Bohle

High Quality
System solutions
Made in Germany

Reliability
Reliable and repeatable
cutting results

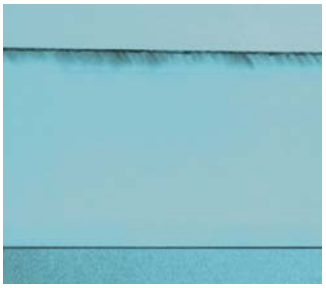
Experience
For more than 85 years
our dedication has been
to glass processing

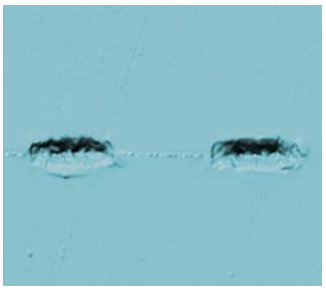
Silberschnitt

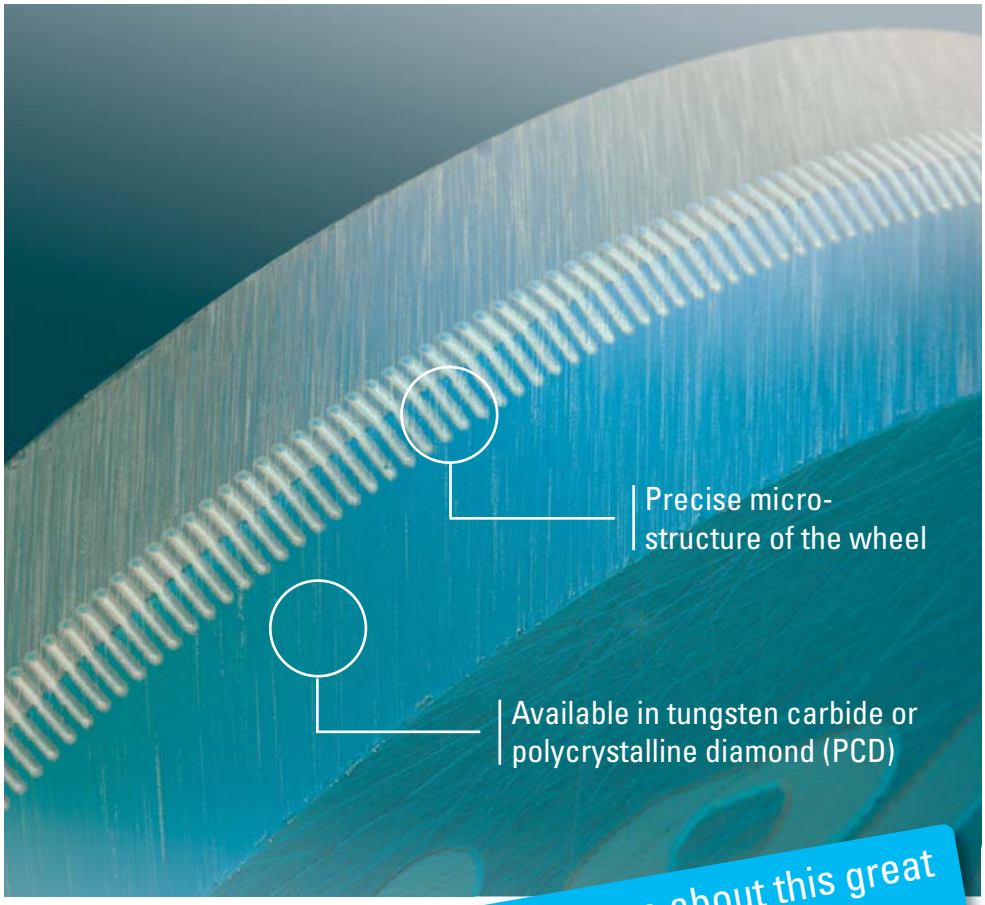
Automatic Cutting Technology
Perfect Edge Quality

Cutmaster®PLATINUM

A great innovation has a name







Learn more about this great innovation on page 10.

- ✓ Excellent edge quality
- ✓ Minimal cutting pressure
- ✓ Minimal splintering
- ✓ Longer service life
- ✓ Dry cutting
- ✓ Improved edge stability

3 Good Reasons to choose Bohle

MORE GOOD REASONS
Visit our Online-Shop
www.bohle.de

Bohle is an international company – with German roots. The products are exported to almost every country in the world; exports account for over 60% our business. In order to best recognise requirements which vary from market to market, Bohle is close to the customer: with our network of field staff, numerous subsidiaries and over 100 agents worldwide.

01 Selection

Bohle has all the products you need for your day-to-day business. Choose the best from 14 product fields such as glass cutting, UV-bonding, measuring tools, vacuum cups, sealants and glazing tools...

- ✓ We have all the supplies you need
- ✓ Constantly growing product range

02 Quality

Bohle has always paid special attention to quality and is proud to provide you top quality products at fair prices.

- ✓ Production in Germany
- ✓ Latest technologies

03 Experience

For more than 85 years, we have been involved with glass. Our innovations, solutions and expert workshops reflect this extensive know-how.

- ✓ In the business for over 85 years
- ✓ Free support from our application technicians

3 Good Reasons to choose Bohle ... ... for Automatic Glass Cutting

01 High Quality Cutting Wheels

Equipped with state-of-the-art technology, Bohle produces cutting wheels for a wide variety of applications. Whether for float, drawn, thin or thick glass, special glass like display or borosilicate glass, Bohle provides carbide, PCD, coated and microstructured cutting wheels to meet your requirements. **High Quality - Made in Germany.**

- ✓ Know-how from more than 85 years
- ✓ Reliable and repeatable cutting results

02 Complete System Solutions

Bohle has been developing and producing complete solutions for cutting machines for many years. By this we mean not only cutting wheels and axles, but also wheel holders and complete pillar posts. The range of pillar posts manufactured to customers' specific wishes is being continuously expanded.

- ✓ For all machinery brands
- ✓ Worldwide support

03 ACW Cutting Fluids

A comprehensive range of ACW products is available from Bohle. These products meet the needs of the glass industry perfectly and supplement our product range ideally. Together with the Silberschnitt® products for industrial glass processing we offer perfect system solutions for glass manufacturers and processers. Quality from a single source.

- ✓ Improved fracture characteristics
- ✓ Reduction of glass splintering/dust
- ✓ Significantly longer service life of the wheels

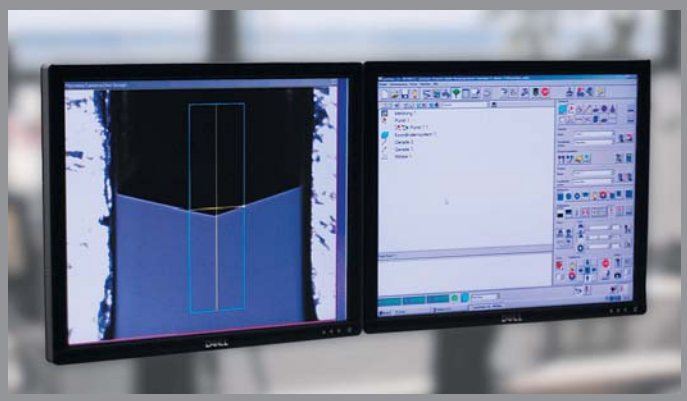
Contents

01 It all comes down to the wheel

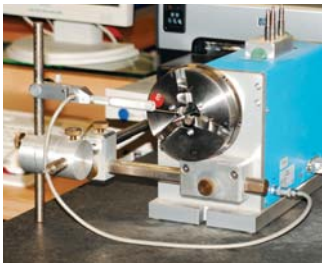
At an early stage, Bohle recognised the remarkable properties of carbide steel. One of the major benefits of the material is that it features a service life which is several times longer than the life of conventional steel wheels. Furthermore, the carbide cutting wheels have consistently good cutting properties which provide clean cut edges for different glass thicknesses. A similar development can be seen with PCD (polycrystalline diamond). Bohle is continuously investing in the research and development of glass cutting technology. New materials are being tested both in our own laboratory and in day-to-day practice in trial plants as well.

Best raw materials and outstanding machining

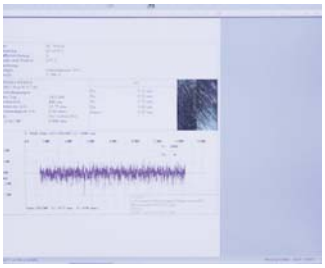
The careful selection and analysis of the raw material is the starting point for producing top quality glass cutting wheels. But not only the basic material is critical for the quality of the cutting wheel; tremendous know-how lies in the machining of the wheels. The wheels are ground to perfection on specially developed machines.
The grind is adapted to suit the later application and results in consistently long service lives and optimal cutting results. The Silberschnitt cutting wheels obtain the best running qualities because the holes are hone processed and the side surfaces are fine polished and lapped. The majority of the world's well-known cutting machine manufacturers put their trust in Silberschnitt quality and standardly equip their systems with automatic cutting technology from Bohle.



Results of the angle measurement



Surface roughness measuring device



Result of surface roughness measurement

A solution for every requirement

Equipped with the latest technology, Bohle manufactures cutting wheels for a wide variety of applications. In conjunction with our customers we develop wheels designed to meet the special demands of the final product being cut. No matter whether it is float glass, drawn glass, thin glass, thick glass, or special glass like display glass or borosilicate glass, Bohle develops the optimum solution for every requirement. Cutting angles as well as roughness of the grind are made to suit the intended application of the wheel. With the right combination of cutting angle, cutting pressure and cutting speed, it is ensured that the optimum tension is produced in the glass, significantly reducing splintering. Apart from special grinds for specific applications, Bohle produces three standard finishes which cover the majority of cutting requirements encountered.

As a company with high quality standards,
Bohle naturally maintains their own test laboratory
and is ISO 9001 certified.

