

Stirring and Mixing



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STIRRING AND MIXING

Magnetic stirring bars and stirrer shafts have to feature many different qualities since they are used with many different products and in different vessels. The comprehensive BOLA range is offering the best possible solution – if not, we will manufacture according to your specifications.

PRODUCT TIPS



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Magnetic Stirring Bars



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BOLA Stirrer Shafts



What you should know about BOLA Stirrer Shafts

BOLA Stirrer Shafts consist of a PTFE-jacketed stainless steel shaft and a stirrer blade made of solid PTFE. The stainless steel core provides high mechanical stability and allows a safe fixing in the agitator.

Unbreakable

All glass stirrer shafts which are commonly used in laboratories are very fragile. Dropping, stirring solid materials or too much power transmitted from the agitator to the product can cause broken glass. Due to their solid stainless steel core, BOLA Stirrer Shafts are protected against all these possibilities of breaking.

Universal chemical resistance

Due to the thick PTFE-jacket, the product which is stirred is only exposed to PTFE. This assures an almost universal chemical resistance. PTFE-jacketed stirrer shafts can be used whenever stirrer shafts made of PP (polypropylene), glass or stainless steel are not sufficient.

Temperature resistance

Stirrer shafts made of PP (polypropylene) are deformed at temperatures exceeding +100°C and cannot be used any longer. All BOLA PTFE-jacketed stirrer shafts can be used at temperatures of up to +250°C without any negative effects on their chemical resistance.

Non-adhesive

The surfaces of glass and stainless steel stirrer shafts allow adhesion of products (in particular such as dyes and glues). BOLA PTFE Stirrer Shafts, however, are non-adhesive and therefore eliminate adhesion of dyes and glues.

Interchangeability

At present, most stirrer shafts used in laboratories are made of glass. All BOLA Stirrer Shafts are available with the same diameters, lengths and surface qualities (KPG) as stirrer shafts made of glass. Thus, the user can easily replace the glass stirrer shaft with a PTFE-jacketed stirrer shaft and does not have to change agitators, couplings and guiding devices.

Safe fixing

The upper end of the BOLA Stirrer Shaft is not jacketed with PTFE and can therefore be fixed safely into the agitator or the stirrer coupling.

Solid stirrer blade

The stirrer blade is fixed tightly to the stirrer shaft and cannot be loosened by the product which is still turning after switching off the agitator. The stirrer shafts are suitable for clockwise and counterclockwise rotation.





Frequently asked: Why don't you coat stirrer shafts?

Coating with PTFE only provides a thin plastic layer. This layer can be damaged very easily by aggressive products, friction or rough handling during storage. A possible consequence is that parts of the layer are peeled off.



The BOLA solution: A solid PTFE jacket together with solid stirrer blades. BOLA Stirrer Shafts provide a long durability and an excellent mechanical resistance.

Suitable chucking diameter of stirrer shafts

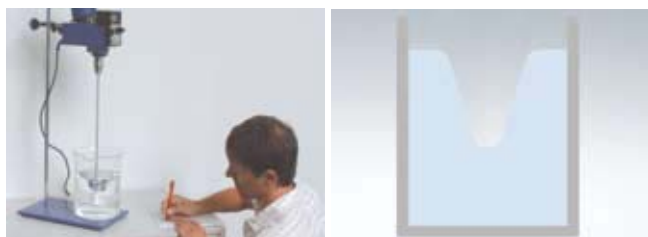
Very long stirrer shafts need to have suitable diameters to be stable enough. All BOLA Stirrer Shafts have adequate diameters and lengths. If the chucking diameter of a stirrer shaft is too big, it can mostly be reduced by machining. This machining has to be made totally self-centring to avoid eccentricity of the stirrer shaft. Please contact us if you need a reduced chucking diameter.



Results of stirring – tested for you

In order to help you choose the suitable stirrer shaft for your application, we have made tests with typical data. These graphs shall give you an indication for the stirring effects of the BOLA Stirrer Shafts.

- » Speed: 500 rpm
- » Volume: 2.000 ml
- » Product: water
- » Temperature: 20°C
- » Vessel: glass beaker



BOLA Propeller Stirrer Shafts

BESTSELLER

Material: PTFE	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal	Stirring effect: bottom-up
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Product description:

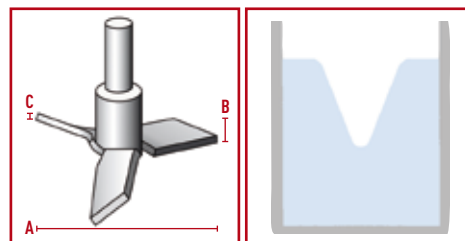
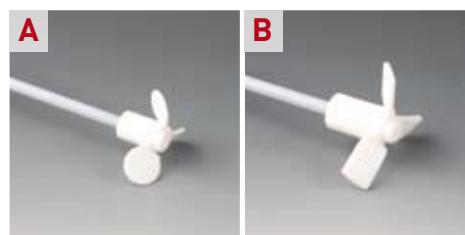
PTFE-jacketed stainless steel shaft, propeller completely made of PTFE with three 45° angled round or angular blades. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

	Length mm	Shaft dia. mm	Chuckling dia. mm	Dimensions according to drawing			Cat. No.:
				A	B	C	
A	250	6	4	50	18	1,5	C 378-04
	350	6	4	50	18	1,5	C 378-06
	450	6	4	50	18	1,5	C 378-08
B	350	8	6,5	75	18	3,0	C 378-12
	450	8	6,5	75	18	3,0	C 378-14
	600	8	6,5	75	18	3,0	C 378-16
	450	10	8,0	75	18	3,0	C 378-18
	600	10	8,0	75	18	3,0	C 378-20
	800	10	8,0	75	18	3,0	C 378-22

Applications:

The product is sucked bottom-up, good axial flow with low shear force.



BOLA Moon-Shaped Stirrer Shafts

Material: PTFE	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal
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Product description:

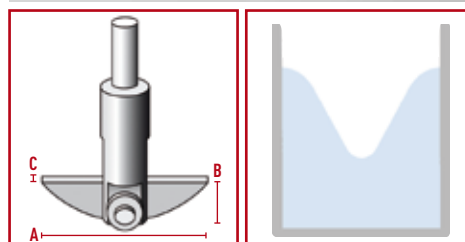
PTFE-jacketed stainless steel shaft, tilting half-moon stirrer blade with double-sided groove and access for the stirrer shaft completely made of PTFE. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	For ground joint NS	Dimensions according to drawing			Cat. No.:
				A	B	C	
350	8	6,5	24/29	65	18	3	C 376-02
450	8	6,5	24/29	65	18	3	C 376-04
350	8	6,5	29/32	90	24	3	C 376-06
450	8	6,5	29/32	90	24	3	C 376-08
600	8	6,5	29/32	90	24	3	C 376-10
350	10	8,0	29/32	90	24	3	C 376-12
450	10	8,0	29/32	90	24	3	C 376-14
510	10	8,0	29/32	90	24	3	C 376-16
600	10	8,0	29/32	90	24	3	C 376-18
1.000	10	8,0	29/32	90	24	3	C 376-19
600	16	14,0	45/40	125	35	3	C 376-20
800	16	14,0	45/40	125	35	3	C 376-22

Applications:

Tangential flow with little turbulence. The tilting half-moon blade is ideal for stirring in round-bottom flasks with ground joint necks. Blades (see Cat. No. C 400-... on page 35) are available separately and can be mounted additionally.



BOLA U-Shaped Stirrer Shafts

BESTSELLER

Material:
PTFE

Temperature resistance:
from -200°C to +250°C

Chemical resistance:
+++ universal

Product description:

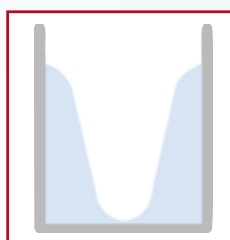
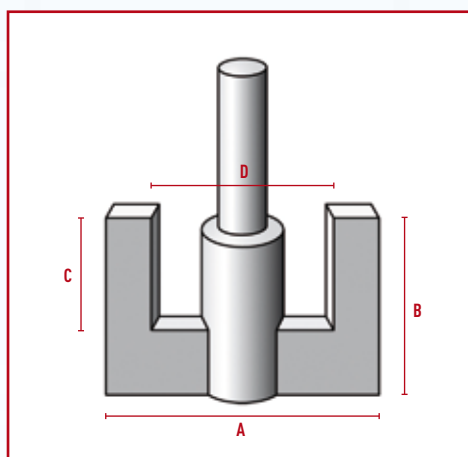
PTFE-jacketed stainless steel shaft, u-shaped stirrer blade completely made of PTFE. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuck dia. mm	Dimensions according to drawing				Cat. No.:
			A	B	C	D	
350	8	6,5	40	35	20	26	C 384-01
350	8	6,5	60	40	25	30	C 384-02
450	8	6,5	60	40	25	30	C 384-04
450	8	6,5	80	50	30	44	C 384-06
600	8	6,5	80	50	30	44	C 384-08
600	8	6,5	100	60	35	56	C 384-10
350	10	8,0	80	50	30	44	C 384-16
450	10	8,0	80	50	30	44	C 384-17
600	10	8,0	100	60	35	56	C 384-24
800	10	8,0	100	60	35	56	C 384-28
1.000	10	8,0	100	60	35	56	C 384-32
1.200	10	8,0	100	60	35	56	C 384-40
600	10	8,0	130	80	55	80	C 384-44
800	10	8,0	130	80	55	80	C 384-48
1.000	16	14,0	130	80	55	80	C 384-50
800	16	14,0	150	120	90	90	C 384-52
1.000	16	14,0	150	120	90	90	C 384-58
1.200	16	14,0	150	120	90	90	C 384-64

Applications:

Strong, tangential flow with high shear rate in the margin area, little sediments on the wall of the vessel. Ideal for mixing viscous liquids.



