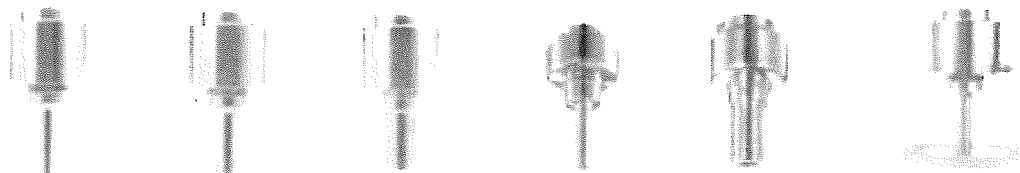


SONOPULS

Standard and booster horns SH

They amplify and transmit the vibrations to the probe. The suitable horn will be tightened to the ultrasonic converter.

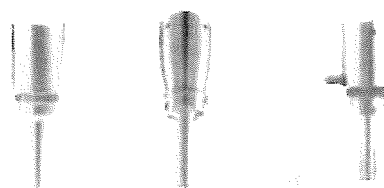
For adapting replaceable probes. With external thread for connection of different vessels by the use of adapters NA.



	Booster horns					Flow-through booster horn
Type	SH 213 G	SH 219 G	SH 225 G	SH 200 G	SH 400 G	FZ 7 G
For HD		2200.2		4200	4400	2200.2/4200
Code no.	527	3647	3634	3732	3754	452

Flow-through horns FZ

They are used to produce stable mixtures of non mixable or hardly mixable liquids (oil / water). Different vessels with standard ground can be connected via adapters NA to the external thread of the horn. In combination with two different media flow-through cell DG 4 G can be sonicated directly in the cavitation field. A cooling is also possible.



	Standard horns		Flow-through Standard horn
Type	SH 70 G	SH 100 G	FZ 5 G
For HD	2070.2	4100	2070.2/4100
Code no.	486	3731	490

Adapters

Sleeve adapters made of PTFE are for tight mounting of standard ground glass vessels to standard or booster horns with external threads.

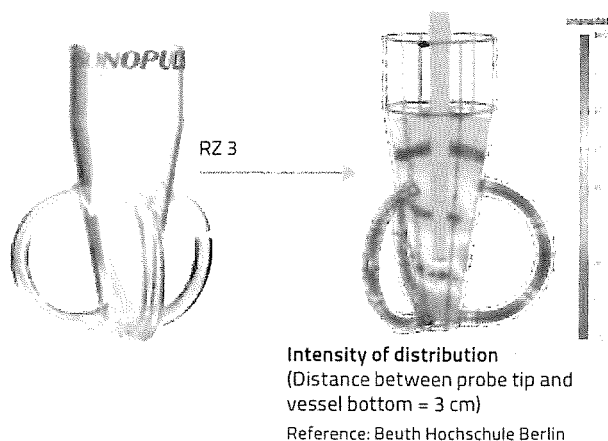
Sleeve adapters

Type	NA 29 G for NS 29/32 for SH 70 / 100 / 200 G / 213 G with probe diameters max. 13 mm	NA 45 G for NS 45 / 40 for SH 70 / 100 / 200 / 213 / 219 / 225 G / 400 G with probe diameters max. 25 mm
For HD	2070.2 / 2200.2 / 4100 / 4200 / 4400	
Code no.	540	487

Processing vessels made of glass

Rosette cells RZ

Caused by the sound pressure the sample will be pushed against the vessel bottom and can circulate well through the side arms. When placing the rosette cell into crushed ice, the sample will be effectively cooled because of an enlarged glass surface and improved circulation.

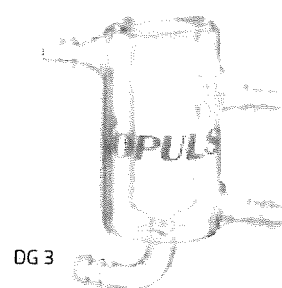
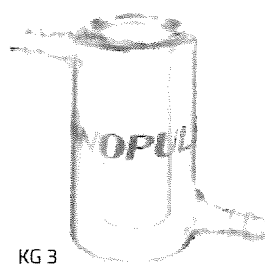


Cooling vessels KG

They are used for processing temperature-sensitive samples. Their cooling jackets allow a circulation of the cooling liquid during the sonication.

Flow-through vessels DG

They are equipped with cooling jackets. A continuous sonication of sample up to 30 l/h is possible in flow-through. The cooling jackets allow a circulation of the cooling liquid during the sonication.



	Rosette cells					Cooling vessels			Flow-through vessels	
Type	RZ 1	RZ 2	RZ 3	RZ 4	RZ 5	KG 3	KG 5	DG 3	DG 5	DG 6
For probe diameter [mm]	2-3	2-6	3-13	13-25	19-25	2-13	13-25	2-13	13-25	25-38
Volume [ml]	25	40	110	390	660	15	70	max. 5.6 l/h	max. 30 l/h	max. 30 l/h
Internal dia. [mm]	30	42	50	75	90	20	35	20	53	70
Depth [mm]	85	100	135	202	243	65	95	65	95	120
Code no.	3606	3607	522	3256	483	536	481	538	482	3819

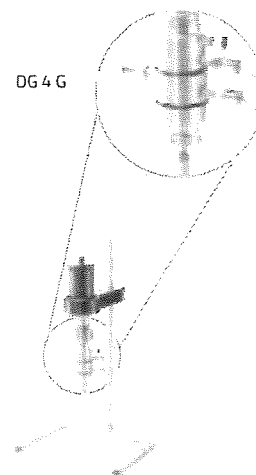
Processing vessels made of stainless steel for direct sonication in flow-through

The DG 4 G enables an inline sonication as well as a continuous processing of larger sample volumes of up to max. 50 l/h. It will be directly mounted to the external thread of the standard or booster horn. DG 4 G is especially used for emulsifying, mixing and homogenising. The liquid will be pumped from below against the radiating surface of the probe, passes directly the cavitation field and leaves the processing chamber via its outlet. A multiple circulation is possible. The cooling jacket permits a constant processing temperature. The sonication level depends on the set amplitude and the flow-through rate. Overpressure < 2 bar.