TÜV CERT
DIN EN ISO 9001
Zertifikat: 09 100 72086

» Determine the cutting quality «

Silberschnitt ACTIVE

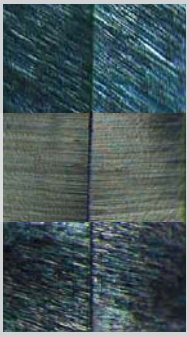
- For automatic cutting of shapes as well as laminated glass
- For open cuts in glass thicknesses of 2 to 6 mm in the automotive field
- For standard cutting with an angle from 145° and up
- For coated glass such as low-E

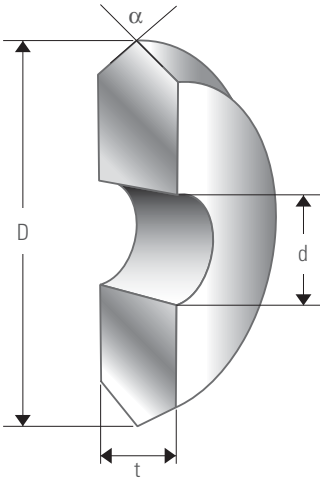
Silberschnitt BASIC

- For automatic cutting of float glass 2 to 8 mm thick

Silberschnitt CONTACT PLUS

- For thin glass where high edge quality is required
- For display glass as well as LCD, TFT and PDP





α = Cutting angle
(±1°)

D = Outside diameter
(+0.15 mm/0.0059“
-0.30 mm/0.0118“)

d = Inside diameter
(+0.04 mm/0.0016“)

t = Wheel thickness
(±0.01 mm/0.0004“)

Cutting angles

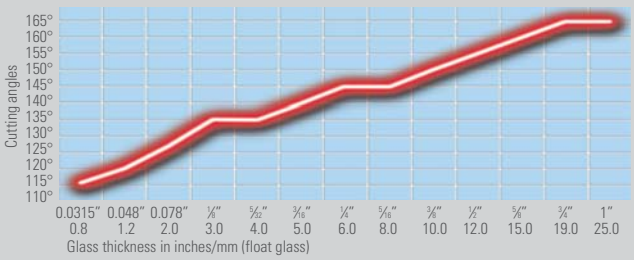
In the true sense of the word, glass is not cut, but rather broken. By scoring the surface of the glass with a cutting wheel, tension is built up in the glass. Bending the pane, either by hand or with a tool, results in a controlled break. In order to be able to cut glass of different thicknesses and coatings, the cutting wheel must have the optimum cutting angle. Only when the cutting angle is exactly suited to the glass can the best break quality be achieved and the edge damage be reduced to a minimum.

Cutting pressure

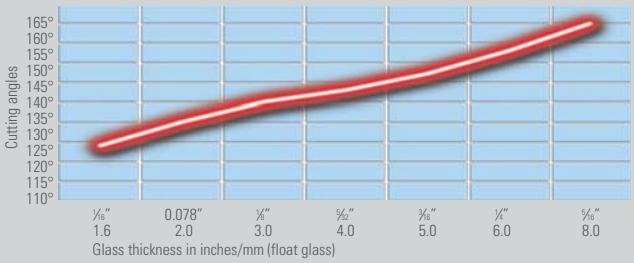
When cutting glass, the right combination of cutting pressure and cutting angle is very important to keep the score as uniform and narrow as possible. A good score looks like a fine, silvery thread. Excessive cutting pressure increases the risk of glass splintering. In this case, the broken edge exhibits a rough pattern with irregularities. The diagram below can help determine the optimum cutting angle.

Cutting speed

Not only the cutting pressure but also the cutting speed is important for a good cut. In general we can say that it is better to cut quickly, because doing so reduces the cutting pressure and allows a blunter wheel angle to be selected. This in turn improves the buildup of tension along the score in the glass and results in better breaking quality.



Cutting angle diagram for straight cuts



Cutting angle diagram for shape cuts

Wheel choice

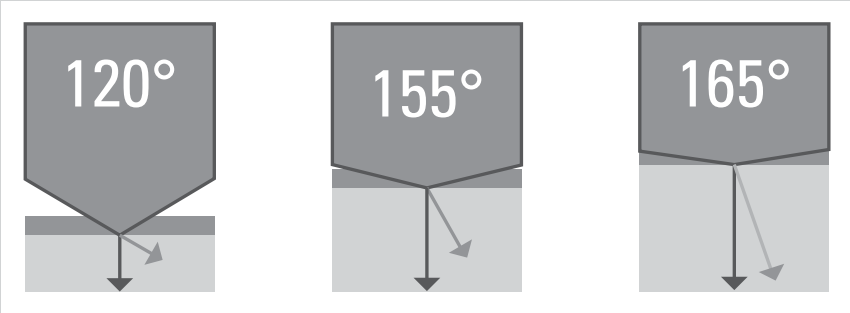
The smaller, the better. As a rule, wheels with the smallest possible diameter should be used because, in conjunction with the cutting speed, they allow the cutting pressure to be reduced.

The cutting angle must be determined according to the glass thickness. The cutting geometry results in a force which creates tension in the glass. The more obtuse the cutting angle is, the greater the build-up of tension.

Customised solutions on the spot

In addition to standard solutions, Bohle will manufacture all Silberschnitt wheels in increments of 1° (from 75° to 165°) on request. The Bohle professionals will also be happy to assist you on site to find solutions for your applications. Whether you need cutting wheels, wheel holders, complete solutions or other products for automatic glass cutting: by working closely with the customer we can find optimum solutions. Call us. We will be glad to help you.

Polarisation filtered photo of a glass edge:
Snap-shot taken directly after cutting



Cutting angle and build-up of tension in the glass

02 Silberschnitt® Cutmaster® Platinum

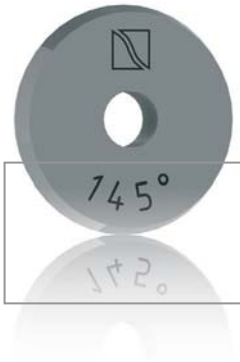
The perfect solution for cutting

The innovative cutting wheels of the Cutmaster®Platinum series have been developed by Bohle to produce especially high quality cutting edges. The different types of wheels are suitable to cut glass from 0.1 mm thick.

Due to their special micro-structured cutting edge, these wheels achieve excellent cutting results with minimal cutting pressure, especially when cutting high quality glass types such as sensoric and solar glass, optical filters and quartz glass.
In extensive tests, excellent results have also been achieved with borosilicate glass in various thicknesses. Furthermore, float glass as well as glass tubes can be precisely cut with the Cutmaster®Platinum.
In addition to the universal application fields, the Cutmaster®Platinum wheels are also suitable for dry cutting, thereby avoiding any contamination from cutting fluids and the resulting time-consuming cleaning.
Cutmaster®Platinum can be used in all common float lines – easily mounted and exchanged with the quick exchange system of Bohle. For standard requirements, carbide wheels are available – an even longer service life is achieved with wheels made of PCD.

What effects does the micro-structure have?

The micro-structure allows tensions to be transmitted into the glass with minimal cutting pressure, resulting in a very easy break of the glass.
Due to the structure of the cutting edge, the cutting wheel penetrates as notches into the glass compared to standard wheels which score the glass using their whole circumference. As a result, micro-openings of the fissure are produced precisely in the cutting direction. Accompanying cracks and damages deviating from the score line are effectively avoided and edge damages reduced to a minimum.



All cutting wheels of the Cutmaster® Platinum series are imprinted with the cutting angle, thus avoiding confusion when they are used.

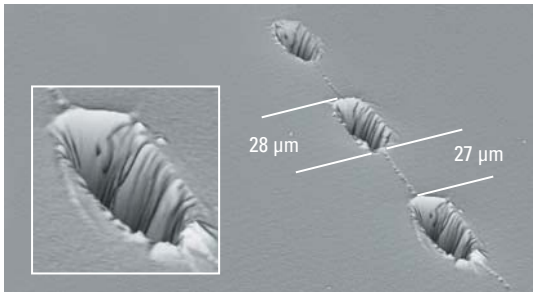
» Advantages of Cutmaster® Platinum at a glance «

- *Excellent edge quality*
- *Minimal cutting pressure*
- *Minimal splintering*
- *Longer service life*
- *Dry cutting*
- *Improved edge stability*

01 Cutmaster® Platinum

1:125

02 Surfaces after cutting



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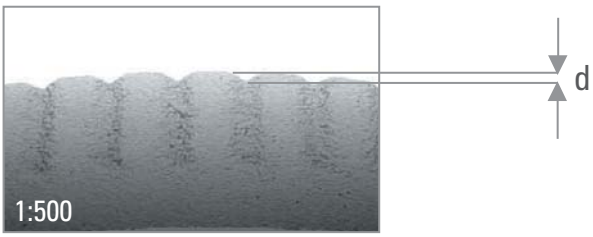
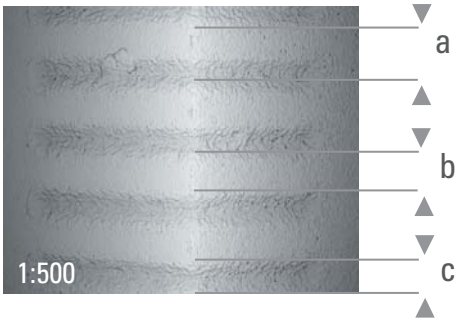
03 Wheel structure



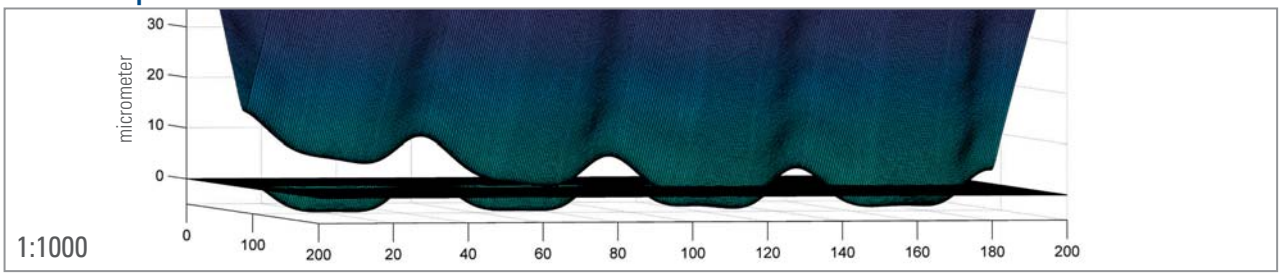
04 Details of wheel structure



a = pitch
b = peak width
c = slot width
d = slot depth

a = 50.0 µm
b = 20.0 µm
c = 30.0 µm
d = 8.0 µm

05 Glass penetration



The plastic version of wheel holders, types 416 and 417, are also available with carbide cutting wheels in the Cutmaster® Platinum version.
When ordering, please be sure to specify the desired cutting angle.
for example: 416B00P* 135°

The cutting wheels of the Cutmaster® Platinum version are available in tungsten carbide or PCD.
Please note the available types listed on page 12.

Silberschnitt® Cutmaster® Platinum

Sample applications

Float glass
Slitting cutting of float glass from 0.1 to 19 mm;
Shape cutting of float glass from 0.1 to 2 mm

Special glass
Medical glass; optical glass; solar glass / photovoltaic glass
Slitting cutting of borosilicate glass up to 25 mm, slitting cutting of glass ceramic (Ceran, NeoCeran, Robax), slitting cutting of leaded glass up to 30 mm.