SUITABLE: page 25
Additional stirrer blades


BESTSELLER
BOLA Globe Stirrer Couplings

 Material:
POM

 Temperature resistance:
from -20°C to + 110°C

 Chemical resistance:
++ very good
Product description:

Made of POM, a plastic material with a good mechanical strength, powerful transmission of up to 300 Ncm, suitable for a speed of up to 1.200 rounds per minute, maximum misalignment of axes 10 mm.

NEW

	Opening for stirrer shaft mm	Upper dia. mm	Total length mm	Cat. No.:
A	Ø 6,5 and 10	10	190	C 398-08
B	Ø 8 and 10	10	190	C 398-12
C	Inner square SW6	SW8	180	C 399-12
D	GL 10	10	170	C 393-12

Product advantages:

- » very low centrifugal forces due to low weight
- » suitable for both left- and right-handed rotation (except for GL 10 thread: no left-handed rotation possible)
- » no resonance
- » simple assembly by means of screw joints with clamp rings
- » pivot (length 90 mm) can be shortened by the user

Applications:

Ideal for balancing misalignment of axes between agitator and stirrer shaft, suitable for glass, metal or BOLA stirrer shafts.



BOLA Maxi Propeller Stirrer Shafts

BESTSELLER

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal** Stirring effect: **bottom-up**

Product description:

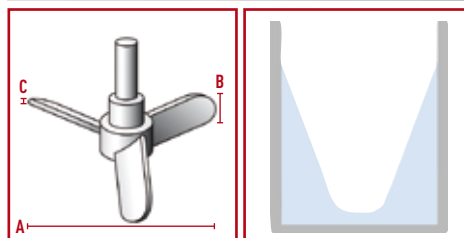
PTFE-jacketed stainless steel shaft, propeller completely made of PTFE with three 45° angled blades. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Dimensions according to drawing			Cat. No.:
			A	B	C	
450	10	8	140	20	4	C 392-28
600	10	8	140	20	4	C 392-34
800	10	8	140	20	4	C 392-40
1.200	10	8	140	20	4	C 392-42
800	16	14	140	26	6	C 392-44
1.000	16	14	140	26	6	C 392-46
600	16	14	200	26	6	C 392-52
800	16	14	200	26	6	C 392-58
1.000	16	14	200	26	6	C 392-64
1.200	16	14	200	26	6	C 392-70
1.600	16	14	200	26	6	C 392-74
1.200	16	14	280	26	8	C 392-80
1.600	16	14	280	26	8	C 392-84
1.200	16	14	400	26	8	C 392-90
1.600	16	14	400	26	8	C 392-94

Applications:

The product is sucked bottom-up, very good axial flow with low local shear force.



BOLA Stirrer Shafts with One Paddle

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal** Stirring effect: **bottom-up**

Product description:

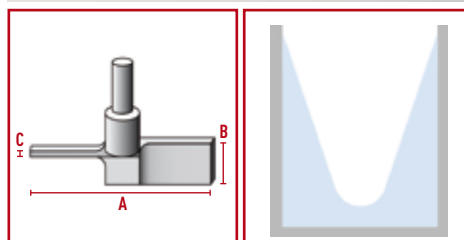
PTFE-jacketed stainless steel shaft, paddle completely made of PTFE with two 45° angled blades. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Dimensions according to drawing			Cat. No.:
			A	B	C	
450	8	6	80	18	4	C 379-02
600	8	6	80	18	4	C 379-04
800	8	6	80	18	4	C 379-06
600	10	8	110	20	5	C 379-08
800	10	8	110	20	5	C 379-10
1.000	10	8	110	20	5	C 379-12
1.000	16	14	140	25	12	C 379-18

Applications:

The product is sucked bottom-up, very good axial flow with low shear force.



SUITABLE: page 27
Stirrer bearings for
BOLA stirrer shafts

BOLA Impeller Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

PTFE-jacketed stainless steel shaft, impeller completely made of PTFE with three blades bent backwards, lower side of impeller either even or 15° angled. Universal chemical resistance since the product is only exposed to PTFE

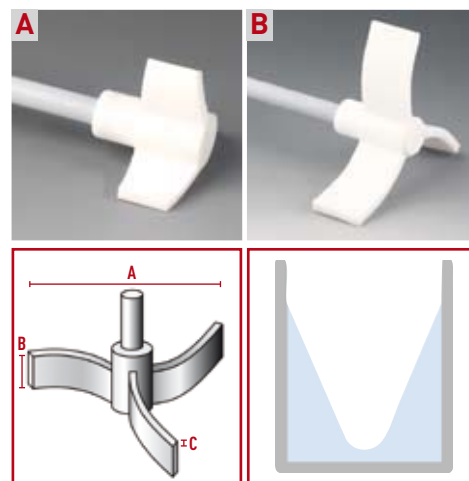
NEW

FDA conform

	Length mm	Shaft dia. mm	Chuckling dia. mm	Angle	Dimensions according to drawing			Cat. No.:
					A	B	C mm	
A	350	10	8	15°	45	22	5	C 389-18
	350	10	8	15°	60	25	5	C 389-20
	450	10	8	15°	60	25	5	C 389-22
B	350	10	8	0°	100	25	5	C 389-24
	450	10	8	0°	100	25	5	C 389-28
	600	10	8	0°	100	25	5	C 389-32
	800	10	8	0°	100	25	5	C 389-36
	600	10	8	0°	150	25	5	C 389-62
	800	10	8	0°	150	25	5	C 389-66

Applications:

Very good and gentle stirring due to blades which are bent backwards, low shear force. The 15° angled impellers are ideal for stirring in vessels with round bottom.



BOLA Centrifugal Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

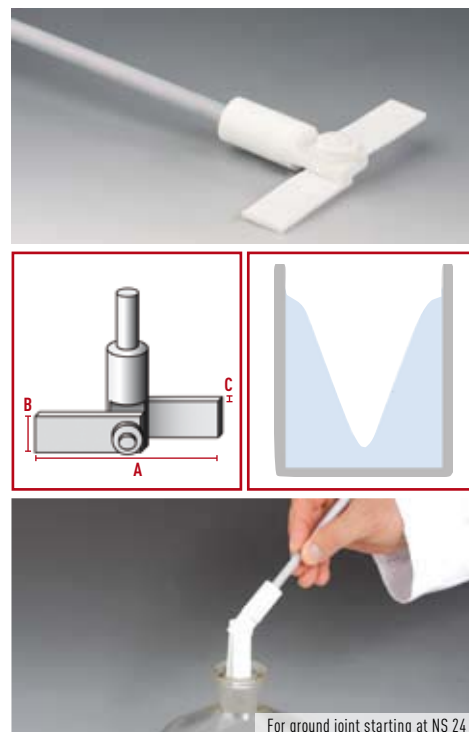
PTFE-jacketed stainless steel shaft, stirring unit (movable paddles, bolt and receiver for paddles) completely made of PTFE. The paddles open up at increasing speed. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Dimensions according to drawing			Cat. No.:
			A	B	C mm	
350	6	4	50	17	2,0	C 377-04
350	8	6,5	90	17	2,0	C 377-08
450	8	6,5	90	17	2,5	C 377-10
350	10	8,0	90	17	2,5	C 377-12
450	10	8,0	90	17	2,5	C 377-14
600	10	8,0	90	17	2,5	C 377-16

Applications:

The stirrer shaft can be used for stirring in narrow mouth vessels or in vessels with ground joint opening (starting at size NS 24).



SUITABLE: page 36
Additional stirrer paddles

BOLA Stirrer Shafts with Blade

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

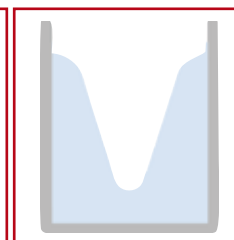
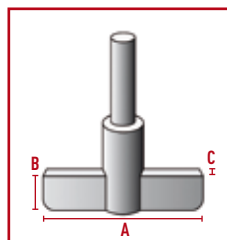
PTFE-jacketed stainless steel shaft, blade completely made of PTFE.
Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Dimensions according to drawing			Cat. No.:
			A	B	C	
450	8	6,5	90	20	5	C 381-04
600	8	6,5	90	20	5	C 381-06
450	10	8,0	120	30	5	C 381-08
600	10	8,0	120	30	5	C 381-10
800	10	8,0	120	30	5	C 381-12
1.000	16	14,0	150	50	5	C 381-18

Applications:

Tangential flow with little turbulence, gentle stirring.



