

Universal Centrifuges

■ Z 446

■ Z 446 K



HERMLE
LABORTECHNIK

Z 446

Z 446 K



Specifications

- Maintenance-free induction drive
- Microprocessor with large LCD display
- Motor driven lid lock
- Automatic radio-frequency rotor identification system (RFID) 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 3,434/4,346 xg. If higher speeds are required, we also offer e.g. an angle rotor with a max. RCF of 16,022 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:	16,000 rpm
max. RCF:	24,325 xg / 26,328 xg
max. volume:	4 x 750 ml
speed range:	200 - 16,000 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:	1,630 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 V03 - Z446 K, 120 V / 50-60 Hz / 20 A
	317.00 V02 - Z446 K, 120 V / 50-60 Hz / 15 A*

*The speed of rotor 221.36 V20 and 220.86 V20 is lower by 500 rpm



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 to 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
- Timer: the centrifuge starts at the preselected time

Accessories Z 446 and Z 446 K

Rotor/Bucket	Adapter		
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Order No.:
221.36 V20
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: 49/1,287
Acceleration in s: 55/551
Deceleration in s: 54/1,501
max. speed: 4,000/4,500 rpm
max. RCF: 3,434/4,346 xg
max. radius: 19.2 cm
Temp. at max. speed: 4°C

616.111
Removing aid
for rectangular bucket 616.110



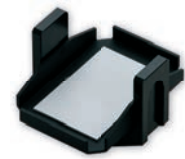
Order No.:
616.110
Rectangular bucket
for Microtitre plates



Acceleration in s: 47/483
Deceleration in s: 49/1,287
Acceleration in s: 55/551
Deceleration in s: 54/1,501
max. speed: 4,000/4,500 rpm
max. RCF: 3,130/3,961 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: 49/1,287
Acceleration ins s: 55/551
Deceleration in s: 54/1,501
max. speed: 4,000/4,500 rpm
mac. RCF: 2,754/3,486 xg
max. radius: 15.4 cm
max. loading height: 72 mm
max. loading weight: 310 g
Temp. at max. speed: -3°C

*hermetical sealable

	Corning®		Falcon®		conical	conical	conical	conical	conical	conical	conical	conical	conical	conical	conical
Volume	750 ml	500 ml	500 ml	250/290 ml	175/225 ml	100 ml	50 ml	50 ml	50 ml	30 ml	15 ml	15 ml	15 ml	10 ml	7 ml
ø in mm	99	99	97	62	61	40	29	29	29	26	17	17	17	16	13
Round bucket															
Length min./max. (mm)	152	114	148	122/137	118/137	102/123	116	116	102/123	102/123	120	120	97/120	70/121	98/119
Tubes per rotor	4	4	4	4	4	12	20	28	28	32	56	68*	72	84	128
Radius correction (cm)	0	0	0.5	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	716.110	716.024	716.100	716.023	716.101	716.102	716.021	716.020	716.103	716.104	716.018	716.015	716.016

* 2-level

	Vacutainer®				Sarstedt®								
Volumen	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 V20



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

Acceleraton in s: 27/251
Deceleration in s: 23/602
max. speed: 4,500 rpm
max. RCF: 2,716 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 V20



Angle rotor 30 x 1.5/2.0 ml
Angle: 45°

Acceleration in s: 24/218
Deceleration in s: 30/526
max. speed: 15,000 rpm
max. RCF: 23,643 xg
max. radius: 9.4 cm
max. ø: 11 mm
Temp. at max. speed: 1°C



