-Corning	60,5	171
		712.100	1 x 175 ml conical	61,5	118
		712.100	1 x 225 ml conical	61,5	137
		712.101	1 x 50 ml conical	29,5	115
		712.104	3 x 50 ml	29	103
		712.103	4 x 30 ml	25,5	92
		712.105	6 x 15 ml conical	17	120
Order No.: 221.52 V02  Angle rotor 10 x 50 ml conical Angle: 38°	Acceleration in s: 60/480 Deceleration in s: 68/1747 Acceleration in s: 56/458 Deceleration in s: 64/1700 max. speed: 10000/10500 rpm max. RCF: 14532/16022 xg max. radius: 13 cm max. ø: 29 mm Temp. at max. speed: 2°C		50 ml conical	15 ml conical	15 ml
					
		ø Tube in mm:	29	17	17
		Length in mm:	116	121	97-116
		Order No. adapter:	without	708.030	708.030

Accessories Z 446 and Z 446 K

Rotor/Bucket	Adapter																				
<p>Order No.: 220.87 V16</p>  <p>Angle rotor 24 x 1,5/2,0 ml Angle: 45°</p>	<p>Acceleration in s: 21/204 Deceleration in s: 30/421 max. speed: 16000 rpm max. RCF: 24325 xg max. radius: 8,5 cm max. ø: 11 mm Temp. at max. speed: 1°C</p> <table border="1"> <thead> <tr> <th>Order No.:</th> <th>Tube rack</th> <th>ø (mm)</th> <th>Length (min./max.)</th> </tr> </thead> <tbody> <tr> <td>without</td> <td>1 x 2,0 ml</td> <td>11</td> <td>40</td> </tr> <tr> <td>without</td> <td>1 x 1,5 ml</td> <td>11</td> <td>40</td> </tr> <tr> <td>704.005</td> <td>1 x 0,5 ml</td> <td>8</td> <td>45</td> </tr> <tr> <td>704.004</td> <td>1 x 0,4/0,2 ml PCR</td> <td>6</td> <td>45</td> </tr> </tbody> </table>	Order No.:	Tube rack	ø (mm)	Length (min./max.)	without	1 x 2,0 ml	11	40	without	1 x 1,5 ml	11	40	704.005	1 x 0,5 ml	8	45	704.004	1 x 0,4/0,2 ml PCR	6	45
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704.005	1 x 0,5 ml	8	45																		
704.004	1 x 0,4/0,2 ml PCR	6	45																		
<p>Order No.: 220.87 V15</p>  <p>Angle rotor 24 x 1,5/2,0 ml Angle: 45° aerosol-tight</p>	<p>Acceleration in s: 21/205 Deceleration in s: 29/421 max. speed: 16000 rpm max. RCF: 24325 xg max. radius: 8,5 cm max. ø: 11 mm Temp. at max. speed: 1°C</p> <table border="1"> <thead> <tr> <th>Order No.:</th> <th>Tube rack</th> <th>ø (mm)</th> <th>Length (min./max.)</th> </tr> </thead> <tbody> <tr> <td>without</td> <td>1 x 2,0 ml</td> <td>11</td> <td>40</td> </tr> <tr> <td>without</td> <td>1 x 1,5 ml</td> <td>11</td> <td>40</td> </tr> <tr> <td>704.005</td> <td>1 x 0,5 ml</td> <td>8</td> <td>45</td> </tr> <tr> <td>704.004</td> <td>1 x 0,4/0,2 ml PCR</td> <td>6</td> <td>45</td> </tr> </tbody> </table>	Order No.:	Tube rack	ø (mm)	Length (min./max.)	without	1 x 2,0 ml	11	40	without	1 x 1,5 ml	11	40	704.005	1 x 0,5 ml	8	45	704.004	1 x 0,4/0,2 ml PCR	6	45
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704.004	1 x 0,4/0,2 ml PCR	6	45																		
<p>Order No.: 221.38 V01</p>  <p>Angle rotor 4 x 8-PCR Strips</p>	<p>Acceleration in s: 12/100 Deceleration in s: 12/201 max. speed: 15000 rpm max. RCF: 15343 xg max. radius: 6,1 cm max. ø: 6 mm Temp. at max. speed: -2°C</p>																				
<p>Order No.: 220.88 V09</p>  <p>Angle rotor 44 x 1,5/2,0 ml Angle: 32°/55°</p>	<p>Acceleration in s: 25/233 Deceleration in s: 30/283 max. speed: 16000 rpm max. RCF: 24039 xg max. radius: 8,4 cm max. ø: 11 mm Temp. at max. speed: 3°C</p> <table border="1"> <thead> <tr> <th>Order No.:</th> <th>Tube rack</th> <th>ø (mm)</th> <th>Length (min./max.)</th> </tr> </thead> <tbody> <tr> <td>without</td> <td>1 x 2,0 ml</td> <td>11</td> <td>40</td> </tr> <tr> <td>without</td> <td>1 x 1,5 ml</td> <td>11</td> <td>40</td> </tr> <tr> <td>704.005</td> <td>1 x 0,5 ml</td> <td>8</td> <td>45</td> </tr> <tr> <td>704.004</td> <td>1 x 0,4/0,2 ml PCR</td> <td>6</td> <td>45</td> </tr> </tbody> </table>	Order No.:	Tube rack	ø (mm)	Length (min./max.)	without	1 x 2,0 ml	11	40	without	1 x 1,5 ml	11	40	704.005	1 x 0,5 ml	8	45	704.004	1 x 0,4/0,2 ml PCR	6	45
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704.004	1 x 0,4/0,2 ml PCR	6	45																		

More from Hermle



Z 216 M



Z 366 K

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