BOLA Stirrer Shafts with Two Paddles

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal Stirring effect: bottom-up

Product description:

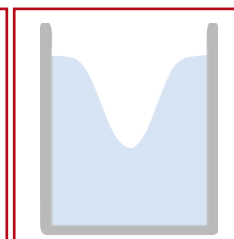
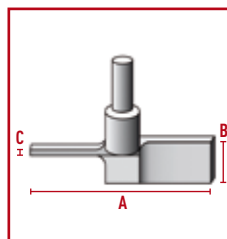
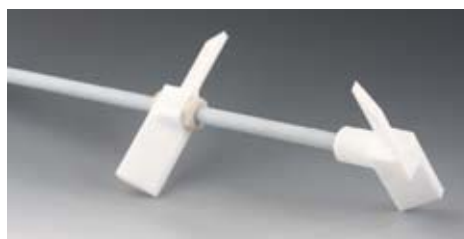
PTFE-jacketed stainless steel shaft, two PTFE paddles arranged crosswise at 90°. Upper paddle is fixed by means of clamp screws made of PEEK compound.

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Distance of blades mm	Dimensions according to drawing			Cat. No.:
				A	B	C	
450	8	6,5	50	80	18	4	C 380-02
600	8	6,5	50	80	18	4	C 380-04
800	8	6,5	50	80	18	4	C 380-06
600	10	8,0	100	110	20	5	C 380-08
800	10	8,0	100	110	20	5	C 380-10
1.000	10	8,0	100	110	20	5	C 380-12
600	16	14,0	150	140	25	12	C 380-14
800	16	14,0	150	140	25	12	C 380-16
1.000	16	14,0	150	140	25	12	C 380-18
1.200	16	14,0	150	140	25	12	C 380-20

Applications:

The product is sucked bottom-up, very good axial flow with low local shear force. The upper paddle can be positioned individually.



BOLA Fan-Shaped Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

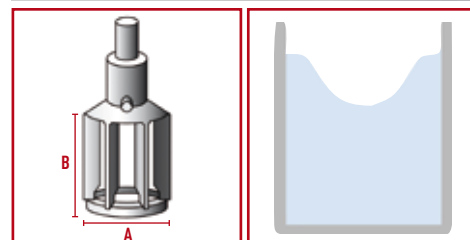
PTFE-jacketed stainless steel shaft, fan-shaped stirring unit completely made of PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	For ground joint NS	Dimensions according to drawing		Cat. No.:
				A	B	
300	8	6,5	29/32	24	35	C 382-02
300	8	6,5	45/40	38	45	C 382-06
450	8	6,5	45/40	38	45	C 382-08
450	10	8	60/46	53	55	C 382-12
600	10	8	60/46	53	55	C 382-14

Applications:

The mixture is drawn off from the bottom. Ideal mixing due to centrifugal forces. Ideal for stirring in narrow mouth vessels or in vessels with ground joint openings.



Helpful: page 232

Information on maximum revolutions per minute for BOLA stirrer shafts

BOLA Propeller Stirrer Shafts with 4 Blades

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal Stirring effect: bottom-up

Product description:

PTFE-jacketed stainless steel shaft, propeller completely made of PTFE with four 45° angled angular blades. Universal chemical resistance since the product is only exposed to PTFE.

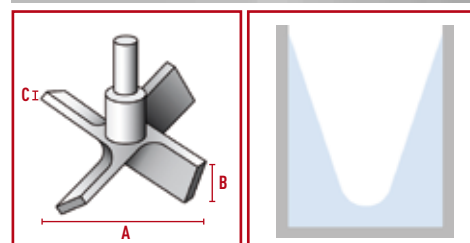
NEW

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Dimensions according to drawing			Cat. No.:
			A	B	C	
350	8	6,5	50	18	4	C 484-18
600	10	8,0	100	20	5	C 484-36

Applications:

The product is sucked bottom-up, good axial flow with low shear force.



SUITABLE: page 16

Universal stirrer couplings

BOLA Discs Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to + 250°C Chemical resistance: +++ universal

Product description:

PTFE-jacketed stainless steel shaft, discoidal stirrer blade with six radial paddles completely made of PTFE, similar to a "Rushton Turbine" stirrer shaft. Universal chemical resistance since the product is only exposed to PTFE.

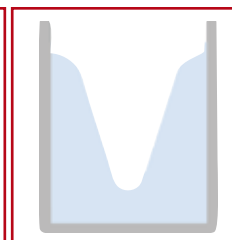
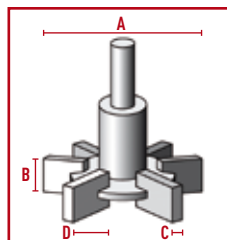
NEW

FDA conform

Length mm	Shaft dia. mm	Chuck dia. mm	Suitable for NS NW	Dimensions according to drawing				Cat. No.:
				A	B	C	D mm	
350	6	4	29/32	25	5	2	6,3	C 598-12
350	6	4	45/40	38	8	2	10	C 598-16
350	10	8		60	10	2	12,5	C 598-22
600	10	8		60	10	2	12,5	C 598-26
350	10	8		100	15	3	18,8	C 598-32
600	10	8		100	15	3	18,8	C 598-36
600	10	8		150	28	4	35	C 598-42
1.000	10	8		150	28	4	35	C 598-46
600	10	8		200	36	4	45	C 598-52
1.000	10	8		200	36	4	45	C 598-56
600	16	14		200	36	4	45	C 598-62
1.200	16	14		200	36	4	45	C 598-66

Applications:

Axial suction of mixture, strong radial flow. Ideal for aerating liquids.



BOLA Mini-Propeller Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to + 250°C Chemical resistance: +++ universal Stirring effect: bottom-up

Product description:

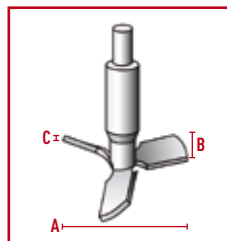
PTFE-jacketed stainless steel shaft, propeller completely made of PTFE with three 45° angled angular blades. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuck dia. mm	Suitable for NS	Dimensions according to drawing			Cat. No.:
				A	B	C mm	
350	6	4	29/32	25	8	2	C 482-12
350	6	4	45/40	40	12	2	C 482-24

Applications:

The product is sucked bottom-up, good axial flow with low shear force. The small stirring diameter allows stirring in narrow mouth vessels or in vessels with ground joint openings.



BOLA Micro Surface Stirrer Shafts

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

PTFE-jacketed stainless steel shaft, blade completely made of PTFE with four round paddles. Universal chemical resistance since the product is only exposed to PTFE.

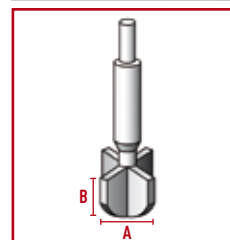
NEW

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Dimensions according to drawing		Cat. No.:
			A	B	
120	3,5	2,5	8	8	C 486-08
180	3,5	2,5	12	12	C 486-12
200	4,0	3,0	14	14	C 486-16
200	4,0	3,0	16	16	C 486-20

Applications:

Ideal for stirring in test tubes or narrow-mouth vessels, optimum mixture in round vessels and in vessels with low fill level.



BOLA Double Impulse Stirrer Shafts

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal** Stirring effect: **bottom-up**

Product description:

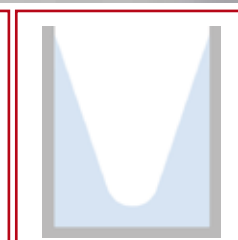
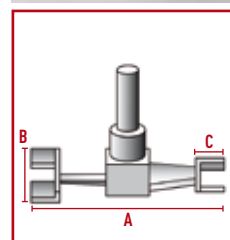
PTFE-jacketed stainless steel shaft, two paddles arranged crosswise at 90° completely made of PTFE. Upper paddle is fixed by means of clamp screws made of PEEK compound. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Distance of blades mm	Dimensions according to drawing			Cat. No.:
				A	B	C	
600	10	8	150	140	34	19	C 391-18
800	16	8	150	140	34	19	C 391-28
1.200	16	14	300	240	56	32	C 391-34

Applications:

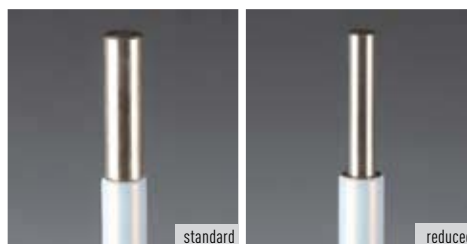
The inner stirring surfaces provide an upswing, while the parallel paddle ends provide a downward movement. Even viscous liquids are mixed ideally. The upper paddle can be positioned individually.



BOLA Stirrer Shafts with Reduced Chucking Diameter (RCD)

For some applications, it is necessary to use very long stirrer shafts. These stirrer shafts must have suitable diameters to be stable enough. It can occur that the chucking diameter of these long stirrer shafts is too big for the agitator. All BOLA Stirrer Shafts listed below have a professionally reduced chucking diameter of 10 mm and can be fixed safely in all common agitators.

You need a smaller diameter, or a different stirrer shaft? No problem:
Simply indicate the requested diameter and the catalogue number of the stirrer shaft.



Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

A BOLA Stirrer Shafts with Blade RCD

PTFE-jacketed stainless steel shaft, blade completely made of PTFE. Universal chemical resistance since the product is only exposed to PTFE. Blade dimensions see Cat. No. C 381-... on page 19.

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Cat. No.:
1.000	16	10	C 581-18

Applications:

Tangential flow with little turbulence, gentle stirring.



B BOLA Moon-Shaped Stirrer Shafts RCD

PTFE-jacketed stainless steel shaft, tilting half-moon stirrer blade with double-sided groove and access for the stirrer shaft completely made of PTFE. Universal chemical resistance since the product is only exposed to PTFE. Blade dimensions see Cat. No. C 376-... on page 14.