Flow-through processing vessel

Type	DG 4 G
For HD	2070.2 / 2200.2 4100 / 4200
Code no.	3608

Blue: Cooling circulation
Red: Sample circulation



SONOPULS Product Information

BANDELIN
Ultraschall seit 1955

Flow-through horn with exterior thread → FZ 5 G / FZ 7 G

For use with HD 2000 / HD 2000.2 / HD 3000

Order no. FZ 5 G - 490 / FZ 7 G - 452



The flow-through horn, made of TiAl6V4 (3.7165), allows the production of stable mixtures of non or hardly mixable liquids by direct intrusion in the cavitation field below the tip.

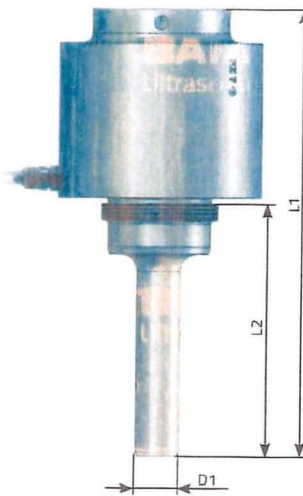
The flow-through horn is furnished with an external thread to fit various vessels and adapters.

During operation the amplitude indicator could fall severely due to an increasing liquid damping. The flow-through (atomizing effect) is not influenced.

Supply

- 1 flow-through horn with external thread
- 1 threaded bolt M10 × 25
- 1 TT 13 FZ titanium flat tip with hole dia. 1,5 mm
- 1 spanner SW 8/10
- 1 hose coupling 3×5 mm, stainless steel, with cap nut and sealing ring
- 1 silicone hose 3×5 mm, 1,2 m long
- 2 HS 40/42 sickle spanners, long

	FZ 5 G	FZ 7 G
L1* [mm]	122	131
L2 [mm]	74	74
D1 [mm]	13	13
Torque [Nm]	70	70



Assembly

Attachment of the flow-through horn and the titanium flat tip TT 13 FZ is described in the operating instruction.

The mating surfaces of the horn and converter must be absolutely clean.

Screw the hose coupling with sealing ring very tightly into the threaded hole of horn. Use spanner SW 8. Remove the cap nut, push it over the hose end. Plug the hose end to hose coupling at the horn, secure it with cap nut.

* Horns are tuned to their working frequency. Lengths may vary slightly due to variations in titanium material.

Accessories

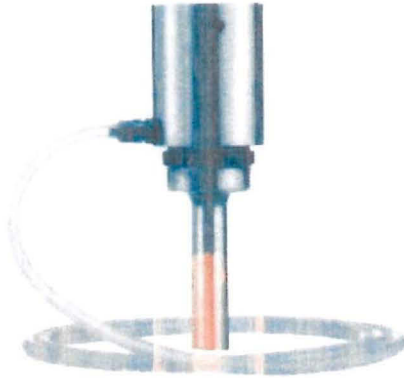
FZ 5 G / 7 G in combination with flow-trough vessels made of glass (DG 3/5/6) or made of stainless steel (DG 4 G) enables continuous mixing of 2 media during sonication and parallel tempering and observation.

Unless it is necessary to enter the medium via the flow-through hole of the horn, horn opening can be closed with a titanium flat tip TT 13 (without hole).

Adapters

standard ground
cone adapter NA 29 G → for standard
cut 29/32,

standard ground
cone adapter NA 45 G → for standard
cut 45/40



FZ 5 G



Dodavatel:

Adresát:

Fisher Scientific, spol. s r.o.

 Kosmonautů 324
 530 09 Pardubice

 IČ: 45539928 DIČ: CZ45539928
 Zápis OR KS Hradec Králové, C.1920

Odběratel:

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Kontaktní osoba:

Pobočka:

telefon:

Fax:

Zakázka:

ZP190-14166

Poptávka:

Poptávka odběratele:

Vystavil:

Telefon:

Datum:

Platnost do:

14.10.2019

15.12.2019

VŘ -50/2019 - příslušenství k ultrazvukovému homogenizátoru

Kód	Název zboží	Množství	MJ	Sleva	Cena/MJ	Celkem bez DPH	DPH
9994.5218	flow-through standard horn FZ 5 G	1,000	ks	25+0%	9 028,50	9 028,50	21%
9991.1466	PTFE adapter NA 29 G	1,000	ks	25+0%	2 242,50	2 242,50	21%
9991.7751	Průtočná nádobka DG 3, průtočná, chlazená, max. 5,6 l/hod	1,000	ks	25+0%	5 733,00	5 733,00	21%
9991.6734	Průtočná nádobka DG 5	1,000	ks	25+0%	5 830,50	5 830,50	21%
6750.3536	Nádobka chlazená KG 3	1,000	ks	25+0%	3 056,25	3 056,25	21%

Celkem bez DPH: 25 890,75 CZK

Sazba DPH	Základ	DPH
0 %	0,00	0,00
15 %	0,00	0,00
21 %	25 890,75	5 437,06

Celkem s DPH:

31 327,81 CZK

Fisher Scientific
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 Kosmonautů 324, 530 09 Pardubice
 tel.: 456 799 230
 DIČ: CZ45539928 -14-