



Bedienungsanleitung

Operating Instructions

Mode d'emploi

- » Magnet-Rührkupplungen (P-MRK)
- » Magnetic Stirrer Head (P-MRK)
- » Têtes magnétiques (P-MRK)

BOLA Magnetic Stirrer Heads

**BOLA Magnetic Stirrer Head (P-MRK), Cat.-No. C 520-24, C 520-28,
C 520-48, C 530-08, C 530-10 and C 530-15**

**BOLA Magnetic Stirrer Head (P-MRK) with Flat Flange, Cat.-No.: C 522-40,
C 522-50, C 532-22**

**BOLA Magnetic Stirrer Head (P-MRK) with Rodaviss[®], Cat.-No.: C 540-08 and
C 540-10**

OPERATING INSTRUCTIONS

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BOLA Magnetic Stirrer Head can be used without additional lubricants and are suitable for long-term operation. Through the leading in a receiver, which is connected to the driving magnet, neither the guiding nor the stirrer shaft suffers from abrasion that could contaminate the medium. All spare parts can be disassembled for cleaning and be exchanged, if necessary.

Depending on the type of application, BOLA Magnetic Stirrer Heads can be obtained with ground joint or flat flange in two different types:

Type 1 is delivered with a receiver made of borosilicate glass. All parts coming into contact with the medium are metal-free as they are made of different chemically high-resistant plastic compounds or glass. This version is especially suitable for applications with chemically highly aggressive or highly pure products (Cat. No. C 520-..., C 522-...).

Type 2 is delivered with a receiver made of Hastelloy[®]. Unlike glass, Hastelloy[®] is unbreakable. This allows to use stirrer shafts made of other materials such as stainless steel as well as a frequent disassembly of the stirrer shaft as there is no risk of glass breakage when leading in the shaft into the receiver (Cat. No. C 530-..., C 532-...). BOLA Magnetic Stirrer Heads with Flat Flange can either be used with "QVF" flat flanges or with „SCHOTT“ flat flanges. The medium is only exposed to metal-free materials which all have a very good chemical resistance.

BOLA Magnetic Stirrer Heads

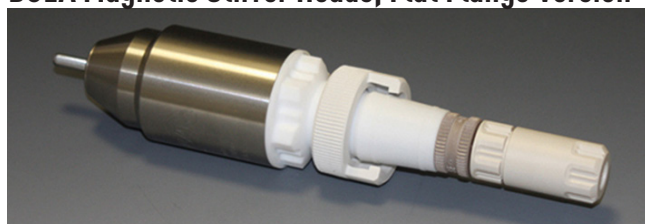
1. Specifications

Bola Magnetic Stirrer Heads, Ground Joint Version



Cat.-No.	For Ground Joint	Dimensions	For shaft O.D	Material	Torque	Speed	Connection to agitator
C 520-24	NS 29/32	Ø 50x243 mm	8 mm	PTFE, PTFE-compound, borosilicate glass	90 Ncm	max. 1500 rpm	External square SW6
C 520-28		Ø 50x241 mm	10 mm				
C 520-48	NS 45/40						
C 530-08	NS 29/32	Ø 50x243 mm	8 mm	PTFE, PTFE-compound, Hastelloy®			
C 530-10		Ø 50x241 mm	10 mm				
C 530-15	NS 45/40						

BOLA Magnetic Stirrer Heads, Flat Flange Version



Cat.-No.	For Ground Joint	Dimensions	For shaft O.D	Material	Torque	Speed	Connection to agitator
C 522-40	DN 40	Ø 62x241 mm	10 mm	PTFE, PTFE-compound, borosilicate glass	90 Ncm	max. 1500 rpm	External square SW6
C 522-50	DN 50	Ø 75x241 mm					
C 532-22	DN 40	Ø 62x241 mm	10 mm	PTFE, PTFE-compound, Hastelloy®			

BOLA Magnetic Stirrer Heads

BOLA Magnetic Stirrer Head (P-MRK) with Rodaviss®



Cat.-No.	For Ground Joint	Dimensions	For shaft O.D	Material	Torque	Speed	Connection to agitator
C 540-08	NS 29/32	∅	8 mm	PTFE, PTFE-compound, Hastelloy®	90 Ncm	1.500 1/min	External square SW6
C 540-10		∅	10 mm				

2. Volume de livraison

1 Mode d'emploi

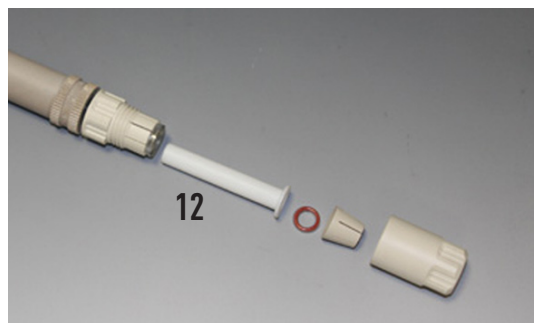
1 BOLA Tête magnétique (P-MRK)

Component parts of Magnetic Stirrer Head for stirrer shaft dia. 8 mm.