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Cat. No.:
600	16	10	C 576-20
800	16	10	C 576-22

Applications:

Tangential flow with little turbulence. The tilting half-moon blade is ideal for stirring in round-bottom flasks with ground joint necks. Blades are available separately and can be mounted additionally.



C BOLA Maxi Propeller Stirrer Shafts RCD

PTFE-jacketed stainless steel shaft, propeller completely made of PTFE with three 45° angled blades. Universal chemical resistance since the product is only exposed to PTFE. Blade dimensions see Cat. No. C 392-... on page 17.

FDA conform

Length mm	Shaft dia. mm	Chucking dia. mm	Cat. No.:
600	16	10	C 592-52
800	16	10	C 592-58
1.000	16	10	C 592-64
1.200	16	10	C 592-70

Applications:

The product is sucked bottom-up, very good axial flow with low local shear force.

BOLA Stirrer Shafts with Reduced Chucking Diameter (RCD)

D BOLA Stirrer Shafts with One Paddle RCD

PTFE-jacketed stainless steel shaft, paddle completely made of PTFE with two 45° angled blades. Universal chemical resistance since the product is only exposed to PTFE. Blade dimensions see Cat. No. C 379-.. on page 17.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Cat. No.:
1.000	16	10	C 579-18
1.200	16	10	C 579-20

Applications:

The product is sucked bottom-up, very good axial flow with low shear force.



E BOLA Stirrer Shaft with Two Paddles RCD

PTFE-jacketed stainless steel shaft, two paddles arranged crosswise at 90° completely made of PTFE. Upper paddle is fixed by means of clamp screws made of PEEK compound. Blade dimensions see Cat. No. C 380-.. on page 19.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Cat. No.:
600	16	10	C 580-14
800	16	10	C 580-16
1.000	16	10	C 580-18
1.200	16	10	C 580-20

Applications:

The product is sucked bottom-up, very good axial flow with low local shear force. The upper paddle can be positioned individually.

F BOLA U-Shaped Stirrer Shafts RCD

PTFE-jacketed stainless steel shaft, U-shaped stirrer blade completely made of PTFE. Universal chemical resistance since the product is only exposed to PTFE. Blade dimensions see Cat. No. C 384-.. on page 15.

FDA conform

Length mm	Shaft dia. mm	Chuckling dia. mm	Cat. No.:
800	16	10	C 584-52
1.000	16	10	C 584-58
1.200	16	10	C 584-64

Applications:

Strong, tangential flow with high shear rate in the margin area, little sediments on the wall of the vessel. Ideal for mixing viscous liquids.



SUITABLE: page 27
Stirrer bearings for BOLA Stirrer Shafts

BOLA Stirrer Blades

These solid stirrer blades are made of PTFE and have a set of clamp screws made of a PTFE/PEEK compound. The blades can be fixed tightly on BOLA Stirrer Shafts by means of the clamp screws. A spanner wrench is included for easy assembly.

Applications:

For flexible testing of optimum geometry and arrangement of blades on stirrer shafts. Usable to create stirrers with one single stage or with several stages.

Material:	Temperature resistance:	Chemical resistance:	Stirring effect:
PTFE / PEEK	from -200°C to + 250°C	+++ universal	bottom-up

A Type: BOLA Propeller Blades

FDA conform

Shaft dia. mm	Dimensions according to drawing			Wrench size	Cat. No.:
	A	B	C		
8	75	18	3	15	C 440-08
10	75	18	3	19	C 440-10

Applications:

The product is sucked bottom-up, good axial flow with low shear force.

B Type: BOLA Impeller Blades

FDA conform

Shaft dia. mm	Dimensions according to drawing			Wrench size	Cat. No.:
	A	B	C		
10	60	25	6	19	C 443-08
10	100	25	6	19	C 443-10
10	150	25	6	19	C 443-14

NEW

Applications:

Very good and gentle stirring due to blades which are bent backwards, low shear force.

C Type: BOLA Propeller with 4 Blades

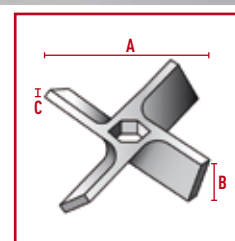
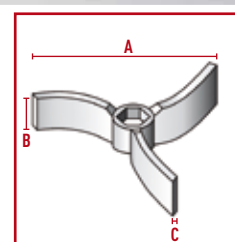
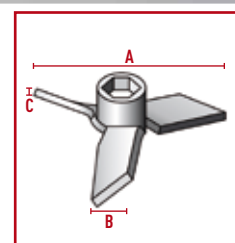
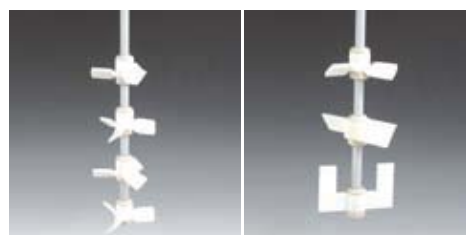
FDA conform

Shaft dia. mm	Dimensions according to drawing			Wrench size	Cat. No.:
	A	B	C		
8	50	22	4	15	C 448-08
10	100	25	5	19	C 448-10
10	140	30	5	19	C 448-20
10	200	30	5	19	C 448-28
16	140	30	12	32	C 448-36
16	200	30	12	32	C 448-42

NEW

Applications:

The product is sucked bottom-up, good axial flow with low shear force.



BOLA Stirrer Blades

D Type: BOLA U-Shaped Blades

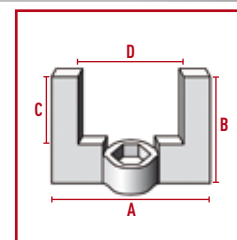
FDA conform

Shaft dia. mm	Dimensions according to drawing				Wrench size	Cat. No.:
	A	B	C	D mm		
8	60	40	22	30	15	C 445-08
8	100	60	35	56	15	C 445-12
10	80	50	30	44	19	C 445-16
10	100	60	35	56	19	C 445-20
10	130	80	55	80	19	C 445-30
10	150	120	90	90	19	C 445-34
16	130	80	55	80	32	C 445-40
16	150	120	90	90	32	C 445-44

NEW

Applications:

Strong, tangential flow with high shear rate in the margin area, little sediments on the wall of the vessel. Ideal for mixing viscous liquids.



E Type: BOLA Paddle

FDA conform

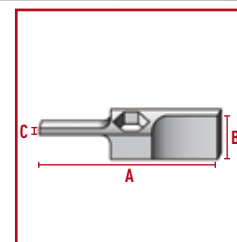
Shaft dia. mm	Dimensions according to drawing			Wrench size	Cat. No.:
	A	B	C mm		
8	80	24	4	15	C 446-08
10	80	25	5	19	C 446-10
10	110	25	5	19	C 446-12
10	140	25	5	19	C 446-14
16	140	30	12	32	C 446-16

NEW

NEW

Applications:

The product is sucked bottom-up, very good axial flow with shear force.



F Type: BOLA Maxi Propeller Blades

FDA conform

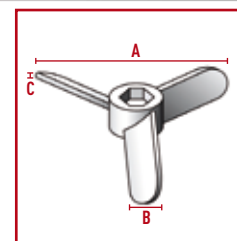
Shaft dia. mm	Dimensions according to drawing			Wrench size	Cat. No.:
	A	B	C mm		
10	140	20	4	19	C 441-10
10	200	20	6	19	C 441-12
16	140	26	6	32	C 441-14
16	200	26	6	32	C 441-16

NEW

NEW

Applications:

The product is sucked bottom-up, very good axial flow with local shear force.



BOLA Solo Stirrer Shafts

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

PTFE-jacketed stainless steel shaft with fused lower end. Universal chemical resistance since the product is only exposed to PTFE.

FDA conform

Length mm	Shaft dia. mm	Chuck dia. mm	Cat. No.:
350	8	6,5	C 472-08
600	8	6,5	C 472-20
350	10	8,0	C 474-08
600	10	8,0	C 474-20
800	10	8,0	C 474-30
1.000	10	8,0	C 474-34
1.200	10	8,0	C 474-40
1.200	16	14,0	C 476-40
1.600	16	14,0	C 476-60

Applications:

Ideal for use together with BOLA Stirrer Blades which can be fixed individually on the Solo Stirrer Shaft. Also usable as stirring staff for manual stirring.



BOLA Stirrer Bearings

BESTSELLER

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal** Vacuum: **suitable**

Product description:

The sealing rings on these bearings ensure a perfect sealing. The ground joint no longer sticks, the danger of breaking is reduced and the cone can be removed easily from the socket. A special gasket made of PTFE and an FPM o-ring which is compressed by a GL screw cap provide a good sealing of the stirrer shaft. This gasket can be exchanged after wearing.

FDA conform

Cone NS European standard	For stirrer shaft dia. mm	Total length mm	Thread of screw cap GL	Cat. No.:
19/26	6	63	18	C 424-04
19/26	8	65	25	C 424-05
24/29	8	69	25	C 424-08
24/29	10	70	25	C 424-09
29/32	6	72	18	C 424-12
29/32	8	74	25	C 424-13
29/32	10	72	25	C 424-14
45/40	10	80	25	C 424-16
45/40	16	86	32	C 424-18
Cone US standard	For stirrer shaft dia. mm	Total length mm	Thread of screw cap GL	Cat. No.:
24/40	8	80	25	C 429-14
24/40	10	80	25	C 429-18

Applications:

Suitable for vacuum, perfect bearing for stainless steel, glass and BOLA Stirrer Shafts



BOLA Glass Stirrer Bearings

BESTSELLER

Material:	Temperature resistance:	Chemical resistance:	Vacuum:
PTFE	from -200°C to + 250°C	+++ universal	suitable

Product description:

Combination of a borosilicate glass piece with ground joint, an interior PTFE shaft guide with integrated special gasket and a GL screw cap made of PPS. The special gasket made of PTFE and an FPM o-ring which is compressed by a GL screw cap provide a good sealing of the stirrer shaft. This gasket can be exchanged after wearing.