Thin glass
Shape cutting of 0.1 to 2.0 mm glass · slitting cutting of 0.05 to 3 mm glass

Cutmaster® Platinum carbide cutting wheels

Art. No.	Dimensions in mm (inch)	Slots
06B000P*	ø 2.5 x 0.80 x ø 0.65 mm (ø 0.0984" x 0.0256" x ø 0.0315")	157
66B000P*	ø 3.0 x 0.80 x ø 0.65 mm (ø 0.1181" x 0.0256" x ø 0.0315")	188
12A000P*	ø 4.1 x 1.08 x ø 1.42 mm (ø 0.1614" x 0.0425" x ø 0.0059")	257
02A000P*	ø 5.0 x 1.00 x ø 1.30 mm (ø 0.1969" x 0.00394" x ø 0.0512")	314
03A000P*	ø 5.6 x 1.08 x ø 1.42 mm (ø 0.2205" x 0.0425" x ø 0.0059")	351

Cutmaster® Platinum PCD cutting wheels

Art. No.	Dimensions in mm (inch)	Slots
82D000P *	ø 2.0 x 0.65 x ø 0.80 mm (ø 0.0787" x 0.0256" x ø 0.0315")	125 - 300
81D000P *	ø 2.5 x 0.65 x ø 0.80 mm (ø 0.0984" x 0.0256" x ø 0.0315")	157 - 375
85D000P*	ø 3.0 x 0.65 x ø 0.80 mm (ø 0.1181" x 0.0256" x ø 0.0315")	188
87D000P *	ø 4.1 x 1.08 x ø 1.40 mm (ø 0.1575" x 0.0394" x ø 0.0512")	257
83D000P*	ø 5.0 x 1.08 x ø 1.51 mm (ø 0.1969" x 0.0394" x ø 0.0594")	314
88D000P *	ø 5.6 x 1.08 x ø 1.40 mm (ø 0.2205" x 0.0394" x ø 0.0512")	351

All other wheels in the Bohle range can be produced on request with the special Cutmaster® Platinum micro-structure and with any cutting angle desired.

When ordering, please indicate the desired cutting angle at the end of the article number.
Standard cutting angles in the carbide version are listed on page 18.

03 Silberschnitt® Cutmaster® Gold

Cutmaster® Gold carbide cutting wheels with 10-fold service life

The innovative Cutmaster® Gold carbide cutting wheels achieve what the glass processing industry has long been waiting for: the balance between cost reduction and quality improvement at the same time. Cutmaster® Gold, the newest member of the Silberschnitt family of products, reduces costs due to its very long service life. Especially when cutting laminated safety glass as well as edge cutting at float glass facilities, service lives can be achieved which are at least ten times as long as that of standard cutting wheels.

At float glass facilities Cutmaster® Gold achieves over 250 km of cutting performance, which until now was only possible with higher priced wheels made of polycristalline diamond (PCD). Furthermore, significant savings can be attained in maintenance: As a result of the long service lives, cutting wheels and wheel holders don't need to be exchanged as frequently as usual. Moreover, the adjustment of cutting pressure which is needed when wheels are exchanged is required less often.

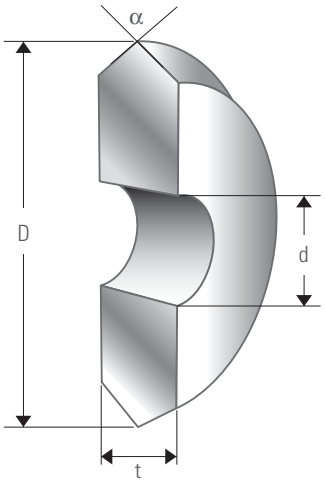
The quality improvement of the cutting result is achieved by the special material configuration of the wheel coating. Contrary to standard carbide cutting wheels, the cutting quality remains at the same high level over the entire operating time. Especially when cutting laminated glass, this excellent quality significantly reduces the danger of glass breakage. To ensure the ultimate cutting performance and service life, Cutmaster® Gold wheels are used only in metal inserts/metal holder.

To ensure the ultimate cutting performance and service life, Cutmaster® Gold wheels are used only in metal inserts/metal holder. Standard glass cutting machines manufactured by Bavelloni, Benteler, Bottero, Bystronic, Grenzebach, Hegla, Intermac, Lisec, Macotec and Rohmer + Stimpfig can therefore easily be equipped with Cutmaster® Gold.

» Reduce costs, improve cutting quality «

- *10-fold service life*
- *Less frequent wheel changing results in cost savings*
- *Consistently high cutting quality over the entire time in use*

03 Silberschnitt® Cutmaster® Gold wheels



α = Cutting angle
(±1°)

D = Outside diameter
(+0.15 mm/0.0059“
-0.30 mm/0.0118“)

d = Inside diameter
(+0.04 mm/0.0016“)

t = Wheel thickness
(±0.01 mm/0.0004“)



Type	02	12		03		
D in mm (“)	5.0 (0.1969“)	4.1 (0.1614“)		5.6 (0.1614“)		
t in mm (“)	1.0 (0.0394“)	1.08 (0.0425“)		1.08 (0.0425“)		
d in mm (“)	1.3 (0.0512“)	1.42 (0.0559“)		1.42 (0.0559“)		
Packing unit	1 / 100 pc.	1 / 100 pc.		1 / 100 pc.		
110°			12C110G			03C110G
118°			12C118G			
120°			12C120G			
125°			12C125G			03C125G
130°		12A130G		03A130G		03C130G
135°	02A135GL	12A135G		03A135G	03B135G	03C135G
145°	02A145GL	12A145G		03A145G	03B145G	03C145G
148°		12A148G		03A148G		03C148G
150°		12A150G		03A150G		03C150G
152°		12A152G		03A152G		
153°		12A153G		03A153G		03C153G
154°		12A154G		03A154G		
155°	02A155GL	12A155G		03A155G		03C155G
158°		12A158G		03A158G		03C158G

04 Silberschnitt® PCD wheels

The Silberschnitt® polycristalline diamond (PCD) cutting wheel was developed for applications demanding a long service life and good cut edge quality.
These extremely hard cutting wheels demonstrate their capabilities particularly well when edges are cut during float glass production: the service lives in this application are extraordinarily long. And when cutting very thin glass such as LCD, TFT or PDP, the Silberschnitt® PCD wheels cut cleanly with practically no dusting or splintering. PCD wheels can be re-ground many times and are therefore especially economical. Bohle can produce cutting angles to suit your specific applications.

Diamond cutting wheels feature the following characteristics:

- An extraordinarily long service life
- Consistently high cutting quality over the entire service life
- Outstanding cut edges
- Significant reduction of glass splintering/dusting
- Adaptation to the particular application

Wheel holder complete	Article No.	490D000	491D000	492D000	494D000	495D000	496D000	497D000	498D000
Wheel holder	Article No.	490.5	490.6	490.7	490.6	432.0C	432.0C	422.0C	422.0C
Wheel	Dimensions	ø 5.0 x 1.08 x ø 1.51 mm	ø 2.5 x 0.65 x ø 0.8 mm	ø 5.0 x 1.08 x ø 1.51 mm	ø 3.0 x 0.65 x ø 0.8 mm	ø 4.1 x 1.08 x ø 1.4 mm	ø 5.6 x 1.08 x ø 1.4 mm	ø 4.1 x 1.08 x ø 1.4 mm	ø 5.6 x 1.08 x ø 1.4 mm
	Article No.	483D000	484D000	483D000	485D000	487D000	488D000	487D000	488D000
Axle	Dimensions	ø 1.5 x 4.1 mm	ø 0.8 x 4.1 mm	ø 1.5 x 6.0 mm	ø 0.8 x 4.1 mm	ø 1.39 x 4.1 mm	ø 1.39 x 4.1 mm	ø 1.39 x 9.0 mm	ø 1.39 x 9.0 mm
	Article No.	497D200	497D300	497D400	497D300	497D141	497D141	497D422	497D422

Wheel holder complete	Article No.	490P000	491P000		494P000	495P000	496P000	497P000	498P000
Wheel holder	Article No.	490.5	6.68		490.6	432.0C	432.0C	422.0C	422.0C
Wheel	Dimensions	ø 5.0 x 1.08 x ø 1.51 mm	ø 2.5 x 0.65 x ø 0.8 mm		ø 3.0 x 0.65 x ø 0.8 mm	ø 4.1 x 1.08 x ø 1.4 mm	ø 5.6 x 1.08 x ø 1.4 mm	ø 4.1 x 1.08 x ø 1.4 mm	ø 5.6 x 1.08 x ø 1.4 mm
	Article No.	83D000P	50.06		85D000P	87D000P	88D000P	87D000P	88D000P
Axle	Dimensions	ø 1.5 x 4.1 mm	ø 0.8 x 4.1 mm		ø 0.8 x 4.1 mm	ø 1.39 x 4.1 mm	ø 1.39 x 4.1 mm	ø 1.39 x 9.0 mm	ø 1.39 x 9.0 mm
	Article No.	497D200	497D300		497D300	497D141	497D141	497D422	497D422

05 Silberschnitt® PCD axles

For optimum, smooth running of PCD cutting wheels, PCD axles should be used for mounting them in their wheel holders. These PCD axles meet the demands for high cutting speeds and minimal wear and they guarantee that the cutting wheel rolls smoothly and easily.

Article No.	Diameter in mm (")	Length +/- 0.2 mm (0.0079")	Chamfer
497D300	0.80 mm (0.0315")	4.1 mm (0.1614")	0.2 x 30° (1x) (0.0079 x 30")
497D306	0.80 mm (0.0315")	6.0 mm (0.2362")	0.2 x 30° (1x) (0.0079 x 30")
497D310	1.10 mm (0.0433")	6.0 mm (0.2362")	0.2 x 30° (1x) (0.0079 x 30")
497D100	1.30 mm (0.0512")	4.1 mm (0.1614")	0.5 x 30° (1x) (0.0197 x 30")
497D141	1.39 mm (0.0547")	4.4 mm (0.1732")	0.5 x 30° (1x) (0.0197 x 30")
497D422	1.39 mm (0.0547")	4.4 mm (0.1732")	0.5 x 30° (1x) (0.0197 x 30")
497D200	1.50 mm (0.0591")	4.2 mm (0.1654")	0.5 x 30° (1x) (0.0197 x 30")
497D400	1.50 mm (0.0591")	6.0 mm (0.2362")	0.5 x 30° (1x) (0.0197 x 30")

Carbide axles with PCD coating

The carbide axle with strong, impact resistant PCD coating is an economical alternative for applications in automotive glass cutting.

Article No.	Diameter in mm (")	Length +/- 0.2 mm (0.0079")	Chamfer
499D080	0.79 mm (0.0311")	4.6 mm (0.1811")	0.3 x 30° (1x) (0.0118 x 30")
499D110	1.10 mm (0.0433")	4.4 mm (0.1732")	0.5 x 30° (1x) (0.0197 x 30")
499D139	1.39 mm (0.0547")	4.4 mm (0,1732")	0.5 x 30° (1x) (0.0197 x 30")
499D939	1.39 mm (0.0547")	9.0 mm (0.3543")	0.5 x 30° (1x) (0.0197 x 30")
499D151	1.49 mm (0.0587")	6.0 mm (0.2362")	0.5 x 30° (1x) (0.0197 x 30")
499D150	1.50 mm (0.0591")	4.4 mm (0.1732")	0.5 x 30° (1x) (0.0197 x 30")

Please enquire about PCD axles with special dimensions.