Besides the above-mentioned items, the magnetic stirrer head for stirrer shaft dia. 8 mm includes the following component:

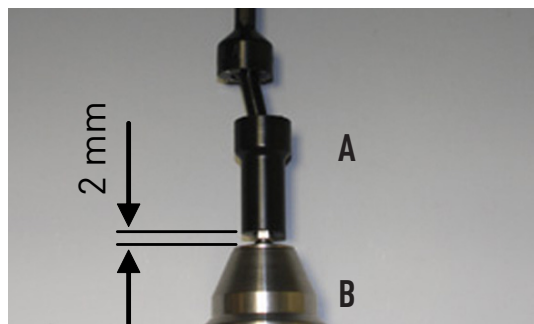
Item 12 Reducing bush

See page 25 for a detailed spare parts list including catalogue numbers.



2. Safety instructions

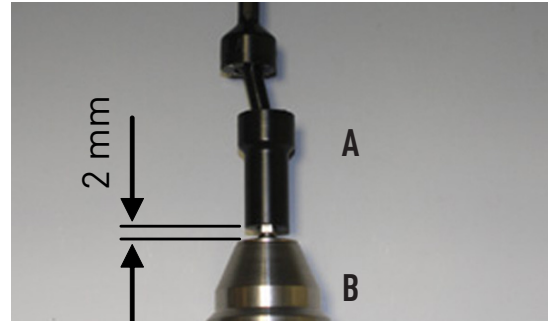
- » Do not take a damaged magnetic stirrer head into operation.
- » Only use the magnetic stirrer head up to the maximum speed of 1.500 rpm.
- » Never use the magnetic stirrer head (B) without globe stirrer coupling (A), Cat. No. C 399-12, or a comparable coupling.
- » There must be a gap of approx. 2 mm (see picture on the right side) between magnetic stirrer head (B) and globe stirrer coupling (A) for compensating heat expansion.
- » If the magnetic stirrer head falls down, there is a risk of injury during disassembly due to broken glass.
- » Only wear tight clothes to avoid being drawn in by rotating components.
- » If you have long hair, please wear a hairnet.
- » Please only use tight gloves.
- » Only use the magnetic stirrer head for products which are in a temperature range between - 200 °C to + 250 °C.



BOLA Magnetic Stirrer Heads

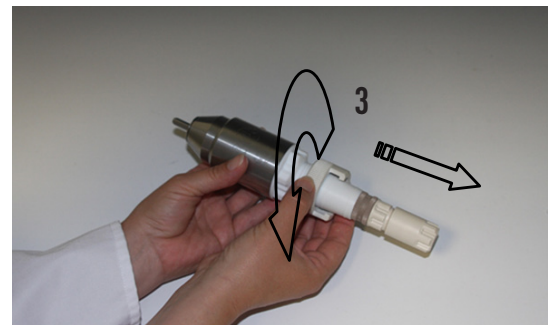
3. Safety instructions

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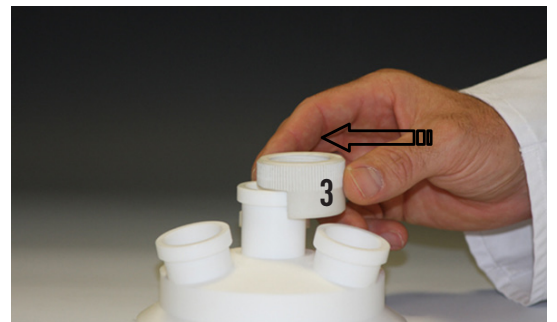


4. Taking into operation

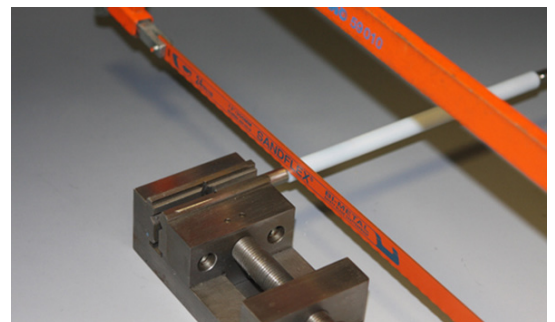
- » Detach the BOLA „SAFE LAB“ Nut (3) by turning it counterclockwise (only ground joint version).



- » Center the „SAFE LAB“ nut (3) on the ground joint. The nut is providing additional safety, but it is not compulsory (only with Safe Lab).

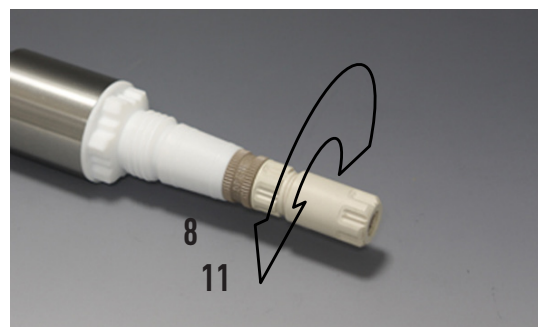


- » We recommend to saw the upper part of BOLA Stirrer Shafts with a hacksaw. Remove the fin with a grinder or a file.