FDA conform

Cone NS European standard	For stirrer shaft dia. mm	Total length mm	Thread of screw cap GL	Cat. No.:
29/32	8	90	25	C 425-08
29/32	10	90	25	C 425-09
45/40	10	110	25	C 425-12
45/40	16	118	32	C 425-14
Cone US standard	For stirrer shaft dia. mm	Total length mm	Thread of screw cap GL	Cat. No.:
24/40	8	103	25	C 428-08
24/40	10	103	25	C 428-12

Applications:

Suitable for vacuum, perfect bearing for stirrer shafts made of stainless steel, glass and for BOLA Stirrer Shafts



BOLA Ultra Stirrer Bearings

Material:	Temperature resistance:	Chemical resistance:	Vacuum:
PTFE	from -200°C to + 250°C	+++ universal	suitable

Product description:

Combination of a borosilicate glass piece with ground joint, an interior PTFE shaft guide with integrated special gasket and a pressure screw made of PTFE with glass fibre.

FDA conform

Cone NS	For stirrer shaft dia. mm	Total length mm ca.	Cat. No.:
29/32	8	108	C 426-08
29/32	10	108	C 426-09

Applications:

Suitable for vacuum, perfect bearing for stirrer shafts made of stainless steel, glass and for BOLA Stirrer Shafts



BOLA Replacement Glass Parts

Material: Glass	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal	Vacuum: suitable
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Product description:

Borosilicate glass with ground joint and GL thread.

FDA conform

Size NS	Thread GL			Cat. No.:
29/32	25			C 425-50
24/40	25			C 425-51
45/40	25			C 425-53
45/40	32			C 425-55

Applications:

Spare part for BOLA Glass Stirrer Bearings



BOLA Replacement Shaft Guides

Material: PTFE	Material: FPM	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal	Vacuum: suitable
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Product description:

With integrated, exchangeable special gasket made of PTFE and an FPM o-ring.

FDA conform

For stirrer shaft dia. mm	Total length mm			Cat. No.:
8	57			C 425-58
10	57			C 425-59
16	66			C 425-60

Applications:

Spare part for BOLA Glass Stirrer Bearings and BOLA Ultra Stirrer Bearings



BOLA Special Gaskets

Material: PTFE	Material: FPM	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal	Vacuum: suitable
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Product description:

Easily exchangeable combination of PTFE gasket with FPM o-ring for PTFE shaft guides. The gaskets provide sealing of the stirrer shafts.

FDA conform

For stirrer shaft dia. mm				Cat. No.:
6				C 425-69
8				C 425-70
10				C 425-71
16				C 425-72

Applications:

Spare part for BOLA Glass Stirrer Bearings and BOLA Ultra Stirrer Bearings



BOLA Replacement Screw Caps

Material: **PPS** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **++ very good**

Product description:

Screw caps compress the o-ring of the special gasket and provide sealing of the stirrer shaft.

FDA conform

For stirrer shaft dia. mm	Thread GL			Cat. No.:
6	18			C 425-82
8	25			C 425-84
10	25			C 425-86
16	32			C 425-88
16	25			C 425-90
22	32			C 425-92

Applications:

Spare part for BOLA Glass Stirrer Bearings



BOLA Special Stirrer Bearings

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal** Pressure: **low** Vacuum: **suitable**

Product description:

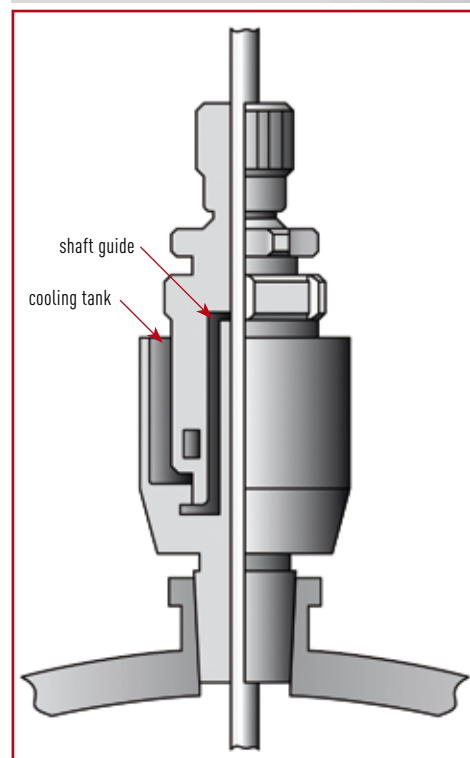
The 29/32 ground joint of these bearings provides a safe seat in the reactor lid. The stirrer shaft is held by an invisible shaft guide made of borosilicate glass which has an adjustable vacuum sealing. The stirrer can be adjusted in height by means of a lock nut. There is no abrasion. A cooling tank for an optional lubricant against overheating is also included. Suitable for vacuum up to at least 700 mm Hg and for low overpressure. Speeds of up to 500 rpm – temporarily even 1000 rpm – are admissible.

FDA conform

Ground Joint NS	For stirrer shafts dia. mm	Cat. No.:
29/32	8	C 430-20
29/32	10	C 430-28

Applications:

Particularly suitable for long-term use. For all stirrer shafts made of stainless steel, glass or for BOLA Stirrer Shafts with a diameter of 8 or 10 mm.



BOLA Magnetic Stirrer Heads with Ground Joint

Material: PTFE	Material: PFA	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal	Vacuum: suitable
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Product description:

Gastight permanent magnetic coupling with ball bearing encapsulated in ceramics and square connection for cardan joint. PTFE cone size 29 with release nut made of PTFE with glass fibre for easy removal of the ground joint. All products which are exposed to the medium do not contain any metals. The 8 mm shaft guide provides guidance without friction of stirrer shafts up to a speed of 800 rpm. The stirrer head can also be fixed directly into the chuck by mounting the included metal adaptor on the square connection (6 mm).

FDA conform

Torque Ncm	Ground joint NS	Viscosity up to mPas	Volume up to ml	Speed rpm max.	Total length mm	Cat. No.:
20	29/32	1.500	2.000	800	203	C 450-16
40	29/32	2.500	4.000	800	215	C 450-24

Applications:

For absolute vacuum.



BOLA Magnetic Stirrer Heads with Flange

Material: PTFE	Material: PFA	Temperature resistance: from -200°C to + 250°C	Chemical resistance: +++ universal	Vacuum: suitable
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Product description:

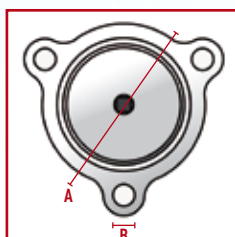
Gastight permanent magnetic coupling with ball bearing encapsulated in ceramics, square connection for cardan joint and flange NW 25. All products which are exposed to the medium do not contain any metals. The 8 mm shaft guide provides guidance without friction of stirrer shafts up to a speed of 800 rpm. The stirrer head can also be fixed directly into the chuck by mounting the included metal adaptor on the square connection (6 mm). Universal chemical resistance, since the product is only exposed to PTFE and PFA.

FDA conform

Torque Ncm	Ground joint NS	Viscosity up to mPas	Volume up to ml	Bolt circle dia. A mm	Bore dia B mm	Length mm	Cat. No.:
60	25	3.500	6.000	75	9	215	C 454-24

Applications:

For absolute vacuum.




BESTSELLER

BOLA Magnetic Stirrer Heads

Material: PTFE / compound Material: Glass Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

Perfect combination of drive shaft with ball bearings, rotor and lower bearing made of PTFE/PEEK and a conductor made of borosilicate glass. Requires little space due to compact construction. No leakage or memory effects due to non-porous, welded rotor. This rotor holds the stirrer shaft by means of three stud screws which are fixed in the counterbores of the stirrer shaft. This provides optimum power transmission and a safe fixing. The 6 mm square can be fixed into the stirrer coupling or into the agitator.

FDA conform

NEW

**NEW
NEW**

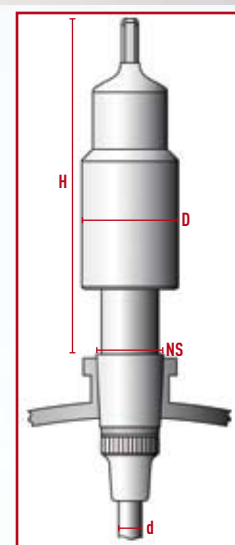
For stirrer shaft dia. d mm	Height H mm	Conductor NS	Torque Ncm	Drive shaft O.D D mm	Cat.No.:
6	90	19/26	15	28	C 512-08
8	148	29/32	50	38	C 502-08
10	148	29/32	50	38	C 502-16
8	140	45/40	50	38	C 504-08
10	140	45/40	50	38	C 504-16
8		for fusing	50	38	C 500-08
10		for fusing	50	38	C 500-16

Product advantages:

- » powerful transmission of up to 50 Ncm
- » no grease required
- » all products which are exposed to the medium do not contain any metals
- » high speed of up to max. 1.500 rpm
- » high working temperatures up to +250°C are possible
- » excellent chemical resistance
- » safe to run dry
- » high durability

Applications:

Ideal for reactor lids with a center ground joint, suitable for stirrer shafts made of glass or stainless steel with counterbores for a safe fixing into the rotor.