Silberschnitt® carbide wheels

The optimum packaging for your cutting wheels

- Different packaging sizes to suit your requirements
- Cutting wheel edges are perfectly protected during transport
- Reclosable, handy transparent box
- Your stock of cutting wheels can be seen at a glance
- Labelling for simple reordering

Please note our packing units:

The first two numbers identify the wheel type. This is followed by a letter (A, B and C), which defines the grind. The three numbers following the letter indicate the cutting angle. If there is no letter after the cutting angle, it is a pack of 10 cutting wheels. The pack of 100 wheels is identified by an "H"at the end of the code. On pages 18 and 19 you will find a table showing the standard wheels available from Bohle ex stock.

Article No.	Wheel type	Grind	Cutting angle	Packaging
03A155	03	A	155	10
03A155H	03	A	155	100

Wheels with special tolerances for Lisec cutting systems with holder type 439.0 / 439.1:

These wheels have special tolerances. (thickness tolerance +0.01).
The code number has an "L" (Lisec) following the cutting angle numbers; the packing unit corresponds to that of all the other wheels.

Article No.	Wheel type	Grind	Cutting angle	Packaging
02A155L	02	A	155	10
02A155LH	02	A	155	100

In response to customer wishes, the cutting wheels are now also available on request with engraved cutting angle. The sales unit for these is 100.

The following wheel types are available on request with engraved angles:
03A135HI, 03A145HI, 03A155HI
12A135HI, 12A145HI, 12A155HI

For all other cutting angles, order article no. 12A000H or 3A000H with I* added at the end. Then indicate the desired angle.

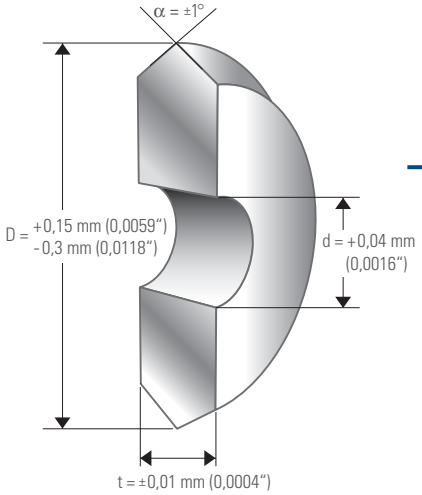
Customised solutions on the spot

In addition to standard solutions, Bohle will manufacture all Silberschnitt wheels in increments of 1° (from 75° to 165°) on request. The Bohle professionals will also be happy to assist you on site to find solutions for your cutting requirements. Whether you need cutting wheels, wheel holders, complete solutions or other products for automatic glass cutting, by working closely with you we can find optimum solutions. Call us. We will be glad to help you.

In order to help you make the right choice from the large number of possible combinations, we have summarised the glass cutting wheels for the most frequent applications in the table below and they are readily available from stock.

- Please select the cutting wheel with the dimensions you require.
- The table on page 8 gives you recommendations for the correct cutting angle.
- Recommendations for choosing the correct grind can be found on page 7.

Type	06		66			05			04			12			02		
D in mm (“)	2.5 (0.0984“)		3 (0.1181“)			3 (0.1181“)			4 (0.1575“)			4.1 (0.1614“)			5 (0.1969“)		
t in mm (“)	0.65 (0.0256“)		0.65 (0.0256“)			1 (0.0394“)			1 (0.0394“)			1.08 (0.0425“)			1 (0.0394“)		
d in mm (“)	0.8 (0.0315“)		0.8 (0.0315“)			1.3 (0.0512“)			1.3 (0.0512“)			1.42 (0.0559“)			1.3 (0.0512“)		
Packing unit	10 / 100 pc.		10 / 100 pc.			10 / 100 pc.			10 / 100 pc.			10 / 100 pc.			10 /100 pc.		
Order No./ Cutting angle	06B000	06C000	66A000	66B000	66C000	05A000	05B000	05C000	04A000	04B000	04C000	12A000	12B000	12C000	02A000	02B000	02C000
77°																	
90°																	
116°																02B116	02C116
118°																	02C118
120°													12B120	12C120		02B120	02C120
127°													12B127	12C127	02A127	02B127	02C127
135°	06B135					05A135	05B135		04A135	04B135		12A135	12B135		02A135	02B135	
140°	06B140					05A140	05B140		04A140	04B140		12A140	12B140		02A140	02B140	
145°	06B145					05A145	05B145		04A145	04B145		12A145	12B145		02A145	02B145	
148°												12A148					
150°	06B150					05A150	05B150					12A150	12B150		02A150	02B150	
152°												12A152					
153°												12A153					
154°												12A154					
155°												12A155	12B155		02A155	02B155	
156°																	
158°												12A158					
159°												12A159					
160°												12A160	12B160		02A160		
165°												12A165	12B165		02A165		
for Wheel holder	432.6		432.6			432.3			432.3			422.0 432.0/432.1			432.3/414.000 416.000 419.000 432.3		
Axles	496.080		496.080			496.130			496.130			depending on type of insert					



Example for ordering:

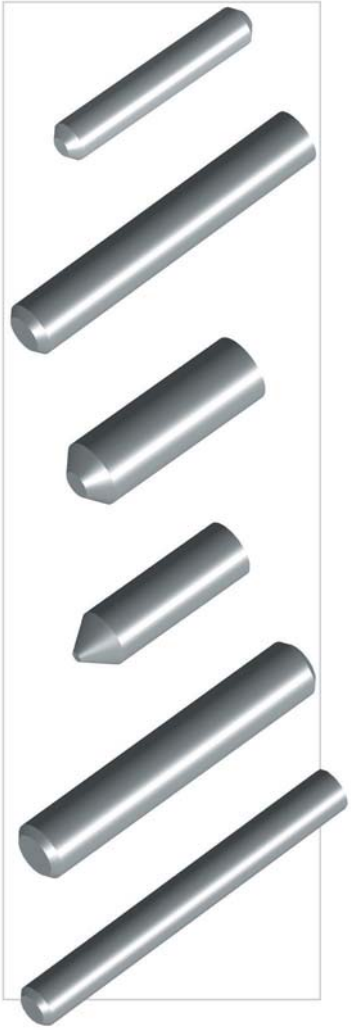
Article No.	Wheel type	Grind	Cutting angle	Packaging
03A135	03	A	135°	10
03A135H	03	A	135°	100

02...L			03			13			07			63	08		64
5 (0.1969“)			5.6 (0.2205“)			5.6 (0.2205“)			6 (0.2362“)			6 (0.2362“)	8 (0.3150“)		12.5 (0.4921“)
1 (0.0394“)			1.08 (0.0425“)			1 (0.0394“)			1.14 (0.0449“)			3 (0.1181“)	2 (0.0787“)		4 (0.1575“)
1.3 (0.0512“)			1.42 (0.0559“)			1.3 (0.0512“)			1.55 (0.0610“)			1.6 (0.0630“)	2.6 (0.1024“)		3 (0.1181“)
Thickness tolerance +0,01 mm (+0.0004“) 10 / 100 pc.			10 / 100 pc.			10 / 100 pc.			10 / 100 pc.			10 pc.	10 pc.		10 pc.
02A000L	02B000L	02C000L	03A000	03B000	03C000	13A000	13B000	13C000	07A000	07B000	07C000	63A000	08A000	08B000	64A000
														08B077	
														08B090	
		02C118													
				03B120	03C120					07B120					
	02B127L			03B127	03C127					07B127					
02A135L	02B135L		03A135	03B135		13A135	13B135		07A135	07B135				08B135	
			03A140	03B140		13A140	13B140		07A140	07B140					
02A145L			03A145	03B145		13A145	13B145		07A145	07B145		63A145			
02A150L			03A150	03B150		13A150	13B150		07A150	07B150		63A150			64A150
			03A152												
			03A153												
			03A154												
02A155L			03A155	03B155		13A155	13B155		07A155	07B155		63A155			64A155
			03A156												
			03A158												
02A160L			03A160												64A160
02A165L			03A165												64A165
439.1 439.2			422.0 432.0/ 432.1			432.3			417.000 418.000			422.1			
496.439/496.130						496.130						496.160			496.300




Type	47				47BP (pre-facetted)	23				33	
D in mm (“)	4.0 (0.175“)				4.0 (0.175“)	5.6 (0.22“)				6.2 (0.2441“)	
t in mm (“)	0.70 (0.0275“)				0.70 (0.0275“)	1.08 (0.0425“)				1.08 (0.0425“)	
d in mm (“)	1.30 (0.051“)				1.30 (0.051“)	1.62 (0.063“)				1.42 (0.0567“)	
Packaging unit	10 / 100 pc.				100 pc.	10 / 100 pc.				100 pc.	
Order No./ Cutting angle	47B000H		47A000	47A000H	47BP00H	23B000	23B000H	23A000	23A000H	33B000	33B000H
77°											
88°											33B088H
90°											
94°											33B094H
116°											
118°											
120°	47B120	47B120H									
125°					47BP125H						
127°						23B127	23B127H				
130°	47B130	47B130									
135°								23A135	23A135H		
140°											
145°								23A145	23A145H		
148°											
150°											
152°											
153°											
154°											
155°											
156°											
158°											
159°											
160°											
162°											
165°											
for Wheel holder	Special holder				Special holder	422.2				432.0 422.0 439.16 439.122	
Axles	496.330				496.330	496.160				496.139F 496.422 496.140F	

Silberschnitt® carbide axles



For mounting of the wheels in the wheel holder or support, Silberschnitt® axles are available in various dimensions. With the present-day standard of machine engineering and the high demands made on the glass cuts, axles of carbide alloy steel are to be recommended. These axles meet all the demands for high cutting speeds and minimal wear and they guarantee that the cutting wheel rolls smoothly and easily. They are ideally suitable for extremely thin as well as thick glass.