BOLA Magnetic Stirrer Heads

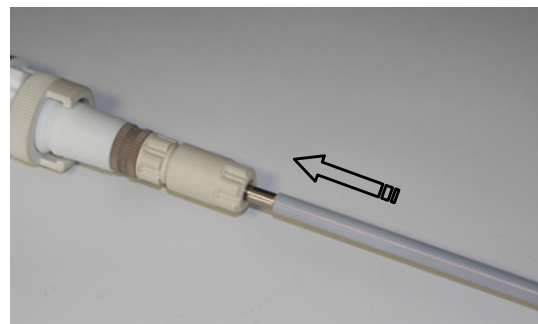
» Keep hold of the clamp screw (8) and open the clamp nut (11) by making counterclockwise turn.



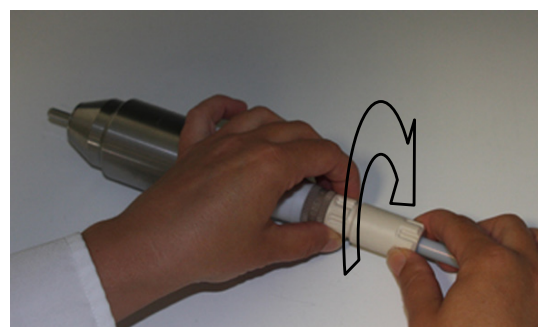
» Push the stirrer shaft through the clamp nut into the receiver.

Attention: The receiver (7) consists of glass or Hastelloy®. Please be careful!

At least 40 mm of the PTFE-jacket must be pushed into the clamp nut in order to receive a safe guiding. But do not push the stirrer shaft as far as it will go, please leave a gap of approx. 5 mm.

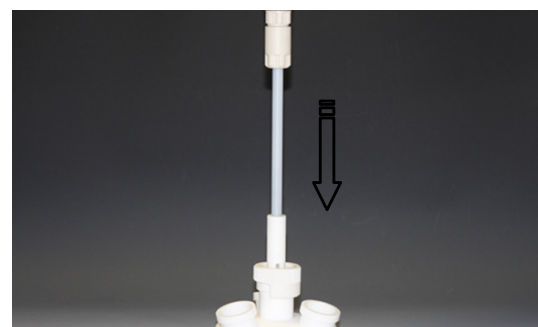


» Keep hold of the clamp screw (8) and tighten the clamp nut (11) clockwise. It is not necessary to use any tool for clamping the stirrer shaft.



» **Ground joint version:**

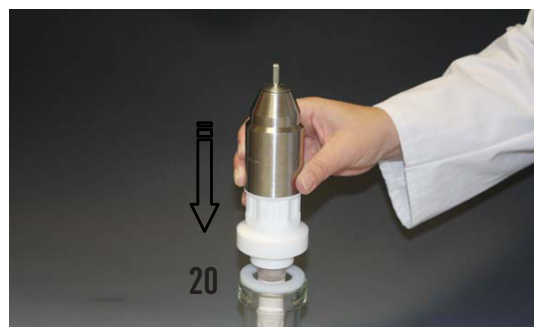
Insert the assembled stirrer shaft through the ground joint into the lid of the reactor. The magnetic stirrer head should be placed on the nut. Keep hold of the magnetic stirrer head and tighten the nut clockwise until the magnetic stirrer head is placed free from backlash in the ground joint. If the stirrer shaft does not fit through the ground joint, push it through from below and fix it in the magnetic stirrer head.



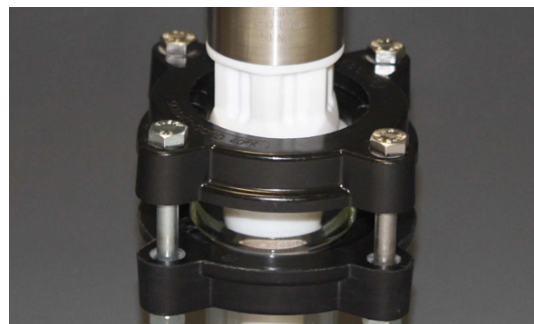
BOLA Magnetic Stirrer Heads

» Flat flange version:

Put a suitable gasket (20) (QVF or SCHOTT version) between the sealing surfaces. Put the magnetic stirrer head on the plane surface.



» Assemble the flange connection according to manufacturer's instructions. In case of temperature fluctuation, we recommend to use a flat flange with adjusting springs (without illustration).



» Recommended for all magnetic stirrer heads

- » Place the globe stirrer coupling (A) between stirrer motor (C) and magnetic stirrer head (B).
- » Adjust the speed controller of your motor to 0 rpm. Approach to the requested speed by increasing it during operation. Please don't exceed the maximum speed of 1.500 rpm.



5. Mode of function

Due to the built-in permanent magnets in drive shaft and rotor, the torque is transmitted from the motor to the stirrer shaft in the reactor. The casing of the drive shaft does not turn.

6. Service / Maintenance

In case of strong contamination, the magnetic stirrer head should be disassembled and cleaned.