BOLA Conductors for Magnetic Stirrer Heads

Material: **Glass** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Borosilicate glass with ground joint and glued upper bearing. Alternatively without ground joint for fusing on the reactor lid (upper bearing to be glued is included).

FDA conform

	Ground joint NS			Cat.No.:
A	19/26			C 463-19
	29/32			C 463-29
	45/40			C 463-45
B	for fusing			C 461-08

Applications:

Accessory for BOLA Magnetic Stirrer Head



BOLA Stirrer Shafts for Magnetic Stirrer Heads

Material: **Glass** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

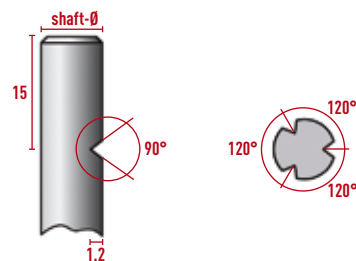
Ground and polished borosilicate stirrer shaft with integrated counterbores for the three stud screws of the rotor of the BOLA Magnetic Stirrer Head.

FDA conform

Length mm	Stirrer shaft dia. mm	Cat.No.:
400	10	C 492-16
600	10	C 492-24

Applications:

Accessory for BOLA Magnetic Stirrer Head. Ideal for use together with BOLA Stirrer Blades which can be fixed individually. Shaft can be shortened on demand.



BOLA GT Glass Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

KPG stirrer shaft made of borosilicate glass, tiltable moon-shaped stirrer blade with angular groove and clamping bolts completely made of PTFE. For vessels with a 29/32 ground joint. Universal chemical resistance since the product is only exposed to PTFE and glass.

FDA conform

Length mm	Shaft dia. mm	Blade dimensions mm	Cat.No.:
290	10	50 x 24 x 3	C 375-02
340	10	68 x 24 x 3	C 375-04
390	10	68 x 24 x 3	C 375-06
490	10	90 x 24 x 3	C 375-08
560	10	90 x 24 x 3	C 375-10

Applications:

Tangential flow with little turbulence. The tilting half-moon blade is ideal for stirring in round-bottom flasks with ground joint necks. Blades are available separately and can be mounted additionally.



For ground joint NS 29/32

BOLA KPG Glass Stirrer Shafts

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

KPG stirrer shaft with double pivot made of ground and polished borosilicate glass, tiltable moon-shaped stirrer blade with double-sided groove completely made of PTFE. For vessels with a 29/32 ground joint. Universal chemical resistance since the product is only exposed to PTFE and glass.

FDA conform

Length mm	Shaft dia. mm	Blade dimensions mm	Cat.No.:
350	10	50 x 24 x 3	C 387-05
350	10	75 x 24 x 3	C 387-07
350	10	90 x 24 x 3	C 387-09
400	10	50 x 24 x 3	C 387-11
400	10	75 x 24 x 3	C 387-13
400	10	90 x 24 x 3	C 387-15

Applications:

Tangential flow with little turbulence. The tilting half-moon blade is ideal for stirring in round-bottom flasks with ground joint necks. Blades are available separately and can be mounted additionally.



For ground joint NS 29/32

BOLA Moon-Shaped Stirrer Blades

Material: PTFE Temperature resistance: from -200°C to + 250°C Chemical resistance: +++ universal

Product description:

Completely made of PTFE, with double-sided groove.



FDA conform

Suitable for ml	Bore dia. mm	For ground joint NS	Blade dimensions mm	Cat.No.:
100	8,5	24/29	50 x 18 x 3	C 400-06
100	8,5	29/32	50 x 24 x 3	C 400-08
250	8,5	24/29	65 x 18 x 3	C 400-12
250	8,5	29/32	68 x 24 x 3	C 400-14
500	8,5	24/29	75 x 18 x 3	C 400-16
500	8,5	29/32	75 x 24 x 3	C 400-18
1.000	8,5	29/32	90 x 24 x 3	C 400-20
2.000	8,5	29/32	110 x 24 x 3	C 400-22
2.000	12,5	45/40	125 x 35 x 3	C 400-24
4.000/6.000	8,5	29/32	125 x 24 x 3	C 400-26
4.000/6.000	12,5	45/40	145 x 35 x 4	C 400-28

Applications:

For glass stirrer shafts with double pivot, KPG glass stirrer shafts (Cat.No. C 387- ...) and PTFE-jacketed stainless steel stirrer shafts (Cat. No. C 376-...).



BOLA Moon-Shaped Stirrer Blades

Material: PTFE Temperature resistance: from -200°C to + 250°C Chemical resistance: +++ universal

Product description:

Completely made of PTFE, with angular groove. For vessels with a 29/32 ground joint.

FDA conform

Suitable for ml	Bore dia. mm	Blade dimensions mm	Cat.No.:
100	5,8	50 x 24 x 3	C 401-02
250	5,8	68 x 24 x 3	C 401-04
1.000	5,8	90 x 24 x 3	C 401-08

Applications:

For glass stirrer shafts and KPG glass stirrer shafts (Cat.No. C 375- ...).



BOLA Moon-Shaped Stirrer Blades

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

Completely made of PTFE, with one-sided groove and bore dia. 10 mm.

FDA conform

Suitable for ml	For ground joint NS	Blade dimensions mm	Cat. No.:
100	24/29	50 x 18 x 3	C 402-07
100	29/32	50 x 24 x 3	C 402-09
250	24/29	65 x 18 x 3	C 402-14
250	29/32	68 x 24 x 3	C 402-16
500	24/29	75 x 18 x 3	C 402-19
500	29/32	75 x 24 x 3	C 402-21
1.000	29/32	90 x 24 x 3	C 402-24
2.000	29/32	110 x 24 x 3	C 402-26
4.000/6.000	29/32	125 x 24 x 3	C 402-31

Applications:

For glass stirrer shafts with one-sided pivot.



BOLA Centrifugal Stirrer Blades

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

Completely made of PTFE, consisting of 2 paddles, bolt and clamp ring. For vessels with a 24/29 ground joint (or bigger).

FDA conform

Stirring dia. mm	Blade dimensions mm	Cat. No.:
50	2	C 407-04
70	2	C 407-06
90	2,5	C 407-08

Applications:

For centrifugal stirrer shafts (Cat. No. C 377-.. on page 18)



For ground joint starting at NS 24/29

BOLA Bolts and Clamp Rings

Material: **PTFE** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Completely made of PTFE, bolts are available in 2 different versions:

A Cylindrical shape

FDA conform

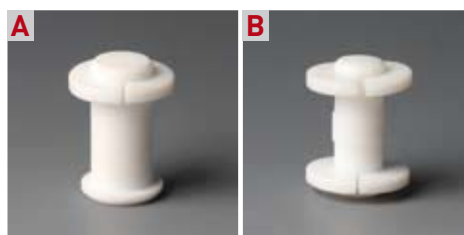
Bolt dia. mm	Usable length mm	For blades with bore dia. mm	Cat. No.:
6	12	6,5	C 410-02
12	16	12,5	C 410-06

B With a distance piece between blade and stirrer shaft. The blade remains movable.

Bolt dia. mm	Usable length mm	For blades with bore dia. mm	Cat. No.:
8	12	8,5	C 410-04

Applications:

For moon-shaped stirrer blades with double-sided groove (Cat. No. C 400- ... on page 35)



BOLA Stirring Bars



What you should know about magnetic stirring and mixing

For optimum results, both drive magnet and stirring bar are decisive. For optimum efficiency, the distance between the magnetic poles of the drive magnet and the length of the stirring bar should be equal. A magnetic stirring bar which is too small will eventually gravitate toward one of the poles of the drive magnet. Stirring efficiency is influenced by the material, by the thickness of the cover plate and the thickness of the vessel. For the best magnetic coupling, the distance between the magnets should be minimized.

What you should know about the choice of stirring bars

Improperly selected stirring bars often cause flickering of the bars in the vessel, respectively ineffective mixing of the product. You can find an overview of the most common stirring bars here below:

Cylindrical Magnetic Stirring Bars:

They are the most commonly used magnetic stirring bars. Due to their simple shape they can be offered at very attractive prices. Cylindrical magnetic stirring bars offer excellent centering and smooth running characteristics.

Glass Magnetic Stirring Bars:

They have a non-porous and smooth glass-coating. All following processes are not affected by any carry-over. There is an increased abrasion between glass vessels and glass stirring bars.

Ultra Magnetic Stirring Bars:

These magnetic stirring bars have very smooth and seamless surfaces. No substance can penetrate into their surfaces and thus, all following processes are not affected by any „carry-over“. They are mainly used for high-purity work or trace analysis

Power Magnetic Stirring Bars:

Due to special magnetic material, their torque loads are larger than those of conventional magnetic stirring bars. Power magnetic stirring bars are mainly used for agitating viscous liquids or for bridging larger distances between the magnetic stirring machine and the magnetic stirring bar.



HELPFUL: page 233
Detailed information on magnetic stirring

Square Magnetic Stirring Bars:

They are particularly suitable for big vessels due to the high magnetic force. Solids are released or removed from the bottom of the vessel.