Information about special-sized axles not shown in the catalogue is available on request. The following standard carbide axles are available ex stock (in packs of 10):

Article No.	Diameter in mm (")	Length ± 0.2 in mm	Chamfer
496.080	0.80 mm (0.0314")	4.6 mm (0.1811")	0.5 x 45° (2x) (0.0200" x 45°)
496.380	0.80 mm (0.0314")	3.6 mm (0.1417")	0.5 x 35° (2x) (0.0200" x 35°)
496.130	1.30 mm (0.0512")	4.2 mm (0.1654")	0.2 x 45° (2x) (0.0790" x 45°)
496.330	1.30 mm (0.0512")	3.6 mm (0.1417")	0.2 x 45° (2x) (0.0790" x 45°)
496.439	1.30 mm (0.0512")	8.0 mm (0.3149")	0.2 x 55° (1x) (0.0790" x 55°)
496.4391	1.30 mm (0.0512")	14.0 mm (0.5512")	0.2 x 45° (1x) (0.0790" x 55°)
496.138F	1.38 mm (0.0543")	4.2 mm (0.1654")	0.4 x 45° (1x) (0.0157" x 45°)
496.210A	1.38 mm (0.0543")	5.3 mm (0.210")	0.4 x 45° (1x) (0.0157" x 45°)
496.245A	1.38 mm (0.0543")	6.2 mm (0.245")	0.4 x 45° (1x) (0.0157" x 45°)
496.305A	1.38 mm (0.0543")	7.7 mm (0.305")	0.4 x 45° (1x) (0.0157" x 45°)
496.139F	1.39 mm (0.0547")	4.6 mm (0.1811")	0.8 x 35° (1x) (0.0314" x 35°)
496.422	1.39 mm (0.0547")	9.0 mm (0.3543")	0.2 x 45° (2x) (0.0790" x 45°)
496.140F	1.40 mm (0.0551")	12.0 mm (0.4724")	0.4 x 45° (1x) (0.0157" x 45°)
496.150	1.50 mm (0.0591")	5.5 mm (0.2165")	0.2 x 45° (1x) (0.0790" x 45°)
496.160	1.60 mm (0.0630")	9.0 mm (0.3543")	0.2 x 45° (2x) (0.0790" x 45°)
496.300	3.00 mm (0.1181")	11.0 mm (0.4331")	0.5 x 45° (1x) (0.0200" x 45°)

432.005 Cap for 432

The cap is slipped onto the holder 432 and ensures that the mounted axle as well as the wheel don't fall out. Sold individually.

Assortment case 4400.0

This case with 2 inserts allows you to keep your stock of diverse wheels nicely sorted. The case also includes a magnifying glass and the practical mounting aid (Art. No. 440).

08 Silberschnitt® wheel holders

With modern machines and production methods, down time can be very costly. Silberschnitt® wheel holders were specially developed to reduce the shutdown time needed when changing cutting wheels. Their main characteristics are that they can be quickly changed and that they guarantee a clean, safe cut.

Silberschnitt® plastic wheel holders

Silberschnitt® plastic wheel holders are precision parts with uniformly close tolerances. Thanks to the different colours, the wheel angle is immediately recognizable. Bohle uses high quality, wear-resistant plastics for the wheel types 416 and 417. One special feature of the plastic wheel holders is the low frictional resistance - essential for good running properties.

Silberschnitt® steel wheel holders

Silberschnitt® steel wheel holders are designed to meet the demands of modern glass cutting machines. High precision and the ability to be changed quickly are prominent features of these wheel holders. They are produced on CNC machines, ensuring that the slots for the cutting wheels are at perfect right angles to the holes for the axles. Minimal tolerances ensure an exact wheel run.

Thanks to efficient production and high quantities, steel wheel holders are very economical. Many leading manufacturers of glass cutting machines exclusively use Silberschnitt® model 432.0 steel wheel holders. These wheel holders are especially suitable for use in machines with high cutting speeds. In addition, they are ideal for use when cutting thick glass. These wheel holders are inherently stable and can reliably transfer even high cutting pressure to the glass surface.

New: The respective wheel angles are engraved in the 432.0 wheel holders. Thus the steel wheel holders likewise allow the immediate recognition of wheel angles.

Mounting aid BO 440 and BO 441

The practical mounting aid for wheel holder 432.0 makes wheel changing easy.

BO 440 ø 1.30 mm
BO 441 ø 0.80 mm

Screwdriver BO 442

Screwdriver blade tip width 1.9 x 0.4 mm, total length 86 mm.

Customised solutions on the spot

In addition to standard solutions, Bohle will manufacture all Silberschnitt wheels in increments of 1° (from 75° to 165°) on request. The Bohle professionals will also be happy to assist you on site to find solutions for your cutting requirements. Whether you need cutting wheels, wheel holders, complete solutions or other products for automatic glass cutting, by working closely with you we can find optimum solutions.
Call us. We will be glad to help you.

The right solution

Please refer to the specifications of your machine manufacturer when selecting the optimum wheel holder for your cutting machine. Please note that this list is not exhaustive.

Manufacturers: Bavelloni, Benteler, Bottero, Bystronic, Grenzebach, Hegla, Intermac, Lisec, Macotec und Rohmer + Stimpfig




	416				417				414	419
Material	plastic				plastic				steel	steel
Version	coloured				coloured					
Wheel ø	5 mm				6 mm				5.6 / 5.0 mm	5.0 mm
	wheel 02				wheel 07				13 / 02	02
	10 / 100				10 / 100				10	10
Order No.	416A000	416B000	416C000		417A000	417B000	417C000		414.000	419.000
Special angle										
118°			416C118	light blue		417B118		light blue		
120°		416B120		light blue		417B120		light blue		
127°		416B127		yellow		417B127		yellow		
135°	416A135	416B135		white	417A135	417B135		white		419.2
140°	416A140	416B140		blue		417B140		white		
145°	416A145	416B145		black	417A145	417B145		black		419.1
150°	416A150	416B150		brown		417B150		red		
155°	416A155	416B155		red	417A155	417B155		red		
156°										
160°	416A160			dark green						
165°	416A165			light green						

BENTELER	Bottero Glass Technologies	GRENZEBACH
INTERMAC	HEGLA INNOVATIV FLEXIBEL / LiSEC	CMS Brembana glass technology
glaston BAVELLONI	MACOTEC MACCHINE DI TECNOLOGIA Your Cutting Partner	Bystronic glass

	432.	432.	432.	432.10	432.20	432.30	432.60
Material	steel	steel	steel	steel	steel	steel	steel
Axle	incl.	incl.	for 496.138F	incl.	incl.	incl.	incl.
Wheel type	incl. 03	incl. 12	for 12/03	incl. 03A	incl. 12A	incl. 05A	incl. 66A
Wheel ø	5.6 mm	4.1 mm	for 4.1 / 5.6 mm	5.6 mm	4.1 mm	3 mm	3 mm
	with inscription	with inscription	with inscription	without inscription	without inscription	without inscription	without inscription
			without wheels	Suitable for automotive applications. When ordering, please indicate the wheel angle and grind.			
127°	432.1271	432.1272	432.127				
134°	432.1341	432.1342	432.134				
135°	432.1351	432.1352	432.135				
140°	432.1401	432.1402	432.140				
145°	432.1451	432.1452	432.145				
148°	432.1481	432.1482	432.148				
150°	432.1501	432.1502	432.150				
152°	432.1521	432.1522	432.152				
153°	432.1531	432.1532	432.153				
154°	432.1541	432.1542	432.154				
155°	432.1551	432.1552	432.155				
156°	432.1561	432.1562	432.156				
158°	432.1581	432.1582	432.158				
160°	432.1601	432.1602	432.160				
163°	432.1631	432.1632	432.163				
165°	432.1651	432.1652	432.165				





For:	432.0	432.3	432.1	432.6	432.M
Axle	496.138F / 496.139F	496.130	496.138F / 496.139F	496.080	496.138F / 496.139F
Wheel type	12/03	05/02L	12/03	06/66	12/03
Wheel ø	4.1 / 5.6 mm	3 / 5 mm	4.1 / 5.6 mm	2.5 / 3 mm	4.1 / 5.6 mm
	without angle inscription	without angle inscription	with hole for ball pressure piece	without angle inscription	without angle inscription

Suitable for the following glass processing machines:
Armatec, Bando, Bavelloni, Benteler, Billco, Bystronic, GED, Grenzebach, Hegla, Intermac, Laser, Lisec, MacoTec, Perfect Technology, Pfister, Rohmer+Stimpfig - **Wheel and axle not included.**








	422.0	422.1	422.2	439.1	439.2	439.16	439.16V	439.122
Material	steel	steel	steel	steel	steel	steel	steel	steel
Axle	496.422	496.160	496.160	496.439	496.439	496.140F	496.140F	496.140F
Wheel type	12/03	63	23	02L	02L	12/03	12/03	12/03
Wheel ø	4.1 / 5.6 mm	6 mm	5.6 mm	5 mm	5 mm	4.1 / 5.6 mm	4.1 / 5.6 mm	4.1 / 5.6 mm
				L = 11.5	L = 16.5		tempered	
Suitable for the following glass processing machines:								
	Bottero	Bottero	Bottero	Lisec	Lisec	Bottero	Bottero	Bottero
	Bystronic	Bystronic	Bystronic					
	Grenzebach	Grenzebach	Grenzebach					
	Benteler	Benteler	Benteler					

Wheel and axle not included.

To optimise the applications in cutting, Bohle offers an addition to the standard type 416 plastic wheel holders. With the metal wheel holder 439.16 and using the plastic rings available in different colours to identify the cutting angle, the cutting properties can be improved significantly.
Especially for applications involving shape cuts or open cuts, it is recommended to use a wheel holder of the 439.16 series.

Wheel holder 439.16 with mounted plastic rings

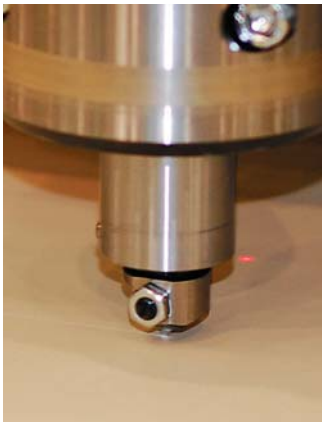
Art. No.	Wheel type	Dimensions in mm (“)	Axle	Dimenions in mm (“)
439.16	12	ø 4.1 x 1.08 x ø 1.42 mm (ø 0.1614“ x 0.0425“ x ø 0.0559“)	496.140F	ø 1.4 x 12.0 mm (ø 0.551“ x 0.4724“)
439.16	03	ø 5.6 x 1.08 x ø 1.42 mm (ø 0.2205“ x 0.0425“ x ø 0.0559“)	496.140F	ø 1.4 x 12.0 mm (ø 0.551“ x 0.4724“)

Suitable for the following cutting machines: Bavelloni, Bottero, CMS, Grenzebach, Intermac, Macotec, Maver, Pannkoke

Art. No.	438R135	438R145	438R150	438R155
Ring set	white	black	brown	red

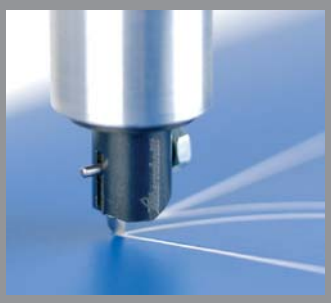
The plastic rings are available in 4 different colours. Sales unit = set of 2 rings.