Order No.:	Tube rack	ø (mm)	Length (min./max.)
without Adapter	1 x 2.0 ml	11	40
without Adapter	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.: 221.18 V20  Angle rotor 6 x 85 ml Angle: 38°	Acceleration in s: 49/462 Deceleration in s: 46/1,655 Acceleration in s: 69/549 Deceleration in s: 67/1,307 max. speed: 11,000/13,000 rpm max. RCF: 15,555/21,726 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.)	
		without Adapter	1 x 85 ml	38	113	
		707.003	1 x 50 ml	29	105	
		707.004	1 x 50 ml conical	29	116	
		707.002	1 x 30 ml	25	90/103	
		707.015	1 x 16 ml	18	103/110	
		707.000	1 x 15 ml	17	95/100	
		707.001	2 x 15 ml	17	103/110	
		707.014	1 x 15 ml conical	17	120	
Order No.: 221.20 V20  Angle rotor 4 x 85 ml Angle: 30°	Acceleration in s: 50/448 Deceleration in s: 45/1,251 Acceleration in s: 61/480 Deceleration in s: 47/1,220 max. speed: 15,000/16,000 rpm max. RCF: 23,140/26,328 xg max. radius: 9.2 cm max. ø: 38 mm Temp. at max. speed: 7°	Order No.:	Tube rack	ø (mm)	Length (min./max.)	
		without Adapter	1 x 85 ml	38	113	
		707.003	1 x 50 ml	29	105	
		707.004	1 x 50 ml conical*	29	116	
		707.002	1 x 30 ml	25	90/103	
		707.015	1 x 16 ml	18	103/110	
		707.000	1 x 15 ml	17	95/100	
		707.001	2 x 15 ml	17	103/110	
		707.014	1 x 15 ml conical*	17	120	
			* only without rotor lid			
Order No.: 221.21 V20  Angle rotor 6 x 250 ml Angle: 28°	Acceleration in s: 66/573 Deceleration in s: 84/1,871 max. speed: 8,000 rpm max. RCF: 10,016 xg max. radius: 14 cm max. ø: 62 mm Temp. at max. speed: -1°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)	
		without Adapter	1 x 250 ml	62	122	
		713.044	1 x 250 ml Corning®	60	159	
		713.045	1 x 175/225 ml Falcon®	61	118/137	
		713.042	1 x 50 ml conical	29	116	
		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 1.5/2.0 ml	11	40	
Order No.: 221.22 V20  Angle rotor 6 x 50 ml Angle: 26°	Acceleration in s: 28/263 Deceleration in s: 31/922 max. speed: 13,000 rpm max. RCF: 15,869 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 Adapter	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	120	
			* only without rotor lid			
Order No.: 221.28 V20  Angle rotor 20 x 10 ml Angle: 30°	Acceleration in s: 32/305 Deceleration in s: 37/984 max. speed: 12,000 rpm max. RCF: 15,775 xg max. radius: 9.8 cm max. ø: 16 mm Temp. at max. speed: -3°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)	
		without Adapter	1 x 10 ml	16	80	
Order No.: 221.51 V20  Angle rotor 4 x 500 ml Angle: 24°	Acceleration in s: 73/575 Deceleration in s: 84/2,317 max. speed: 8,000 rpm max. RCF: 10,367 xg max. radius: 14.5 cm max. ø: 69.5 mm Temp. at max. speed: 4°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)	
		without Adapter	1 x 500 ml	69.5	165	
		712.001	1 x 250 ml	62	122	
		712.102	1 x 250 ml Corning®	60	159	
		712.100	1 x 175 ml Falcon®	61	118	
		712.100	1 x 225 ml Falcon®	61	137	
		712.101	1 x 50 ml conical	29	116	
		712.104	3 x 50 ml	29	103	
		712.103	4 x 30 ml	25	92	
		712.105	6 x 15 ml conical	17	120	
Order No.: 221.52 V20  Angle rotor 10 x 50 ml conical Angle: 38°	Acceleration in s: 60/480 Deceleration in s: 68/1,747 Acceleration in s: 61/480 Deceleration in s: 480/1,747 max. speed: 10,000/10,500 rpm max. RCF: 14,532/16,022 xg max. radius: 13 cm max. ø: 29 mm Temp. at max. speed: 2°C	Order No.:	Tube rack	ø (mm)	Length (min./max.)	
		without Adapter	1 x 50 ml conical	29	116	
		708.050	1 x 15 ml RB	17	97/123	
		701.011*	1 x 7 ml	13.5	95/115	
		701.012*	1 x 5 ml	13.5	70/90	
		701.015*	1 x 1.5/2.0 ml	11	40	
		708.051	1 x 15 ml konisch	17	120	

*only possible with adapter 708.050 or 708.051

Accessories Z 446 and Z 446 K

Rotor/Bucket		Adapter			
<p>Order No.: 220.87 V21</p>  <p>Angle rotor 24 x 1.5/2.0 ml Angle: 45°</p>	<p>Acceleration in s: 21/204 Deceleration in s: 29/375 max. speed: 16,000 rpm max. RCF: 24,325 xg max. radius: 8.5 cm max. ø: 11 mm Temp. at max. speed: 1°C</p>	Order No.:	Tube rack	ø (mm)	Length (min./max.)
		without	1 x 2.0 ml	11	40
<p>Order No.: 220.87 V20</p>  <p>Angle rotor 24 x 1.5/2.0 ml Angle: 45° aerosol-tight</p>	<p>Acceleration in s: 21/204 Deceleration in s: 29/394 max. speed: 16,000 rpm max. RCF: 24,325 xg max. radius: 8.5 cm max. ø: 11 mm Temp. at max. speed: 1°C</p>	without	1 x 1.5 ml	11	40
		704.005	1 x 0.5 ml	8	45
<p>Order No.: 221.38 V20</p>  <p>Angle rotor 4 x 8-PCR Strips</p>	<p>Acceleration in s: 12/100 Deceleration in s: 12/202 max. speed: 15,000 rpm max. RCF: 15,343 xg max. radius: 6.1 cm max. ø: 6 mm Temp. at max. speed: -2°C</p>	704.004	1 x 0.4/0.2 ml PCR	6	45
		without	1 x 2.0 ml	11	40
<p>Order No.: 221.68 V20</p>  <p>Angle rotor 44 x 1.5/2.0 ml Angle: 32°/55°</p>	<p>Acceleration in s: 25/235 Deceleration in s: 25/500 max. speed: 16,000 rpm max. RCF: 24,325 xg max. radius: 8.5 cm max. ø: 11 mm Temp. at max. speed: -2°C</p>	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
		without	1 x 2.0 ml	11	40

More from Hermle



Z 216 M



Z 366 K

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