PTFE and its compounds have a resistant, non-wetting surface which can be easily cleaned. Please do not use abrasive detergents since these might damage the surface and result in a milky surface. You can use all common neutral detergents (pH 7). For a stronger contamination we recommend to use an alkaline detergent up to pH 12. The BOLA Magnetic Stirrer Head can be used without additional lubricants.

BOLA Magnetic Stirrer Heads

How to disassemble the magnetic stirrer head

» Keep hold of the clamp screw (8) and release the clamp nut (9) by making at least one counterclockwise rotation. You can also use two flat spanners size 22 for opening.

Hint: A jammed stirrer shaft can be released by swaying it carefully.

» If the stirrer shaft can't be released, the clamp nut (9) should be completely screwed off

Attention: O-ring and clamp ring can easily get lost.

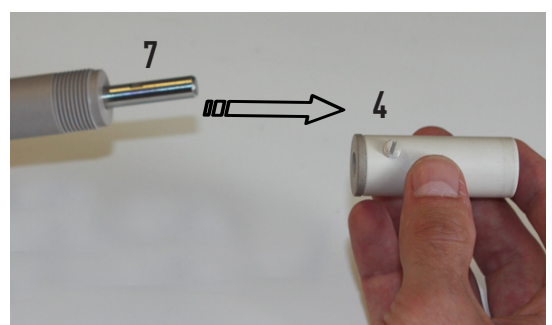
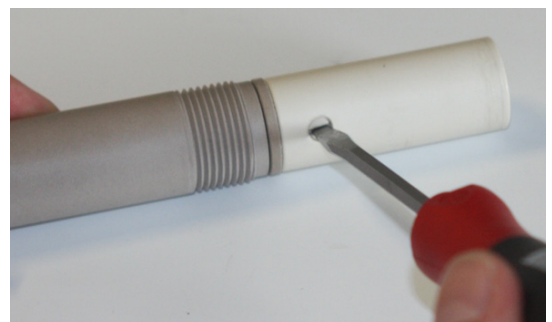
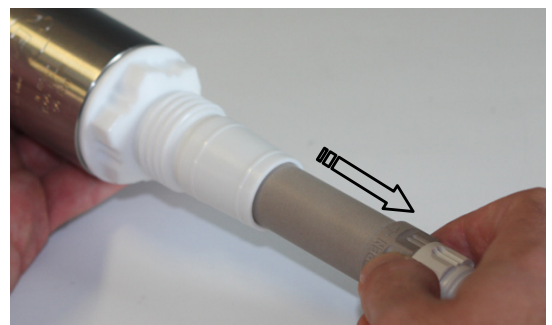
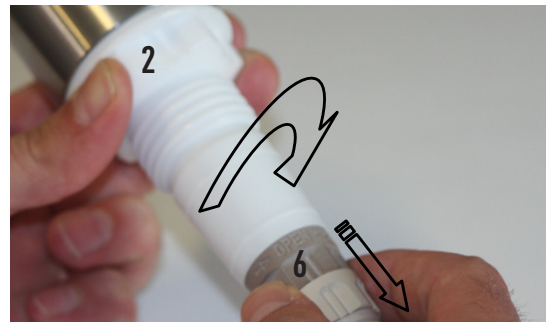
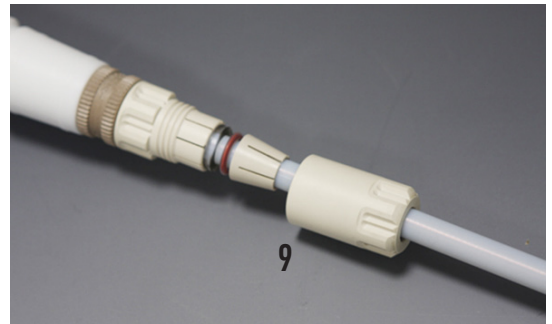
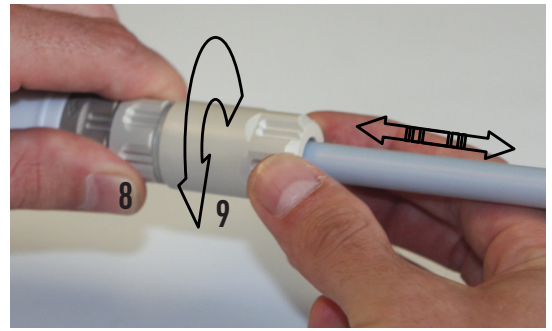
» Keep hold of the drive shaft (1) by holding the casing and the square of the drive shaft. Completely turn off the guiding (6) clockwise.

Attention: left-hand thread.

» After nine rotations, the complete rotor assembly can be pulled out.

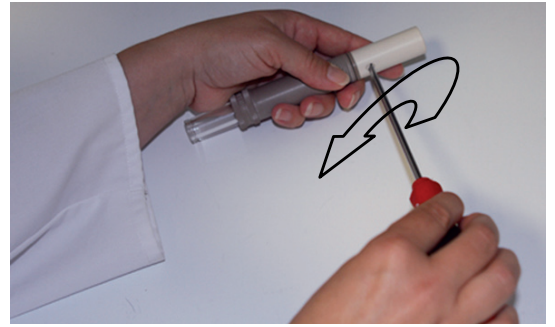
» Screw off the setscrew in the rotor counterclockwise. Use a screwdriver with a width of 4.5 mm.