09 Silberschnitt® blades



With Silberschnitt® blades, films for sandblast stencils or mounted etching stencils can be cut on modern CNC cutting tables. The narrow blades are used for fine contour cuts, the wide blades are suitable only for straight cuts. Films in thicknesses from 0.2 to 2.6 mm can be cut with the Silberschnitt® blades.

						
	432.7	432.8	432.71	432.81	416.1	416.2
Material	steel	steel	steel	steel	plastic	plastic
Blade shape	narrow	wide	narrow, turned 180°	wide, turned 180°	narrow	wide



» Fine contour cuts ...

... with the Silberschnitt® blades for film cutting «

10 Complete solutions

limited swivel

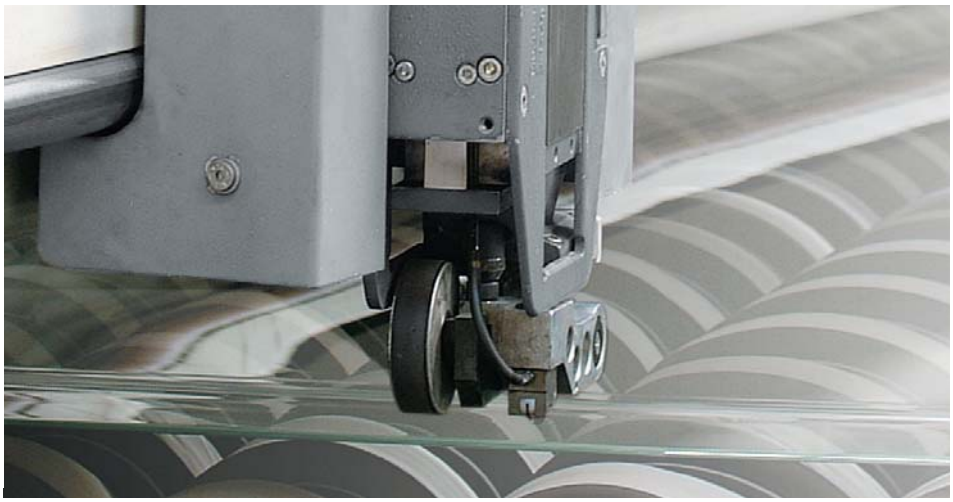
swivel 360°

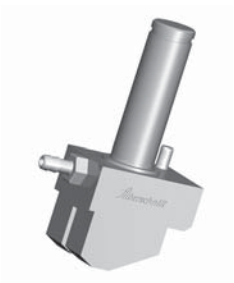
Bohle has been developing and producing complete solutions for cutting machines for many years. By this we mean not only cutting wheels and axles, but also wheel holders and complete pillar posts. The range of pillar posts manufactured to customers' specific wishes is being continuously expanded.

Silberschnitt® pillar posts are available in different versions: for straight cuts with a limited trailing cutting wheel, for shape cuts with trailing wheels which can rotate up to 360°. You can choose whether the cutting wheel should stop in the last cutting position or be centered back to the 0° position after the cutting process. Silberschnitt® pillar posts trail by 2 mm. On request, we can manufacture pillar posts with larger trailing distances.

With complete solutions from Bohle you can be sure that all the components – from the cutting wheel through the axle and wheel holder right up to the pillar posts – are perfectly matched. That guarantees optimal conditions for precise cutting.

Bohle also offers special solutions for applications in float glass facilities. In order to achieve improved cutting quality and service life, we can convert your existing pillar posts which use plastic wheel holders to make them suitable for using high precision metal holders. For use in float glass facilities, a modified holder 432.1 is inserted in the respective pillar post. The holder 432.1 has a hole which goes all the way through. A spring ball in the pillar post secures the wheel holder and prevents it from falling out. This function can only be achieved with Bohle pillar posts. Those made by other manufacturers do not meet the requirement.





439.1015
Grenzebach
ø 7 mm, 14 x 18 x 40.5 mm

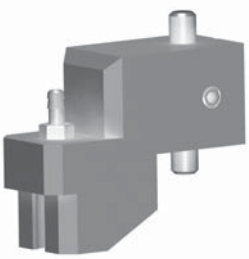
439.2015
Grenzebach
ø 7 mm, 14 x 18 x 40.5 mm

439.3015
Grenzebach
ø 7 mm, 14 x 18 x 40.5 mm

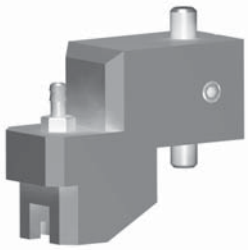
439.1115
Grenzebach
ø 7 mm, 14 x 18 x 40.5 mm

439.2115
Grenzebach
ø 7 mm, 14 x 18 x 40.5 mm

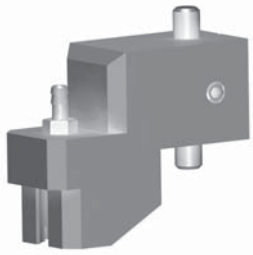
439.3115
Grenzebach
ø 7 mm, 14 x 18 x 40.5 mm



436.200
Grenzebach
14 x 28.5 x 35 mm



436.202
Grenzebach
14 x 28.5 x 35 mm



436.203
Grenzebach
14 x 28.5 x 35 mm

439.1195 limited swivel
various cutting machines
ø 15.8 mm, L = 36.8 mm
trailing 2.5 mm, tempered

439.1196 limited swivel
various cutting machines
ø 19.0 mm, L = 54.1 mm
trailing 2.5 mm, tempered

Suitable for Grenzebach 439 pillar posts.

438.048
Needle bearing set, complete with sealing ring and spring washer

439.1031
Grenzebach
Outer ø 15.8 mm, H = 35.0 mm
trailing 4.0 mm

439.2031
Grenzebach
Outer ø 15.8 mm, H = 35.0 mm
trailing 4.0 mm

439.3031
Grenzebach
Outer ø 15.8 mm, H = 35.0 mm
trailing 4.0 mm

436.220
limited swivel
Grenzebach, Bottero,
ø 19 mm, L = 33.5 mm

436.226
swivel 360°
Grenzebach, Bottero,
ø 19 mm, L = 34 mm

436.220V limited swivel
ball spring catch ground off,
Bottero, ø 19 mm, L = 33.5 mm
trailing 4.0 mm

436.222
limited swivel
Grenzebach, Bottero
ø 19 mm, L = 35.1 mm

439.0077
limited swivel
Bottero, ø 19 mm, L = 34 mm
trailing 3,6 mm, tempered

436.201
limited swivel
Grenzebach
ø 15.8 mm, L = 36 mm

439.1198 limited swivel
various cutting machines
ø 15.8 mm, L = 31.9 mm
trailing 3.2 mm, tempered

439.1201 limited swivel
various cutting machines
ø 15.8 mm, L = 31 mm
trailing 3.0 mm

439.3201 limited swivel
various cutting machines
ø 15.8 mm, L = 31 mm
trailing 3.0 mm

436.BY
Bystronic
ø 29 mm, H = 35 mm
with set screw

436.BYA
Bystronic
ø 29 mm, H = 35 mm

436.3BY
Bystronic
ø 29 mm, H = 35 mm
with set screw

436.3BYA
Bystronic
ø 29 mm, H = 35 mm

439.1107
Bystronic
ø 6.35 mm, L = 23.5 mm
trailing 0, stem length 16 mm

421.1
Bystronic, ø 16 mm,
H = 27.4 mm, L = 274 mm

436.5
limited swivel,
ø 16 mm, H = 42.5 mm

436.6
can rotate 360°,
ø 16 mm, H = 42.5 mm

436.6L
Bavelloni, swivel 360°,
ø 16 mm, H = 44.5 mm

436.16
Bottero, swivel 360°,
ø 16 mm, H = 44.5 mm

436.G
Intermac, Genius, cutting tables
ø 29.5 mm, H = 30.0 mm

436.FOX
Intermac, Fox tables
ø 44 mm, H = 50.5 mm

436.7
Rohmer + Stimpfig
ø 10 mm, H = 35 mm

436.706
Rohmer + Stimpfig, Pfister
ø 10.0 mm, H = 35 mm
Slant 6°

438.054
Ball bearing set
suitable for 436.XX
ø 19 mm x 6 x ø 6 mm

436.1038
M8 x 1, ø 19 mm, L = 55 mm
can rotate 360°

436.1037
Rohmer + Stimpfig
M8, ø 20.5 mm, L = 61.5 mm
can rotate 360°

439.047
Laser
H = 45 mm, B = 14 mm, t = 8 mm

436.1025
Bando, limited swivel,
ø 8 mm, H = 44 mm

436.1026
Bando, swivel 360°, ø 16 mm,
stem ø 8 mm, H = 44 mm

436.3015
Grenzebach, Bottero
limited swivel, ø 15.6 mm,
H = 6 mm, L = 34.2 mm

436.1046
Technometall, swivel 360°,
ø 15.8 mm, H = 32 mm

12/03

439.1194 various cutting machines
stem ø 6.35 mm, stem length
11.0 mm, total length 23.5 mm,
trailing 3.0 mm, tempered

439.2194 various cutting machines
stem ø 6.35 mm, stem length
11.0 mm, total length 25.5 mm,
trailing 3.2 mm, tempered

439.3194 various cutting machines
stem ø 6.35 mm, stem length
11.0 mm, total length 25.5 mm,
trailing 3.0 mm, tempered

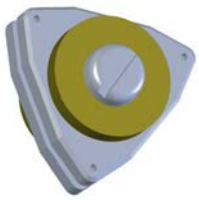
439.1205 various cutting machines
stem ø 6.33 mm, stem length
10.0 mm, total length 22.5 mm,
trailing 3.2 mm, tempered

439.1204
AGC, Asahi cutting machines
swivel 360°, ø 19 mm,
L = 21.0 mm, trailing 2.5 mm

436.1016
Billco
ø 12 mm, H = 24 mm
trailing 2.5 mm

436.101M
for Billco 432.M
ø 12 mm, H = 20 mm
trailing 2.8 mm

439.1108
GED
ø 7.14 mm, L = 38 mm
trailing 2.0 mm, tempered



07B000

434K000
Biebuyck, for 3 carbide wheels,
ø 27.2 mm, thickness = 14.6 mm

11 Cutting fluids

Modern synthetic cutting fluids are definitely preferred over traditional cutting fluids like petroleum or kerosene. The greatest advantages: good lubricating effect, an audibly softer break and and considerably improved edge quality. Furthermore, the modern cutting fluids bind the glass dust and significantly reduce the amount of glass splintering and dust. Silberschnitt® cutting fluids are water-soluble, environmentally safe and available for a wide range of applications: from fluids for cutting thick glass to evaporating cutting fluids for cutting glass with different coatings.

