

SONOPULS Ultrasonic Homogenizers, BANDELIN



BANDELIN
Ultraschall seit 1955

Selecting the best SONOPULS ultrasonic homogenizer for your needs

The ultrasonic output of an homogenizer depends on the amplitude present at the ultrasound-emitting surface of the sonotrode. Start with the volume of the sample that is to be subjected to the ultrasound. Use the diameter of the ultrasound vessel into which the sonotrode is to be immersed and the following table to determine the optimum sonotrode amplitude and the correct SONOPULS ultrasonic homogenizer.

Titanium sonotrodes in conjunction with the SONOPULS ultrasonic homogenizer

Type	Dia. mm	HD 2070.2	HD 2200.2	Amplitude μm_{SS} HD 2070.2/2200.2
MS 72	2	1 ml – 25 ml	2 ml – 30 ml	285/286
MS 73	3	2 ml – 50 ml	5 ml – 90 ml	245/308
KE 76	6	5 ml – 100 ml	10 ml – 350 ml	191/255
TT 13	13	10 ml – 200 ml	20 ml – 900 ml	93/165
VS 70 T				97/170
TT 25	25		30 ml – 1000 ml	- /53

Examples:

1 ml liquid in centrifuge vial with 9 mm ID: MS 73 microtip on HD 2070.2.

15 ml liquid in test tube with 12 mm ID: KE 76 conical tip on HD 2070.2.

100 ml liquid in glass beaker with 45 mm ID: TT 13 titanium disk on HD 2200.2.

10 ml sample volume in 50 ml Corning container for bacteria digestion with MS 73 in HD 2200.2

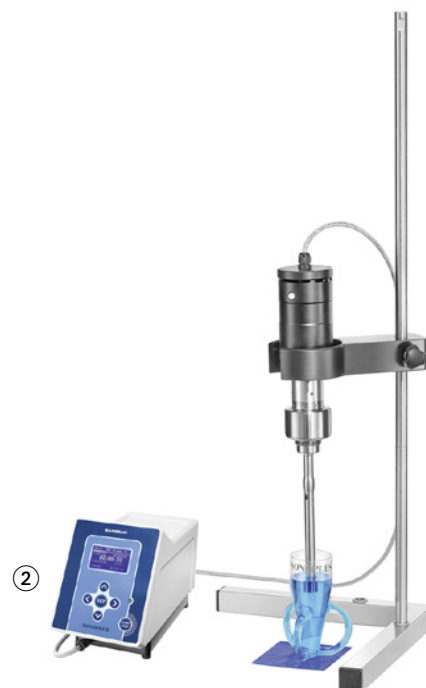
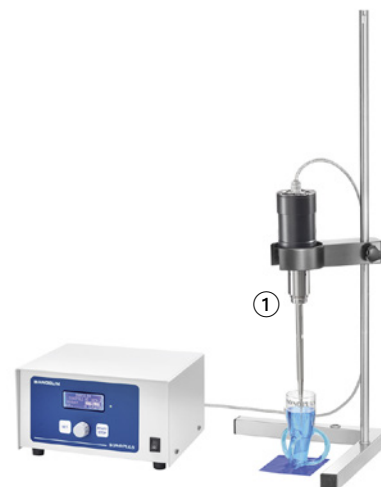
70 ml sample ground cheese in water in RZ 3 for HD 2200.2 with VS 70 T

SONOPULS HD 2070.2 and HD 2200.2

Cell disintegration, accelerated reaction, extracting, emulsifying, suspending, homogenizing, degassing of liquids and for the Sonochemie. Controllable, high energy density for the processing and preparation of samples with ultrasound in the biochemistry lab, in research and in small-scale production.

Amplitude adjustment with electronic stabilization in a range of 10 – 100% for consistent results.

Pulsation of 10 – 100% limits the temperature increase when handling heat-sensitive samples. Cooling in pauses between sound pulses. 20 kHz equalized sound. Sound period 1 sec to 99 min. All values appear on the digital display. Protected against dry-running and constant operation. 230 V (115 V also available).



Article	Order No.
① SONOPULS HD 2070.2 Ready-to-use set	10 07 32451

For volumes from 2 ml to 50 ml. Ready-to-use basic model: Ultrasonic generator GM 2070.2, ultrasonic transducer UW 2070, horn SH 70 G with external thread and microtip MS 73, dia. 3 mm. 70 W HF power. See table above for other volumes. Stand HG 40 and vessel RZ 2 shown in the illustration are not included in delivery.