» Detach receiver (7) with guiding (6) from the rotor (4).

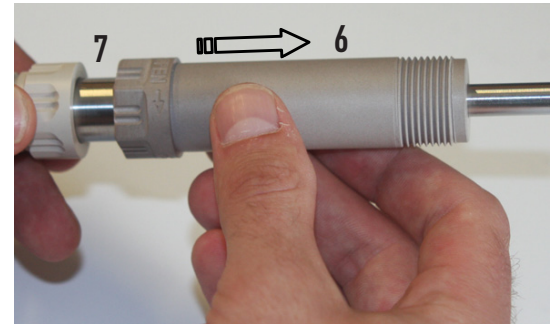


BOLA Magnetic Stirrer Heads

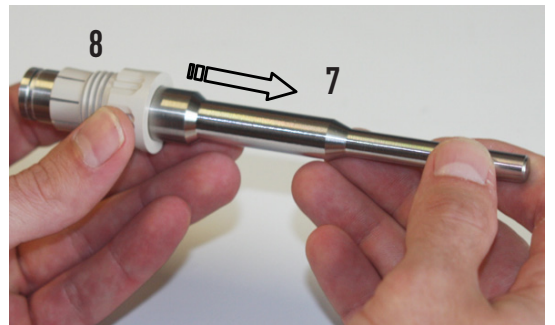
» Detach the wearing disc (5) from the rotor (4) by using your fingernail.



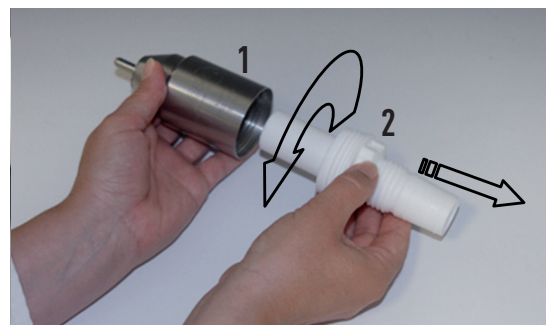
» Remove the guiding (6) from the receiver (7).



» Pull the clamp screw (8) from the receiver (7). Here you will feel a slight resistance.

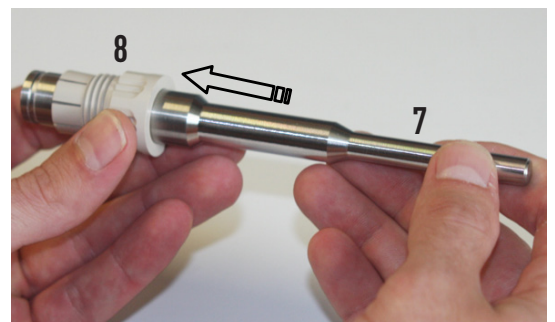


» Remove the guiding assembly (2) from the drive shaft (1) by turning it counterclockwise. You can also use a flat spanner size 41 (Cat. No. C 520-48: flat spanner size 56).

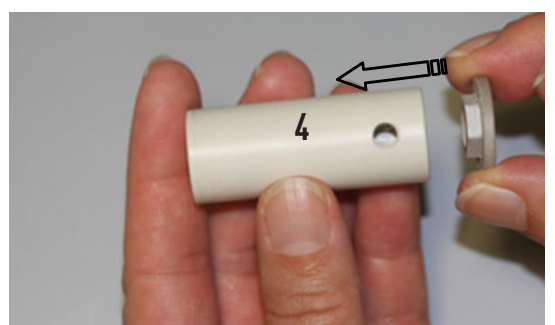


After cleaning, assembly must be made in reverse order. Particular attention should be paid to following issues:

» Push the clamp screw (8) on the receiver (7) until it clicks into place.

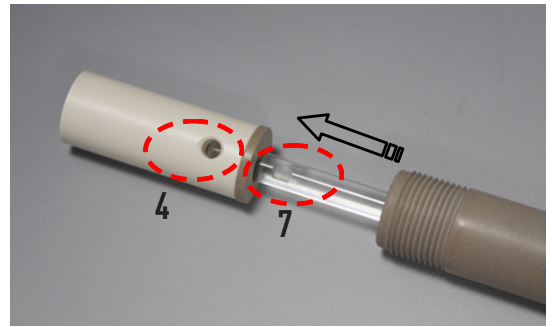


» Put the wearing ring (5) on the rotor (4). The hexagonal bolt on the wearing ring must fit into the hexagon of the rotor. You do not need any tools for assembly.