The Bohle cutting fluids are produced by the Aachener Chemical Works (ACW). Some cutting fluids, for example for cutting thick glass, were developed by ACW in cooperation with Bohle.

Art. No.	Contents	ACW ID	Washable (A) Evaporating (V)	Applications	Viscosity (20°C)
50 028 08	30 l (8 gallon)	Acelub I	V	For use as separating agent in bending applications	approx. 2 mPas
50 028 38	200 l (55 gallon)	Acelub I	V	For use as separating agent in bending applications	approx. 2 mPas
50 028 02	30 l (8 gallon)	Acecut 4153	A	Automotive glass, general cutting, shape cutting	approx. 35 mPas
026	1 l (0.26 gallon)	Acecut NT	A	Regular glass cutting and laminated glass	approx. 5 mPas
025	30 l (8 gallon)	Acecut NT	A	Regular glass cutting and laminated glass	approx. 5 mPas
024	200 l (55 gallon)	Acecut NT	A	Regular glass cutting and laminated glass	approx. 5 mPas
50 028 05	30 l (8 gallon)	Acecut 5503	V	Standard product for cutting insulated glass, automotive glass, mirror glass, low-E, general cutting up to 10 mm, 30°- 50°C / 86°- 122°F	approx. 2 mPas
50 028 35	200 l (55 gallon)	Acecut 5503	V	Standard product for cutting insulated glass, automotive glass, mirror glass, low-E, general cutting up to 10 mm, 30°- 50°C / 86°- 122°F	approx. 2 mPas
50 028 06	30 l (8 gallon)	Acecut 6000	A	Automotive glass, very demanding shape cutting, 40°- 90°C / 104°- 194°F	approx. 65 mPas
50 028 36	200 l (55 gallon)	Acecut 6000	A	Automotive glass, very demanding shape cutting, 40°- 90°C / 104°- 194°F	approx. 65 mPas
50 028 07	30 l (8 gallon)	Acecut 5929	V	Coated glass, special applications	approx. 2 mPas
50 028 37	200 l (55 gallon)	Acecut 5929	V	Float glass production, glass thickness from 4 - 19 mm, working temperature 40°- 60°C / 104°- 140°F	approx. 2 mPas
50 028 04	30 l (8 gallon)	Acecut 5250	V	Insulated glass, mirror glass, general cutting up to 10 mm, laminated glass, cutting film with blade, 30°- 50°C / 86°- 122°F	approx. 2 mPas
50 028 34	200 l (55 gallon)	Acecut 5250	V	Insulated glass, mirror glass, general cutting up to 10 mm, laminated glass, cutting film with blade, 30°- 50°C / 86°- 122°F	approx. 2 mPas

Float glass production

In float glass production, pure mineral spirits are still often used for online cutting. All these products have drawbacks (e.g. residues) which often lead to problems in subsequent processes (e.g. in mirror production, soft coating, production of laminated glass).
Because every manufacturer has different conditions in the production of float glass, the cutting fluid must also be suited to the respective requirements. Important criteria in the selection of cutting fluids are, for example, glass thickness, surface temperature or the system for application. ACW has developed cutting fluids specifically for float glass production suitable for the various requirements (see chart). To avoid problems in subsequent processes, only cutting fluids that evaporate should be used.

Other areas

The right choice of cutting fluid for the varied applications in the flat glass industry is strongly dependent on the individual conditions. Important criteria are, for example, the quality requirements of the cut (particularly when cutting shapes), the type of glass, the type of cutting system or subsequent glass processing. Talk to us before you start using a cutting fluid. We will help you to find the optimum product.

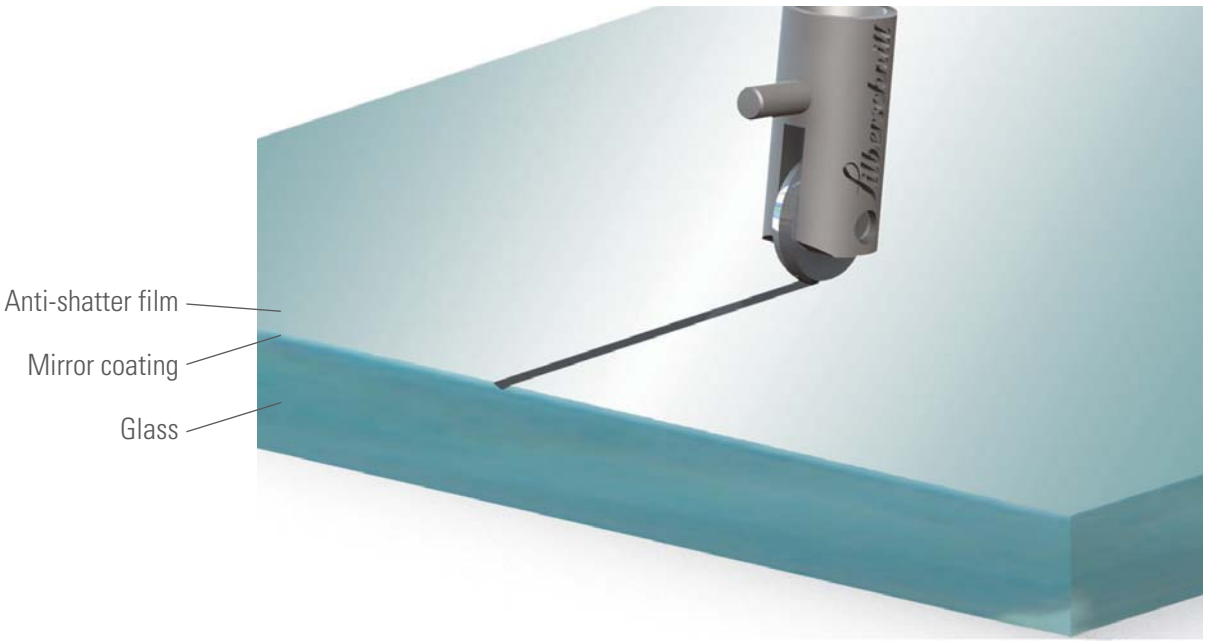
Viscosity of the cutting fluid

As a general rule, modern automatic cutting systems allow the dosage of the cutting fluid to be set without regard to the viscosity. Should problems arise, changing to a cutting fluid with more suitable viscosity can help.

12 Special applications

Cutting of mirrors that are surfaced with anti-shatter film

To cut mirrors that have already been backed with an anti-shatter film during manufacturing, wheels that are specially pre-facetted are used. Depending on the glass thickness, different cutting angles must be used.

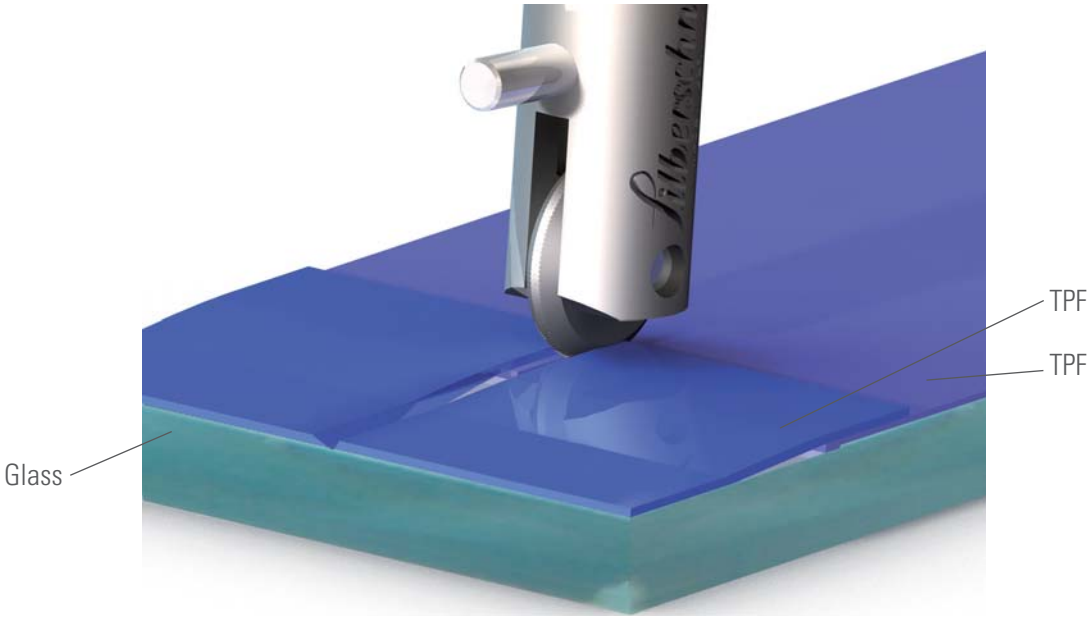


Type						
Article No.	03A100M	416A100M	03A110M	416A110M	03A115M	416A115M
Cutting angle	100°	100°	110°	110°	115°	115°
Glass thickness	4 mm	4 mm	4 mm	4 mm	5/6 mm	5/6 mm

Please refer to pages 24-26 for an overview of metal wheel holders and suitable carbide axles.

Cutting of glass that is protected with TPF (temporary protective film)

The cutting wheel of the Cutmaster® Platinum series with patented micro-structure and a special cutting edge geometry allows a precise cut through the film and optimum penetration into the glass at the same time.
Thus the cutting wheel allows a perfect break of the glass. The special cutting geometry in combination with the micro-structure makes it possible to cut the glass using relatively low cutting pressure.
With the standard carbide cutting wheels that are generally used, it is only possible to cut through the film by exerting overproportional cutting pressure, thus negatively affecting the break quality.

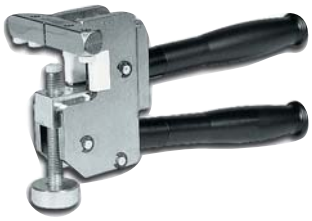


	Carbide wheel	PCD wheel
Article No.	03AP148P	88DP148P
Cutting angle	148°	148°
Glass thickness	6/8 mm	6/8 mm
Article No.	03AP150P	88DP150P
Cutting angle	150°	150°
Glass thickness	8/10 mm	8/10 mm
Article No.	03AP152P	88DP152P
Cutting angle	152°	152°
Glass thickness	10/12 mm	10/12 mm

	Carbide wheel
Article No.	02AP130P
Cutting angle	130°
Glass thickness	6/8 mm

Please refer to pages 24-26 for an overview of metal wheel holders and suitable carbide axles. PCD axles can be found on page 16.

13 Everything else you need



BO 702.0 Silberschnitt® cut running pliers
Heavy-duty model · all-metal · for thick glass up to 25 mm · precisely adjustable to glass thickness · optimum transmission of pressure even over a cut length up to 6 m

BO 704.0 Silberschnitt® cut running pliers
All-metal · for glass thicknesses from 6 to 15 mm · with adjustment screw to set to individual glass thickness · optimum transmission of pressure · also ideal to open straight cuts, corner cut-outs, etc.