Egg-Shaped Magnetic Stirring Bars:

They are particularly suitable for round-bottom flasks. Their shape mimics that of the flasks and assures complete mixing. Those magnetic stirring bars have an egg-shaped magnetic core which assures a better force transmission than a cylindrical core.

Triangular Magnetic Stirring Bars:

Such magnets are useful for mixing reagents which resist dissolving or for avoiding any residues at the bottom of the vessels. They provide strong turbulence at relatively low speeds.

Magnetic Stirring Bars with Pivot Ring:

Their interrupted surface provides greater surface area and added turbulence. Only their pivot ring and one end of the magnetic stirring bar touch the bottom of the vessel. Therefore these magnetic stirring bars have a more steady spinning position and a better longevity.

Star Head Magnetic Stirring Bars:

Optimum stirring in tall, narrow diameter vessels. Ideal stirring bar for cuvettes or test tubes.

Center Magnetic Stirring Bars:

These magnetic stirring bars provide better stirring action and a more stable spinning position due to the punctual position.



Tolerances of the magnetic stirring bars

- » The dimensions of the magnetic stirring bars are nominal dimensions which can have a tolerance of $\pm 5\%$ in length and $\pm 10\%$ in diameter.



Results of stirring – tested for you

In order to help you choose the suitable magnetic stirring bar for your application, we have made tests with these data under real conditions. You will find graphs for each magnetic stirring bar on the next pages.

- | | |
|---------------------------|-------------------------------|
| » Speed: 500 rpm | » Temperature: 20°C |
| » Volume: 2.000 ml | » Vessel: glass beaker |
| » Product: water | |



We “meliorate” your specific magnetic stirring bars

- » These stirring bars can for example be built in devices or can be used for special applications
- » The diameter of the magnetic stirring bars can be machined with a tolerance of up to $\pm 0,02$ mm
- » The magnetic stirring bars are ground to obtain a seamless amplitude
- » The ends are polished to receive a round or any other shape
- » The surface is becoming extremely smooth and even, so that contaminations cannot adhere
- » Reproducibility both in diameter and surface are granted



BOLA Cylindrical Magnetic Stirring Bars

BESTSELLER

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

PTFE-encapsulated magnetic core (Alnico 5), standard magnetic stirring bar, universal chemical resistance.

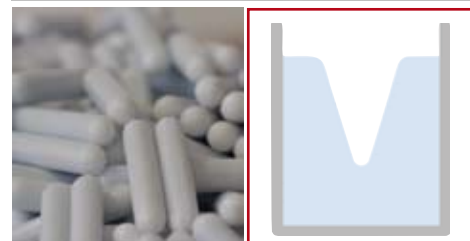


FDA conform

Length mm	Dia. mm	Cat. No.:	Length mm	Dia. mm	Cat. No.:
2	2	C 350-01	30	7	C 350-22
3	3	C 350-02	30	10	C 350-41
5	2	C 350-03	35	6	C 350-23
6	3	C 350-04	40	7	C 350-24
7	2	C 350-05	40	8	C 350-25
8	2	C 350-06	40	10	C 350-26
8	3	C 350-07	45	8	C 350-27
10	3	C 350-08	50	7	C 350-28
10	6	C 350-09	50	8	C 350-29
12	4,5	C 350-10	55	12	C 350-30
13	3	C 350-11	60	7	C 350-31
15	2	C 350-12	60	9	C 350-32
15	4,5	C 350-13	70	9	C 350-33
15	6	C 350-14	70	13	C 350-34
20	3	C 350-15	80	10	C 350-35
20	6	C 350-16	110	27	C 350-36
20	7	C 350-17	120	12	C 350-37
25	5	C 350-18	127	12	C 350-38
25	6	C 350-19	155	27	C 350-39
25	7	C 350-20			
30	6	C 350-21			

Applications:

Cylindrical magnetic stirring bars offer excellent centering and smooth running characteristics.



BOLA Square Magnetic Stirring Bars

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

PTFE-encapsulated magnetic core (Alnico 5), universal chemical resistance.

FDA conform

Dimensions mm	Cat. No.:
14 x 14 x 45	C 361-03
14 x 14 x 90	C 361-06

Applications:

They are particularly suitable for big vessels, strong turbulences at low speed; solids are released or even avoided.



BOLA Magnetic Stirring Bars with Pivot Ring

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

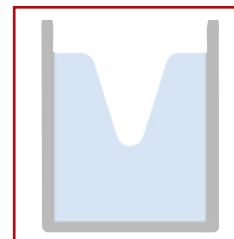
PTFE-encapsulated magnetic core (Alnico 5), cylindrical shape with pivot ring, universal chemical resistance.

FDA conform

Length mm	Dia. mm	Cat. No.:	Length mm	Dia. mm	Cat. No.:
8	3	C 354-02	35	6	C 354-20
12	5	C 354-05	40	8	C 354-23
15	5	C 354-08	45	8	C 354-26
20	6	C 354-11	50	8	C 354-29
25	6	C 354-14	60	9	C 354-32
30	6	C 354-17	70	9	C 354-35

Applications:

They provide a bigger surface area. Very steady spinning position with additional turbulences.



SUITABLE: page 43
Powerful magnetic stirring bar retrievers

BOLA Triangular Magnetic Stirring Bars

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

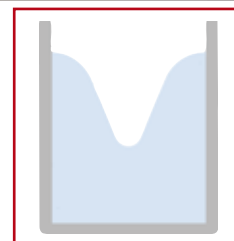
PTFE-encapsulated magnetic core (Alnico 5), universal chemical resistance.

FDA conform

Length mm	Dia. mm	Edge length mm	Cat. No.:
12	8	6	C 357-03
20	8	8	C 357-06
25	8	8	C 357-09
25	14	15	C 357-12
35	10	10	C 357-15
40	14	15	C 357-18
50	12	12	C 357-21
55	14	15	C 357-24
80	17	16	C 357-27
130	38	44	C 357-30

Applications:

For big vessels, strong turbulence at relatively low speeds. Useful for mixing reagents which resist dissolving or for avoiding any residues at the bottom of the vessels.



BOLA Egg-Shaped Magnetic Stirring Bars

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

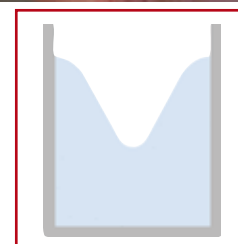
PTFE-encapsulated magnetic core (Alnico 5), universal chemical resistance.

FDA conform

Length mm	Dia. mm	Suitable for round bottom flasks (DIN 12 348) ml	Cat. No.:
20	10	25	C 358-02
25	12	50	C 358-04
30	15	100	C 358-06
35	15	250	C 358-08
40	20	500	C 358-10
50	20	1.000	C 358-12
65	20	4.000	C 358-14
70	20	10.000	C 358-16

Applications:

Ideal for stirring in round bottom flasks. Shape mimics that of the flasks and assures complete mixing.



BOLA Power Magnetic Stirring Bars

Material: PTFE Temperature resistance: from -200°C to +250°C Chemical resistance: +++ universal

Product description:

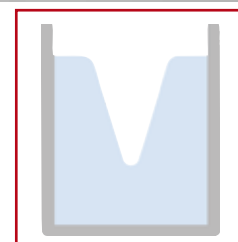
PTFE-encapsulated magnetic core made of a very strong magnetic material (rare earth magnet samarium-cobalt), torque loads transmitted are about 4 times larger than those of conventional magnetic stirring bars. No risk of demagnetization, sterilisable, extremely smooth surface avoiding contaminations, universal chemical resistance.

FDA conform

Length mm	Dia. mm	Cat. No.:
20	8	C 365-20
40	14	C 365-40
50	19	C 365-50

Applications:

They are mainly used for agitating viscous liquids or for bridging larger distances between the magnetic stirring machine and the magnetic stirring bar. Optimum mixing in vessels with a big volume or in tall graduated cylinders.



BOLA Ultra Magnetic Stirring Bars

Material: PTFE Temperature resistance: from -200°C to + 250°C Chemical resistance: +++ universal

Product description:

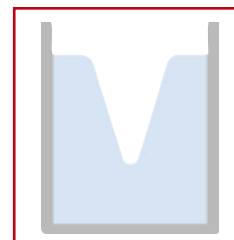
PTFE-encapsulated magnetic core (Alnico 5), extremely smooth and seamless surfaces, no substance can penetrate, universal chemical resistance.

FDA konform

Length mm	Dia. mm	Cat. No.:
10	6	C 353-10
15	5	C 353-15
20	7	C 353-20
25	5	C 353-25
30	5	C 353-30
40	7	C 353-40

Applications:

They are mainly used for high-purity work or trace analysis.



BOLA Magnetic Stirring Bar Retrievers

BESTSELLER

Material: PTFE Temperature resistance: from -200°C to + 250°C Chemical resistance: +++ universal

Product description:

PTFE-encapsulated stirring bar retriever with strong permanent magnet (Alnico 5), universal chemical resistance.



FDA conform

Length mm	Lower end dia. mm	Bar dia. mm	Cat. No.:
150	10	8	C 372-02
200	10	8	C 372-04
250	10	8	C 372-06
300	10	8	C 372-08
350	10	8	C 372-10
400	10	8	C 372-12
600	10	8	C 372-18

Applications:

For the removal of stirring bars from aggressive liquids, prevents loss of stirring bars.