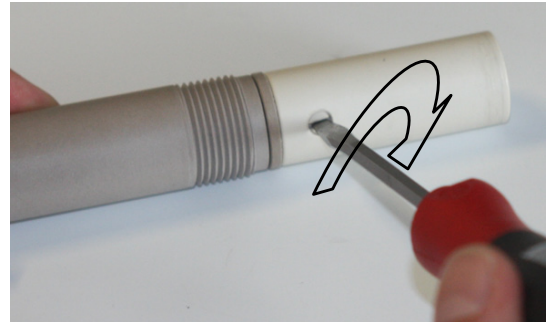


BOLA Magnetic Stirrer Heads

» Center the ground surface of the receiver (7) into the threaded bore of the rotor (4).

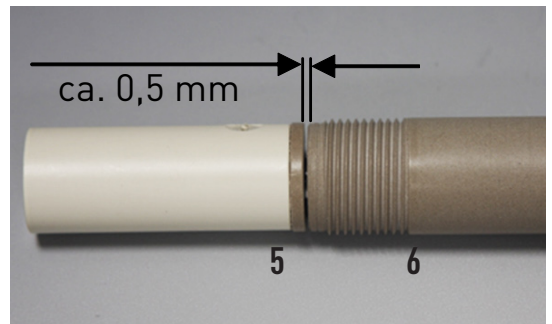


» Screw the setscrew with a screwdriver (width 4.5 mm) into the rotor until it rests on the surface. Turn the screwdriver clockwise. The setscrew must now be completely sunk in the rotor.



Attention: Do not damage the setscrew by turning it too tight!

» The guiding (6) must now be easily turnable and must not be clamped between wearing ring (5) and clamp screw (8).



7. Problems / Repair

Problem	Reason and repair
The magnetic stirrer head is rough-running.	Dirt particles might have entered the magnetic stirrer head. Detach and clean the magnetic stirrer head.
	The receiver (7) made of borosilicate glass might be broken. Detach the magnetic stirrer head and replace the receiver. Attention: Risk of injury because of broken glass! Check all components for subsequent damage from broken glass. Replace all damaged components.

In case of problems you cannot handle, please do not hesitate to contact us by phone. Of course we will try to help you and give advice to find a solution. If the problem might not be solved this way, the cleaned and originally packed magnetic stirrer head can be shipped to us. We will check then if a cost-effective repair is possible.

BOLA Magnetic Stirrer Heads

8. Waste disposal

The packing as well as the magnetic stirrer head are made of recyclable materials. Please take further details about the materials from the following specifications.

9. Customizations

» If you need a different version of the BOLA Magnetic Stirrer Head, do not hesitate to send us your inquiry including all requested data. As a manufacturer, we are able to offer an individual custom manufacture.

In general, following modifications of the standard magnetic stirrer head are possible:

- » A smaller receiver.
- » A different type of drive.
- » A different flat flange size.




Our standard stirrer shafts can be modified in almost every feature (stirring dia., length, shaft dia., shape of blade).

10. Spare parts / accessories








» see page 31 - 33

BOLA Têtes magnétiques

10. Zubehör / Accessories / Accessoires

Beschreibung	Description:	Description	Artikel-Nr.: Cat.-No.: Réf.	Abmessungen: Dimensions: Dimension:	Abbildung: Picture: Image:
BOLA Globus-Rührkupplung, Aufnahme unten:Innen-4-Kant SW 6, Aufnahme oben: Außen-6-Kant SW 8	BOLA Globe Stirrer Coupling, opening for stirrer head: inner square size 6, upper diameter for agitator: outer hexagon size 8	BOLA Coupleur d'agitation Globe, dia. inférieur: carré intérieur taille 6, dia. supérieur: hexagone extérieur taille 8	C 399-12	L 180 mm	
BOLA Halbmond-Rührwellen, nur mit Wellendurchmesser 10 mm geeignet für die Anwendung mit Magnetrührköpfen: C 520-28, C 520-48, C 522-40, C 522-50	BOLA Moon-Shaped Stirrer Shafts, only with shaft diameter 10 mm suitable for use with magnetic stirrer heads: C 520-28, C 520-48, C 522-40, C 522-50	Seulement BOLA Tiges d'agitation demi-lune avec diamètre 10 mm sont appropriés pour BOLA Têtes magnétiques: C 520-28, C 520-48, C 522-40, C 522-50	C 376- ...		
BOLA Halbmond-Rührwellen, nur mit Wellendurchmesser 8 mm geeignet für die Anwendung mit Magnetrührkopf C 520-24	BOLA Moon-Shaped Stirrer Shafts, only with shaft diameter 8 mm suitable for use with magnetic stirrer head C 520-24	Seulement BOLA Tiges d'agitation demi-lune avec diamètre 8 mm sont appropriés pour BOLA Têtes magnétiques C 520-24	C 376- ...		





