

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 3454/4347 xg. If higher speeds are required, we also offer e.g. an angle rotor with a max. RCF of 16019 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:	26331 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

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: 3434/4347 xg
max. radius: 19,3 cm
Temp. at max. speed: 4°C

616.111
Removing aid
for rectangular bucket 616.110



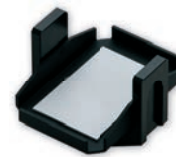
Order No.:
616.110
Rectangular bucket
for Microtitre plates



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: 3130/3962 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: 2755/3485 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

Volumen	Vacutainer				Sarstedt									
	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°

Acceleration 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 V03



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: 23645 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 Adapter

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



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
	Vacutainer				Sarstedt								
Volume	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

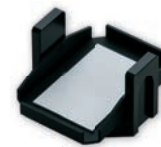


Order No.:
625.004
Round bucket



Acceleration in s: 35/320
Deceleration in s: 34/751
max. speed: 4500 rpm
max. RCF: 4211 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




	Vacutainer										Sarstedt	
Volume	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	4 - 5,5 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				
<p>Order No.: 221.18 V02</p>  <p>Angle rotor 6 x 85 ml Angle: 38°</p>	<p>Acceleration in s: 48/463 Deceleration in s: 46/1654 max. speed: 11000 rpm max. RCF: 15552 xg max. radius: 11,5 cm max. ø: 38 mm Temp. at max. speed: -1°C</p>	<p>Order No.: 707.001 707.002 707.003 707.004 707.014 without 707.000 707.015</p>	<p>Tube rack 1 x 15 ml 1 x 30 ml 1 x 50 ml 1 x 50 ml conical 1 x 15 ml conical 1 x 85 ml 2 x 15 ml 1 x 16 ml</p>	<p>ø (mm) 17 25 29 29 17 38 17 18</p>	<p>Length (min./max.) 103/110 90/103 105 118 120 113 95/100 103/110</p>
<p>Order No.: 221.20 V02</p>  <p>Angle rotor 4 x 85 ml Angle: 30°</p>	<p>Acceleration in s: 50/448 Deceleration in s: 45/1251 Acceleration in s: 61/480 Acceleration in s: 47/1220 max. speed: 15000/16000 rpm max. RCF: 23142/26331 xg max. radius: 9,2 cm max. ø: 38 mm Temp. at max. speed: 7°</p>	<p>Order No.: 707.001 707.002 707.003 707.004 707.014 without 707.000 707.015</p>	<p>Tube rack 1 x 15 ml 1 x 30 ml 1 x 50 ml 1 x 50 ml conical* 1 x 15 ml conical* 1 x 85 ml 2 x 15 ml 1 x 16 ml</p>	<p>ø (mm) 17 25 29 29 17 38 17 18</p>	<p>Length (min./max.) 103/110 90/103 105 118 120 113 95/100 103/110</p> <p>* only without rotor lid</p>
<p>Order No.: 221.21 V02</p>  <p>Angle rotor 6 x 250 ml Angle: 28°</p>	<p>Acceleration in s: 66/573 Deceleration in s: 84/1903 max. speed: 8000 rpm max. RCF: 10017 xg max. radius: 14 cm max. ø: 62 mm Temp. at max. speed: -1°C</p>	<p>Order No.: 713.042 713.030 713.028 713.025 713.020 713.015 without</p>	<p>Tube rack 1 x 50 ml conical 1 x 50 ml 2 x 30 ml 4 x 15 ml conical 5 x 10 ml 8 x 1,5 ml 1 x 250 ml</p>	<p>ø (mm) 29 29 26 17 16 11 62</p>	<p>Length (min./max.) 118 103 92 120 80 40 122</p>
<p>Order No.: 221.22 V02</p>  <p>Angle rotor 6 x 50 ml Angle: 26°</p>	<p>Acceleration in s: 28/264 Deceleration in s: 32/921 max. speed: 13000 rpm max. RCF: 15871 xg max. radius: 8,4 cm max. ø: 29 mm Temp. at max. speed: -4°C</p>	<p>Order No.: without 708.019 708.003 708.004 708.017</p>	<p>Tube rack 1 x 50 ml 1 x 30 ml 1 x 16 ml 1 x 15 ml 1 x 15 ml conical*</p>	<p>ø (mm) 29 25 18 17 17,5</p>	<p>Length (min./max.) 95/115 92/95 100/105 100/105 116/125</p> <p>* only without rotor lid</p>
<p>Order No.: 221.28 V02</p>  <p>Angle rotor 20 x 10 ml Angle: 30°</p>	<p>Acceleration in s: 32/305 Deceleration in s: 37/988 max. speed: 12000 rpm max. RCF: 15777 xg max. radius: 9,9 cm max. ø: 16 mm Temp. at max. speed: -2°C</p>	<p>Order No.: without</p>	<p>Tube rack 1 x 10 ml</p>	<p>ø (mm) 16</p>	<p>Length (min./max.) 80</p>
<p>Order No.: 221.51 V02</p>  <p>Angle rotor 4 x 500 ml Angle: 24°</p>	<p>Acceleration in s: 73/575 Deceleration in s: 82/2317 max. speed: 8000 rpm max. RCF: 10375 xg max. radius: 14,5 cm max. ø: 69,9 mm Temp. at max. speed: 0°C</p>	<p>Order No.: 712.001 712.102 712.100 712.100 712.101 712.104 712.103 712.105</p>	<p>Tube rack 1 x 250 ml 1 x 250 ml-Corning 1 x 175 ml conical 1 x 225 ml conical 1 x 50 ml conical 3 x 50 ml 4 x 30 ml 6 x 15 ml conical</p>	<p>ø (mm) 61,5 60,5 61,5 61,5 29,5 29 25,5 17</p>	<p>Length (min./max.) 195 171 118 137 115 103 92 120</p>
<p>Order No.: 221.52 V02</p>  <p>Angle rotor 10 x 50 ml conical Angle: 38°</p>	<p>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: 14532/16019 xg max. radius: 13 cm max. ø: 29 mm Temp. at max. speed: 2°C</p>	<p>50 ml conical  29 116 without</p>	<p>15 ml conical  17 121 708.030</p>	<p>15 ml  17 97-116 708.030</p>	