BO 710.0 Silberschnitt® cut opening tapper for thick glass
Heavy-duty · all-metal construction · operates on the tapper head principle · adjustable tapper force · for a controlled break with clean glass edges even for demanding requirements

BO 706.0 Silberschnitt® cut opener
For complicated cuts · ideal for opening corner, lateral or other shaped cuts · for glass 6 to 10 mm thick · with turnable pressure ring for optimum adjustment to all cuts · maximum reach 100 mm

BO 51 646 15 Bohle TinCheck®
The innovative TinCheck measuring device is a tool for the fast, reliable and uncomplicated detection of the tin side of float glass. Bohle has succeeded in eliminating the considerable disadvantages of conventional measurement devices, such as sensitivity to light or short service life of the lamp, by the use of state-of-the-art technologies. Electronic components of the very latest LED generation enable TinCheck to provide correct results on the graphic display with the very first measurement. Simply place the handy device on the glass pane, press the start button, and you're finished. The result is displayed immediately.

BO 701.5 Silberschnitt® glass nibbling pliers with carbide cutting wheels
For efficient nibbling of glass shapes · after the surface of the wheel has worn out, the wheel can be turned and re·used.

BO 50 096 38 Glass breaking pliers
Heavy-duty · 380 mm long · with especially long handles · hand forged · for glass up to 20 mm thick

BO 50 080 20 Glass breaking pliers
200 mm long · jaw width 24 mm · lacquered black · ground head

BO 50 082 20 Glass breaking pliers
With curved jaw · 200 mm long · jaw width 20 mm · handles laquered blue

BO 2740.0 Thick glass cutting kit in aluminium case
This kit contains all necessary tools for cutting circles and straight cuts in glass up to 25 mm thick and with max. ø of 120 cm. Now also includes oil glass cutter BO 2000.P POWER and practical aluminium carrying case.

BO 2000.P	Silberschnitt® 2000.P POWER oil glass cutter
BO 2045.0	Silberschnitt® transverse handle for glass cutters
BO 702.0	Silberschnitt® cut running pliers
BO 710.0	Silberschnitt® cut opening tapper for thick glass
BO 521.0	Silberschnitt® thick glass circle cutter
BO 5002800	Silberschnitt® cutting fluid for thick glass
BO 5002810	Dispenser for cutting fluid

BO 2720.0 Silberschnitt® thick glass cutting sledge System 2000
Used with special Bohle straight edges · together with the Silberschnitt® 2000.P POWER oil glass cutter (included in kit), with its trailing wheel and integrated cutting fluid, excellent results are achieved.

BO 2000.P	Silberschnitt® 2000.P POWER oil glass cutter
BO 2045.0	Silberschnitt® transverse handle for glass cutters
BO 5002800	Silberschnitt® cutting fluid for thick glass
BO 5002810	Dispenser for cutting fluid

BO 50 095 25 Carbide steel glass nibbling pliers
with exchangeable jaws

BO 5009526	Spare jaws for carbide steel glass nibbling pliers
BO 5009527	Spare spring for carbide steel glass nibbling pliers

BO 51 667 81 Blades
Round blades ø 25 mm, for cutting laminated glass films, 10 blades in a small case, for use in Lisec laminated glass cutting machines

BO 4401.0 Magnifying glass
For assortment case, magnifying glass made of black plastic, 10 x magnification, opening 15 x 15 mm, height 28 mm

BO 51 648 50 Pressure measuring device
With the pressure measuring device from Bohle (loads up to 500 N), the cutting pressure which is exerted onto the cutting wheel by the cylinder of the cutting head can now be accurately determined.
1 Pressure measuring cell F 500 N (9.81 N = 1 kg)
1 Display unit
1 Aluminium holder for pressure measuring cell
4 Brass spacers
1 Plastic carrying case
1 Operating manual
1 Calibration certificate

BO 4400.0 Assortment case
This case with 2 inserts allows you to keep your stock of diverse wheels nicely sorted. The case includes a magnifying glass, the practical mounting aid (Art. No. BO 440) and a screwdriver (Art. No. BO 442)

BO 440 Mounting aid · BO 441 Mounting aid
Practical mounting aid for mounting the axles in the wheel holders.
BO 441 ø 1.30 mm · BO 441 ø 0.80 mm

BO 442 Screwdriver
Screwdriver blade tip width 1.9 x 0.4 mm, total length 86 mm

BO 438.114 Test pin
Test pin ø 1.14 mm to check the play in the slot dimensions of wheel holders 432.0

14 Good to know

It's not always the wheel's fault

You know the situation: You're not really satisfied with the results of the cutting machine. Based on our experience, we have compiled a questionnaire to help you quickly identify possible problems and easily remedy them yourself. Please check if one or more of the following points may be the cause of your problem:

- Does the wheel still rotate easily when installed?
- Does the wheel have too much lateral play when installed?
- Is the wheel contaminated with cutting fluid residue or glass particles?
- Is sufficient cutting fluid being applied or does it stop dispensing during the cutting process?
- Is the wheel angle right for the glass thickness / glass type / shape cuts or straight cuts?
- Is the cutting pressure right for the wheel angle and the glass thickness/ glass type?
- Does the wheel holder have too much lateral play in the cutting head?
- Is the axle worn?
- Is the cutting speed appropriate for the glass being cut?
- Is the wheel aligned 100% precisely in the cutting direction?
  (Wheel running slightly offset from the cutting direction?)
  Can be recognised by hard breaking, poor broken edge quality and high wear.
  Please note: This fault occurs gradually.
- Are you producing a fine, silvery score line or a white score line? A white track indicates too much cutting pressure or insufficient cutting fluid.
- Is the type of grind of the wheel appropriate for the cutting process and material?
- Are you using the right grind (ACTIVE) for coated glass?
- Does the glass contain excessive separating powder? This impairs perfect cutting and can cause the wheel to jam.
- Are you using glass with high stresses?
- Are you using the right wheel diameter for your glass?
- Small radii and thin glass should be cut with small cutting wheels.
- Is the wheel worn?

15 Workshops

The Bohle Glass Academy offers a comprehensive seminar programme covering many areas of glass processing. Would you like to learn new techniques or improve your expertise in familiar areas? Recognised Bohle professionals and external instructors look forward to seeing you. The Automatic Glass Cutting seminars are held on site at the customer.

Order no.: BSAH003

Automatic Glass Cutting Technology

- Traditional hand tools and their use
- Effects of cutting geometry and different types of grinds
- Choice of wheel holders and optimizing the choice of wheels
- Cutting and breaking flat glass of different thicknesses and types
- Problem solving in automatic glass cutting and the effects of different parameters
- Open cuts of shapes
- Use of cutting fluids
- Optimizing cutting of laminated glass
- Cutmaster® Platinum, The perfect solution for glass cutting
  Precise glass penetration – perfect edge

Target groups

The seminar is designed for those in industrial glass processing who cut glass with standard CNC cutting tables or cutting systems.
If desired, the Automatic Glass Cutting Technology seminar can also be held on Saturdays so your production need not be interrupted.

Advantages for you

The important operation parameters, like choice of appropriate wheels, cutting pressure, cutting speed and optimum cutting fluid supply, are demonstrated on the glass you use and using your own machinery.
An additional objective of the seminar is to optimize the cutting of technical or special glass such as Ceran, Neoceran, Borofloat, etc., prospectively reducing costs.

To make an appointment, please contact:

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16 How to contact Bohle

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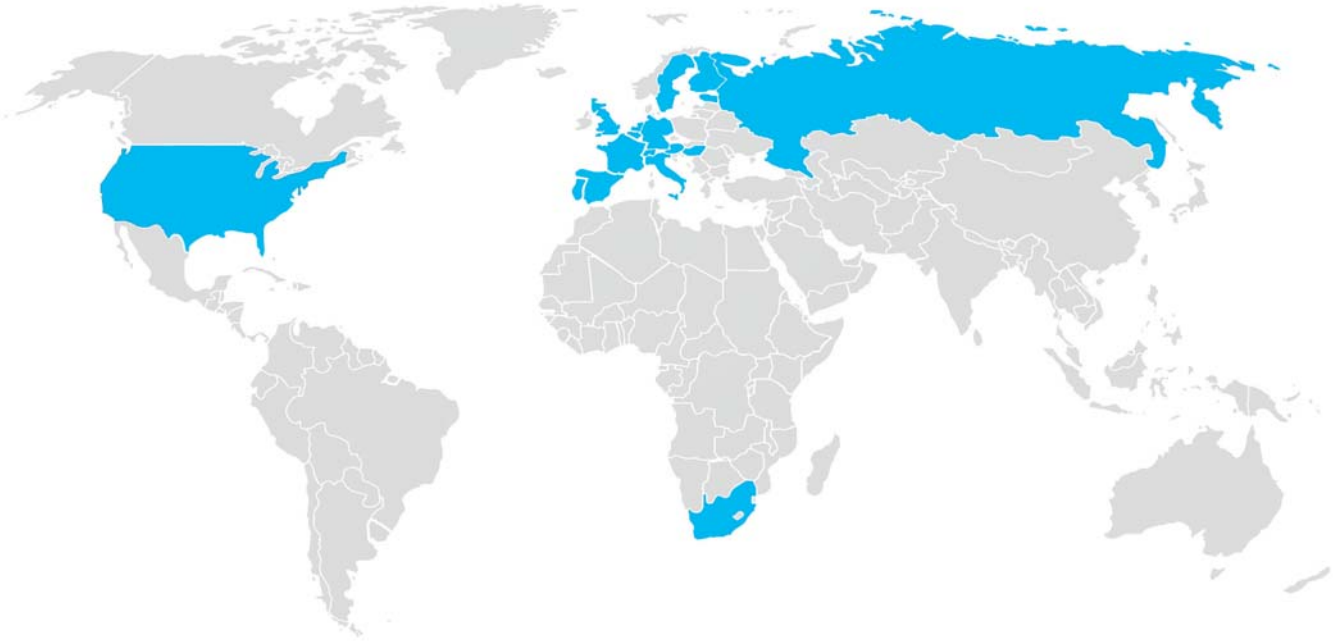
Bohle Online Shop	www.bohle.de
Phone Incoming orders	02129 5568-288
Phone Product advice	02129 5568-289
Fax	02129 5568-281
E-Mail	info@bohle.de
Picking goods up	D - 42781 Haan Siemensstr. 1
Postal address	D - 42755 Haan P.O. Box 1163

Opening hours

Monday to Thursday	8.00 - 16.30
Friday	8.00 - 14.00

Picking goods up

Monday to Thursday	8.00 - 15.00
Friday	8.00 - 12.00



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