BOLA Magnetic Stirring Bar Set

Material: **PTFE** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Consisting of the most common magnetic stirring bars and a retriever with a length of 150 mm. Each one piece of:

Cylindrical 10 x 6, 15 x 4,5, 20 x 6, 25 x 6, 30 x 6, 40 x 8, 50 x 8, 60 x 9;

Pivot ring 15 x 5, 25 x 6, 40 x 8;

Triangular 25 x 8, 40 x 14

FDA conform

Dimensions of box mm	Cat. No.:
175 x 110 x 30	C 348-10

Applications:

Ideal for beginners, for testing different kinds and dimensions of magnetic stirring bars



BOLA Glass Magnetic Stirring Bars

Material: **Glas** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

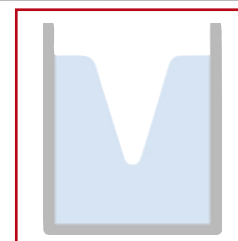
Magnetic core (Alnico 5) encapsulated in borosilicate glass, cylindrical shape, extremely smooth surface prevents from penetration of substances, non-porous, non-contaminating, universal chemical resistance.

FDA conform

Length mm	Dia. mm	Cat. No.:
15	8	C 351-03
20	8	C 351-06
25	8	C 351-09
30	8	C 351-12
40	8	C 351-15
55	8	C 351-19

Applications:

They are mainly used for high-purity work or trace analysis.



BOLA Star Head Magnetic Stirring Bars

Material: **Glas** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

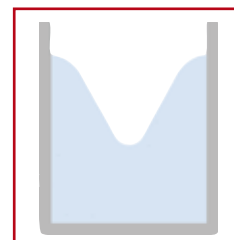
PTFE-encapsulated magnetic core (Alnico 5), universal chemical resistance.

FDA conform

	Dia. mm	Height mm	Cat. No.:
	10	8	C 360-04
	14	10	C 360-07
	17	13	C 360-10
	22	15	C 360-13
	30	12	C 360-16
	35	12	C 360-19
	40	14	C 360-22
	58	15	C 360-25

Applications:

Optimum stirring in tall, narrow diameter vessels due to symmetrical fins on both sides. Ideal stirring bar for cuvettes or test tubes.



BOLA Dumbbell-Shaped Magnetic Stirring Bars

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

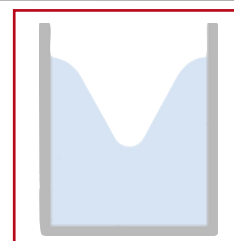
PTFE-encapsulated magnetic core (Alnico 5), universal chemical resistance.

FDA conform

	Length mm	Dia. of discs mm	Cat. No.:
	37	20	C 359-03
	55	20	C 359-06

Applications:

Stable discs on both sides provide an excellent stirring.



BOLA Center Magnetic Stirring Bars

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

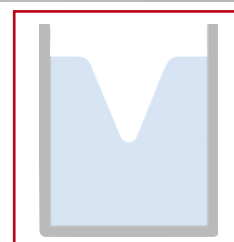
PTFE-encapsulated magnetic core (Alnico 5), conically tapered ends, universal chemical resistance.

FDA conform

	Length mm	Dia. mm	Cat. No.:
	20	7	C 367-20
	30	8	C 367-30
	40	8	C 367-40
	50	8	C 367-50

Applications:

Extremely steady mixing due to small center seat.



BOLA Crosshead Magnetic Stirring Bars

Material: PTFE
 Temperature resistance: from -200°C to + 250°C
 Chemical resistance: +++ universal

Product description:

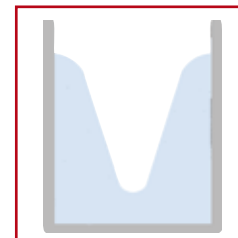
PTFE-encapsulated magnetic core (Alnico 5), universal chemical resistance.

FDA conform

Length x Width mm	Height mm	Cat. No.:
10 x 10	5	C 369-10
19 x 19	9	C 369-19
25 x 25	13	C 369-25
32 x 32	14	C 369-32
38 x 38	15	C 369-38

Applications:

Safe and quiet mixing, optimum stirring due to stable position



BOLA Colour Magnetic Stirring Bars

Material: PTFE
 Temperature resistance: from -200°C to + 250°C
 Chemical resistance: +++ universal

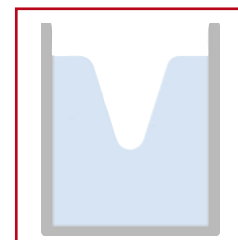
Product description:

Magnetic core (Alnico 5) encapsulated with coloured PTFE, universal chemical resistance.

Length mm	Dia. mm	Colour	Cat. No.:
13	8	yellow	C 368-08
25	8	yellow	C 368-12
38	8	yellow	C 368-16
50	8	yellow	C 368-20
13	8	blue	C 368-28
25	8	blue	C 368-32
38	8	blue	C 368-36
50	8	blue	C 368-40
13	8	red	C 368-48
25	8	red	C 368-52
38	8	red	C 368-56
50	8	red	C 368-60

Applications:

For better distinction.



BOLA Tandem Magnetic Stirring Bars

Material: **PTFE** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

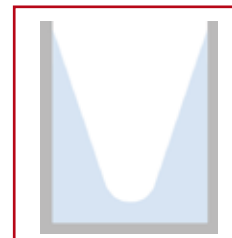
Product description:

PTFE-encapsulated magnetic cores (Alnico 5), center bore for receiving the BOLA Bearing Neck or a glass neck (available from a glassblower), universal chemical resistance. Bearing neck not included in delivery.

FDA conform

Magnetic stirring bar length x O.D. mm	Bearing neck dia. mm	Recommended height of neck mm	Block dimensions mm	Cat. No.:
40 x 10	8	15	34 x 14 x 14	C 363-26
55 x 12	8	19	44 x 18 x 14	C 363-30
110 x 24	12	37	84 x 36 x 36	C 363-36
155 x 24	12	37	84 x 36 x 36	C 363-39

Extremely strong mixing of the product, ideal transmission of the magnetic force of the stirrer to the tandem magnetic stirring bar. Reduction of running surface to a ring minimizes friction and increases lifespan. Tandem magnetic stirring bars do not touch the bottom and therefore do not wear.



BOLA Bearing Necks

Material: **PTFE / compound** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Very hard PTFE-PEEK compound, for receiving a BOLA Tandem Magnetic Stirring Bar, center fixing on the bottom of the vessel by means of glue (we recommend silicone; hardened in water), universal chemical resistance.

FDA conform

Dia. of neck mm	Lower dia. mm	Usable height mm	Suitable for Cat. No.:	Cat. No.:
8	25	19	C 363-26 and C 363-30	C 364-08
12	25	37	C 363-36 and C 363-39	C 364-16





BOLA Culture Bottles

BESTSELLER

Material: **PTFE** Temperature resistance: **from -200°C to + 250°C** Chemical resistance: **+++ universal**

Product description:

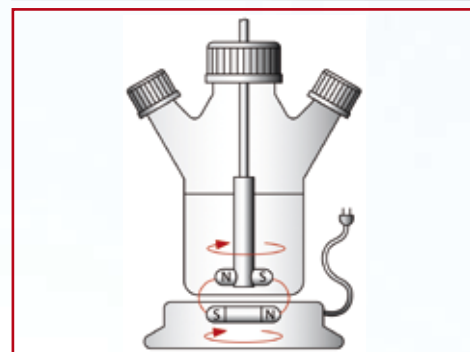
- » Bottle made of borosilicate glass
- » Screw cover for center neck made of PP with glass fibre
- » Screw caps for sidearms made of PPS
- » Stirrer made of PTFE and stainless steel is continuously adjustable in height from the outside
- » Complete unit can be sterilized
- » Universal chemical resistance
- » Suitable for both low and high speeds (max. 1000 rpm)

FDA conform

Usable volume ml	I.D. of center neck mm	Thread of bottle GL	Thread of sidearms GL	Cat. No.:
50	30	45	2 x 14	C 420-03
125	30	45	2 x 18	C 420-05

Applications:

- » Stirring unit is driven by a common magnetic stirrer
- » Magnetism causes rotation
- » For gentle mixing of cell cultures
- » The sidearms can be connected to tubing, probes or sensors (suitable laboratory screw joints can be found on page 55)



BOLA Tweezers

Material: **PTFE** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Precast tweezers made of PTFE with pointed or blunt ends. Universal chemical resistance.

FDA conform

A	Length mm			Pointed end Cat. No.:
	100			H 909-02
	150			H 909-04
	200			H 909-06
B	Length mm			Blunt end Cat. No.:
	100			H 912-02
	150			H 912-04
	200			H 912-06



BOLA Double Spatulas

Material: **PTFE** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Spatulas made of PTFE with tapered ends. Universal chemical resistance.

FDA conform

Length mm	Width of ends mm		Cat. No.:
120	16		H 915-02
150	16		H 915-04
180	16		H 915-06



BOLA Scrapers

Material: **PTFE** Temperature resistance: **from -200°C to +250°C** Chemical resistance: **+++ universal**

Product description:

Scrapers made of PTFE with tapered end. Ideal handling due to big handle and wide blade. Universal chemical resistance.

FDA conform

Total length mm	Width of blade mm	Dia. of handle mm	Cat. No.:
160	50	20	H 916-02
200	90	20	H 916-06
200	120	20	H 916-08

Applications:

For a very gentle peeling of products.