Accessories Z 446 and Z 446 K

Rotor/Bucket	Adapter				
<p>Order No.: 220.87 V09</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: 24328 xg max. radius: 8,5 cm max. ø: 11 mm Temp. at max. speed: 1°C</p>	<p>Order No.:</p> <p>without</p> <p>without</p> <p>704.005</p> <p>704.004</p>	<p>Tube rack</p> <p>1 x 2,0 ml</p> <p>1 x 1,5 ml</p> <p>1 x 0,5 ml</p> <p>1 x 0,4/0,2 ml PCR</p>	<p>ø (mm)</p> <p>11</p> <p>11</p> <p>8</p> <p>6</p>	<p>Length (min./max.)</p> <p>40</p> <p>40</p> <p>45</p> <p>45</p>
<p>Order No.: 220.87 V10</p>  <p>Angle rotor 24 x 1,5/2,0 ml Angle: 45°</p>	<p>Acceleration in s: 21/205 Deceleration in s: 29/421 max. speed: 16000 rpm max. RCF: 24328 xg max. radius: 8,5 cm max. ø: 11 mm Temp. at max. speed: 1°C</p>	<p>Order No.:</p> <p>without</p> <p>without</p> <p>704.005</p> <p>704.004</p>	<p>Tube rack</p> <p>1 x 2,0 ml</p> <p>1 x 1,5 ml</p> <p>1 x 0,5 ml</p> <p>1 x 0,4/0,2 ml PCR</p>	<p>ø (mm)</p> <p>11</p> <p>11</p> <p>8</p> <p>6</p>	<p>Length (min./max.)</p> <p>40</p> <p>40</p> <p>45</p> <p>45</p>
<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: 15342 xg max. radius: 6,1 cm max. ø: 6 mm Temp. at max. speed: -2°C</p>				

More from Hermle



Z 216 M



Z 366 K

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Additional Information for leaflet Z 446/K

New in Z 446/K

Order.-no.: **220.88 V09**



Acceleration in s: 25/233
Deceleration in s: 30/283
max. Speed: 16000 min⁻¹
RCF: 24040 xg
max. Radius: 8,4
max. Ø: 11 mm
Temp. at max. speed: 2,6°C

Angle rotor 44 x 1,5/2,0 ml
Angle 40°

Adapter

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