Ersatzteile / Spare Parts / Pièces de rechange

Beschreibung	Description:	Description	Art.-Nr.: Cat.-No.: Réf.	Material Material Matériau	für Rührkupplung for Stirrer Coupling pour tige d'agitation	Verpackungs- einheit Packing Unit Unité d'emballage	Abbildung: Picture: Image:
Antriebswelle P-MRK 90 Ncm; NS29; NS45; DN40; DN50	Drive Shaft P-MRK 90 Ncm; NS29; NS45; DN40; DN50	Arbe de transmission P-MRK 90 Ncm; NS29; NS45; DN40; DN50	C 932-03	Edelstahl Stainless Steel Acier inox	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	1 Stück 1 piece 1 pièce	
Führungsaufsatz P-MRK NS 29/32; Wellen-Ø 8 + Ø 10 mm	Guiding Assembly P-MRK NS 29/32; Shaft O. D. 8 + Ø 10 mm	Module de guidage P-MRK NS 29/32; Shaft O. D. 8 + Ø 10 mm	C 921-01	PTFE PTFE PTFE	C 520-24, C 520-28	1 Stück 1 piece 1 pièce	
Führungsaufsatz P-MRK NS 45/40; Wellen-Ø 10 mm	Guiding Assembly P-MRK NS 45/40; Shaft O. D. 10 mm	Module de guidage P-MRK NS 45/40; Shaft O. D. 10 mm	C 921-02	PTFE PTFE PTFE	C 520-48	1 Stück 1 piece 1 pièce	
Führungsaufsatz P-MRK DN 40; Wellen-Ø 10 mm	Guiding Assembly P-MRK DN 40; Shaft O. D. 10 mm	Module de guidage P-MRK DN 40; Shaft O. D. 10 mm	C 921-03	PTFE PTFE PTFE	C 522-40	1 Stück 1 piece 1 pièce	
Führungsaufsatz P-MRK DN 50; Wellen-Ø 10 mm	Guiding Assembly P-MRK DN 50; Shaft O. D. 10 mm	Module de guidage P-MRK DN 50; Shaft O. D. 10 mm	C 921-04	PTFE PTFE PTFE	C 522-50	1 Stück 1 piece 1 pièce	
Führungsaufsatz P-MRK Rodaviss NS 29/32; Wellen-Ø 8 + Ø 10 mm	Guiding Assembly P-MRK Rodaviss NS 29/32; Shaft O. D. 8 + Ø 10 mm	Module de guidage P-MRK Rodaviss NS 29/32; Shaft O. D. 8 + Ø 10 mm	C 921-05	PTFE PTFE PTFE	C 540-08, C 540-10	1 Stück 1 piece 1 pièce	
Combi-Muttern „SAFE LAB“ NS 29/32	„SAFE LAB“ Locking Nut NS 29/32	Ecrou „SAFE LAB“ NS 29/32	K 1349-10	PTFE-GF PTFE-GF PTFE-GF	C 520-24, C 520-28	1 Stück 1 piece 1 pièce	

BOLA Têtes magnétiques

Beschreibung	Description:	Description	Art.-Nr.: Cat.-No.: Réf.	Material Material Matériau	für Rührkupplung for Stirrer Coupling pour tige d'agitation	Verpackungs- einheit Packing Unit Unité d'emballage	Abbildung: Picture: Image:
Combi-Muttern „SAFE LAB“ NS 45/40	„SAFE LAB“ Locking Nut NS 45/40	Ecrou „SAFE LAB“ NS 45/40	K 1349-16	PTFE-GF PTFE-GF PTFE-GF	C 520-48	1 Stück 1 piece 1 pièce	
Rotor P-MRK 90 Ncm; NS29; NS45; DN40; DN50	Rotor P-MRK 90 Ncm; NS29; NS45; DN40; DN50	Rotor P-MRK 90 Ncm; NS29; NS45; DN40; DN50	C 935-01	PTFE-PEEK Compound Mélange PTFE-PEEK	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	1 Stück 1 piece 1 pièce	
Gewindestift P-MRK M6; NS29; NS45; DN40; DN50	Set Screw P-MRK M6; NS29; NS45; DN40; DN50	Vis sans tête P-MRK M6; NS29; NS45; DN40; DN50	C 934-01	PTFE-PEEK Compound Mélange PTFE-PEEK	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	Pack mit 10 Stück pack with 10 pieces paquet de 10 pieces	
Verschleiß-Scheibe P-MRK NS29; NS45; DN40; DN50	Wearing Disc P-MRK NS29; NS45; DN40; DN50	Rondelle d'usure P-MRK NS29; NS45; DN40; DN50	C 931-01	PTFE-PDR	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	Pack mit 3 Stück pack with 3 pieces paquet de 3 pieces	
Führung P-MRK NS29; NS45; DN40; DN50	Guiding P-MRK NS29; NS45; DN40; DN50	Guidage P-MRK NS29; NS45; DN40; DN50	C 922-01	PTFE-PDR	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	1 Stück 1 piece 1 pièce	
Rührwellenaufnahme P-MRK NS29; NS45; DN40; DN50	Receiver P-MRK NS29; NS45; DN40; DN50	Arbre creux P-MRK NS29; NS45; DN40; DN50	C 936-01	Borosilikatglas Borosilicate Glass Verre borosilicaté	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	1 Stück 1 piece 1 pièce	
Rührwellenaufnahme P-MRK NS29; NS45; DN40; DN50	Receiver P-MRK NS29; NS45; DN40; DN50	Arbre creux P-MRK NS29; NS45; DN40; DN50	C 936-02	Hastelloy C22	C 530-08, C 530-10, C 530-15, C 532-22, C 532-32	1 Stück 1 piece 1 pièce	
Klemmschraube P-MRK NS29; NS45; DN40; DN50	Clamp Screw P-MRK NS29; NS45; DN40; DN50	Vis de serrage P-MRK NS29; NS45; DN40; DN50	C 926-01	PTFE-PEEK Compound Mélange PTFE-PEEK	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	1 Stück 1 piece 1 pièce	
O-Ring P-MRK Wellen-Ø 8 mm; NS29/32	O-Ring P-MRK Shaft O. D. 8 mm; NS29/32	Joint torique P-MRK tige dia.ext. 8 mm; NS29/32	C 937-01	PFA/Silikon PFA/Silicone PFA/Silicone	C 520-24	Pack mit 3 Stück pack with 3 pieces paquet de 3 pieces	
O-Ring P-MRK Wellen-Ø 10mm; NS29/32; NS45/40; DN 40; DN 50	O-Ring P-MRK Shaft O. D. 10mm; NS29/32; NS45/40; DN 40; DN 50	Joint torique P-MRK tige dia.ext. 10mm; NS29/32; NS45/40; DN 40; DN 50	C 937-02	PFA/Silikon PFA/Silicone PFA/Silicone	C 520-28, C 520-48, C 522-40, C 522-50	Pack mit 3 Stück pack with 3 pieces paquet de 3 pieces	
Klemmkeil P-MRK Wellen-Ø 8 mm; NS29/32	Clamp Ring P-MRK Shaft O. D. 8 mm; NS29/32	Clavette de serrage P-MRK tige dia.ext. 8 mm; NS29/32	C 927-01	PTFE-PEEK Compound Mélange PTFE-PEEK	C 520-24	Pack mit 5 Stück pack with 5 pieces paquet de 5 pieces	