Article	Order No.
SONOPULS HD 2200.2 Ready-to-use set	10 07 32531

For volumes from 20 ml to 900 ml. Ready-to-use basic model: Ultrasonic generator GM 2200.2, ultrasonic transducer UW 2200, booster horn SH 213 G with external thread and titanium disk TT 13, dia. 13 mm. 200 W HF power. See table above for other volumes. Stand HG 40 and vessel RZ 2 shown in the illustration are not included in delivery.

Accessories for HD 2070.2 and HD 2200.2

For connecting titanium sonotrodes:

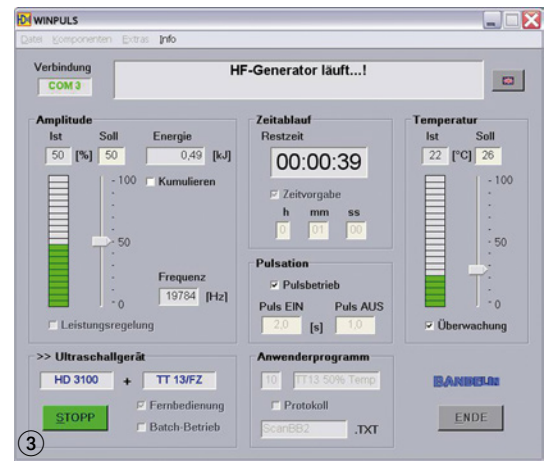
Titanium horns instead of SH 70 G/SH 213 G

Article	Order No.
SH 219 G Ø 19 mm for UW 2200	53 07 02210
SH 225 G Ø 25 mm for UW 2200	53 07 02212



SONOPULS HD 4050 / 4100 / 4200

Technical data:	HD 4050	HD 4100	HD 4200
HF generator:	GM 4200	GM 4200	GM 4200
W × H × D (mm):	150×220×335	150×220×335	150×220×335
Ultrasonic converter:	UW 50	UW 100	UW 200
Ø × L (mm):	45 × 175	70 × 150	70 × 150
Available sonotrodes Ø (mm):	2/ 3/ 4.5/ 6	2/ 3/ 4.5/ 6/ 9/ 13	3/ 4.5/ 6/ 9/ 13/ 16/ 25



Article **Ultrasonic homogenizer SONOPULS HD 4050** Order No. **10 07 34050**

for volumes from 0.5 – 100 ml

Ready-to-operate set: for volumes from 0.5 ml – 20 ml, ultrasonic power max. 50 W, ultrasonic generator GM 4200, ultrasonic converter UW 50, titanium probe TS 102, dia. 2 mm

Article **Ultrasonic homogenizer SONOPULS HD 4100** Order No. **10 07 34100**

for volumes from 2 – 200 ml

Ready-to-operate set: for volumes from 3 – 50 ml, ultrasonic power max. 100 W, ultrasonic generator GM 4200, ultrasonic converter UW 100, standard horn SH 100 G, titanium probe TS 103, dia. 3 mm

② Article **Ultrasonic homogenizer SONOPULS HD 4200** Order No. **10 07 34200**

for volumes from 5–1000 ml

Ready-to-operate set: for volumes from 20 – 900 ml, ultrasonic power max. 200 W, ultrasonic generator GM 4200, ultrasonic converter UW 200, standard horn SH 200 G, titanium probe TT 213, dia. 13 mm

Ultrasonic homogenizer HD 4400 for sonication of volumes from 100 – 3000 ml on request.

Accessories for HD 4050 / 4100 / 4200

Article **WINPULS remote control for HD 4050/4100/4200** Order No. **53 07 03625**

For process monitoring using a PC with WIN 2000 or WIN XP. Various additional functions such as test logging and user-friendly data storage management (up to 99 memory slots). Set consisting of WINPULS software and IR 1 infrared adapter for RS 232 interface.

④ Article **TM 50 temperature sensor, Ø 1.9 mm** Order No. **10 07 33733**

⑤ Article **TM 100 temperature sensor, Ø 4.0 mm** Order No. **53 07 03622**

For HD 4050/4100/4200, for measuring the sample temperature from 0 to 120°C.

Titanium sonotrodes

Type	Version	Ø mm	for	Order No.
⑥ MS 72	Micro tip	2	SH 70 G, SH 213 G	53 07 03062
⑦ MS 73	Micro tip	3	SH 70 G, SH 213 G	53 07 03065
⑧ KE 76	Conical tip	6	SH 70 G, SH 213 G	53 07 03068
⑨ TT 13	Titanium disk	13	SH 70 G, SH 213 G	53 07 05215
⑩ TT 25	Titanium disk	25	SH 225 G	53 07 05225
VS 70 T	long	13	SH 70 G / SH 213 G	10 07 30494
VS 200 T	long	25	SH 225 G	10 07 30478

Beaker resonator

Indirect exposure:

Article **BB 6 for HD 2200.2, 4200, plastic** Order No. **53 07 03605**

Article **BR 30 for HD 2070, HD 2070.2, HD 2200.2, 4100, 4200, titanium alloy TiAl6V4** Order No. **53 07 06205**

Reaction cup holders

Article **EH 6** Order No. **53 07 06206**

Reaction cup holder for BB6 for simultaneous contact-free exposure of up to 6 samples. (perforation diameter 11.5 mm)

Article **EH 3.1** Order No. **10 07 37527**

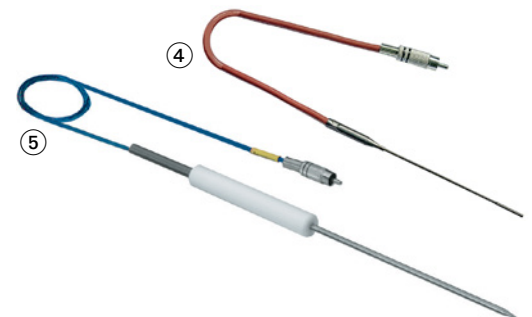
Reaction cup holder for BR 30 for simultaneous exposure of pathogenic and toxic materials, with: 1 perforated disc each for 3 × 1.0 ml or 2.0 ml reaction cups, 1 perforated disc each for 3 × 0.5 ml reaction cup, 1 perforated disc each for 8 × 0.2 ml PCR cups

Cooling vessels

With liquid cooling of the sample, made of glass for visual inspection

Article **KG 3, up to 15 ml, for sonotrodes up to Ø 13 mm** Order No. **53 07 07003**

Article **KG 5, up to 80 ml, for sonotrodes up to Ø 25 mm** Order No. **53 07 07005**



Flow-through vessels

With cooling jacket, made of glass for visual inspection or of stainless steel

Type	Volume ml	Material	for	Order No.
⑮ DG 3	- 15 ml	Glas	Sonotrodes up to Ø 13 mm HD 2070.2/2200.2/4050/4100/4200/4400	53 07 07103
DG 5	- 80 ml	Glas	Sonotrodes up to Ø 25 mm HD 2200.2/4200/4400	53 07 07105
⑯ DG 4 G		Stainless steel	HD 2070.2/2200.2/4100/4200	53 07 03608

Exposure vessels made of glass

Article	Vol. ml	for	Order No.
RZ 1	25	Sonotrodes up to Ø 25 mm, HD 2070.2/2200.2/4050/4100/4200	10 07 33606
RZ 2	40	Sonotrodes up to Ø 25 mm, HD 2070.2/2200.2/4050/4100/4200	10 07 33607
⑰ RZ 3	110	Sonotrodes up to Ø 25 mm, HD 2070.2/2200.2/4050/4100/4200/4400	53 07 07120
RZ 4	390	Sonotrodes up to Ø 25 mm, HD 2200.2/4200/4400	10 07 33256
RZ 5	900	Sonotrodes up to Ø 25 mm, HD 2200.2/4200/4400	53 07 07121

RZ = Rosette cells

Accessories

Article	Order No.
Standard ground adapter NA 29 G	53 07 09029
For NS 29/32 SH 70/213 G	
Standard ground adapter NA 45 G	53 07 09031
For NS 45/40 SH 70/213/219/225 G	
Foot switch remote control TS 8	53 07 09108
For HD 2070.2/2200.2/4050/4100/4200/4400	
⑱ Stainless steel stand HG 40	10 07 33681
For HD 2070.2/2200.2/4050/4100/4200/4400	

WH 40 bracket for HG 40 (Fig. ⑲) optional

AT 40 support table for WH 40 on HG 40 (Fig. ⑳) optional

Sound-reducing box LS 40

For noise reduction when using ultrasound homogenizers, use of a noise protection box is recommended.

Due to the optimized design of the LS 40, a very effective noise reduction by approx. 30 dB-AU is achieved. LED interior lighting and the integrated sight glass allow for optimal process observation during the exposure.

The LS 40 is made of stainless steel and equipped with an effective ventilation system. A removable base tray ensures easy cleaning. At the rear of the noise protection box, there is a prepared opening (40x70 mm) for hose feeds or a SONOPULS temperature sensor. An HG 40 holding frame is required to accommodate the SONOPULS ultrasonic converters.

Article	Order No.
⑳ Sound proof box LS 40	10 07 33682
For HD 2070.2/2200.2/4050/4100/4200/4400	

Article	Order No.
Sound-reducing box LS 4	53 07 09301
for HD 2070.2/2200.2/4050/4100/4200	
Made of plastic-coated chipboard. Noise reduction by approx. 10 dB-AU. Full-surface plexiglass door enables process observation.	



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