BOLA Têtes magnétiques

Beschreibung	Description:	Description	Art.-Nr.: Cat.-No.: Réf.	Material Material Matériau	für Rührkupplung for Stirrer Coupling pour tige d'agitation	Verpackungs- einheit Packing Unit Unité d'emballage	Abbildung: Picture: Image:
Klemmkeil P-MRK Wellen-Ø 10mm; NS29/32; NS45/40; DN 40; DN 50	Clamp Ring P-MRK Shaft O. D. 10mm; NS29/32; NS45/40; DN 40; DN 50	Clavette de serrage P-MRK Shaft O. D. 10mm; NS29/32; NS45/40; DN 40; DN 50	C 927-02	PTFE-PEEK Compound Mélange PTFE-PEEK	C 520-28, C 520-48, C 522-40, C 522-50	Pack mit 5 Stück pack with 5 pieces paquet de 5 pieces	
Klemm-Mutter P-MRK NS29; NS45; DN40; DN50	Clamp Nut P-MRK NS29; NS45; DN40; DN50	Ecrou de serrage P-MRK NS29; NS45; DN40; DN50	C 925-01	PTFE-PEEK Compound Mélange PTFE-PEEK	C 520-24, C 520-28, C 520-48, C 522-40, C 522-50	Pack mit 3 Stück pack with 3 pieces paquet de 3 pieces	
Reduzierhülse P-MRK Wellen-Ø 8 mm; NS29/32	Reducing Bush P-MRK Shaft O. D. 8 mm; NS29/32	Douille P-MRK Shaft O. D. 8 mm; NS29/32	C 938-01	PTFE	C 520-24	Pack mit 3 Stück pack with 3 pieces paquet de 3 pieces	
Verschraubungsset Rodaviss®	Screw Set Rodaviss®	Raccords Rodaviss®	C 940-01	PBT, Nitrit, PA	C 540-08, C 540-10	1 Set 1 Set 1 Set	

CE Declaration of Conformity

EC-Declaration of Conformity in compliance with Machinery Directive 2006/42/EC

The manufacturer / distributor

Bohlender GmbH • Waltersberg 8 • 97947 Grünsfeld • Germany

herewith declares that the following products:

Magnetic Stirrer Heads (P-MRK), product group: C 520- ...

Magnetic Stirrer Heads (P-MRK) with Flat Flange, product group: C 522- ...

Magnetic Stirrer Heads with Ground Joint, product group: C 450- ...

Magnetic Stirrer Heads with Flange, product group: C 454- ...

apply to the above mentioned directive including any amendments valid at the time this declaration was signed.

The following directives have been applied:

Directive 2014/30 EU

**Directive relating to electromagnetic compatibility,
General requirements**

The low voltage directive 2006/95/EC has been fulfilled according to 2006/42/EC terms of protection objectives.

The following harmonized standards have been applied:

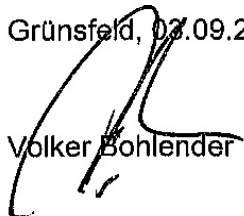
DIN EN ISO 12100

Safety of machinery

ISO 12100:2010

Risk assessment and risk reduction

Grünsfeld, 03.09.2015



Volker Bohlender