



# Automatic Glass Cutting Precision for all applications

### **Cutmaster®PLATINUM** A great innovation has a name





### MORE GOOD REASONS Visit our Online-Shop www.bohle-america.com

# ... as your supplier

The Bohle Group, leading manufacturer and supplier of tools, machines and accessories for glass processing and finishing, has been represented in North America with their own subsidiary since 2008. We offer a long history of manufacturing and innovation since 1923, with our own products made in Germany, now available directly - bringing quality and affordability together.



# 01 Selection

We have 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 needGrowing product range







We provide high quality at an affordable price. Most of our products are made in Germany or established American brands.



Long service life New technologies





### )3

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

Free support from master glaziers
 In the business for over 85 years





# ... for Automatic Glass Cutting



### **01** High Quality Cutting Wheels

Equipped with state-of-the-art technology, Bohle produces Silberschnitt 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 individual carbide, PCD, coated and micro-structured cutting wheels. **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



**A**achener Chemische Werke

## **03** ACW Production Chemicals

We offer a broad range of the well-known ACW products such as ACECUT or ACECOOL. These products are specially geared to the needs of the glass industry and so they complement our range perfectly. Together with our Silberschnitt products from our Industrial Cutting Technology division, we now offer top quality system solutions for glass manufacturers and processors of all sizes – conveniently from a single source.

Developed by ACW in Germany

✓ Only available from Bohle America



# Contents

	It all comes down to the wheel	6
02	Silberschnitt <sup>®</sup> Cutmaster <sup>®</sup> Platinum	10
03	Silberschnitt <sup>®</sup> Cutmaster <sup>®</sup> Gold	12
04	Silberschnitt <sup>®</sup> PCD wheels	14
05	Silberschnitt <sup>®</sup> carbide cutting wheels	15
06	Silberschnitt <sup>®</sup> carbide axles	18
07	Silberschnitt <sup>®</sup> wheel holders	19
08	Silberschnitt <sup>®</sup> blades for film cutting	23
09	Complete solutions	24
10	Cutting fluid	28
	Everything else you need	30
	Good to know	33
	Workshops	34
	How to contact Bohle	35

# It all comes down to the wheel



01

At an early stage, Bohle recognized 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, resulting in consistently long service lives and optimal cutting results. The Silberschnitt<sup>®</sup> 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<sup>®</sup> quality and standardly equip their systems with automatic cutting technology from Bohle.



Results of the angle measurement



Surface roughness measuring device



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.



### » Choose your individual grind «

- For automatic cutting of shapes as well as laminated glass
- For open cuts in glass thicknesses of single strength to 1/2"-1/4" (2 to 6 mm) in the automotive field
- $\blacksquare$  For standard cutting with an angle of 145° and up
- For coated glass such as low-E



Tilberschnitt

 $\blacksquare\,$  For automatic cutting of float glass single strength to  $\rlap{h2''}{}^{-\rlap{5}\!/}{}^{\prime\prime}$  (2 to 8 mm) thick



For thin glass where high edge quality is required

For display glass as well as LCD, TFT and PDP





#### **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 force

When cutting glass, the right combination of cutting force 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 force 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 force and allows a blunter wheel angle to be selected. This in turn improves the build up of tension along the score in the glass and results in better breaking quality.





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 obtruse the cutting angle is, the greater the build-up of tension.

#### Customized solutions on the spot

In addition to standard solutions, Bohle will manufacture all Silberschnitt<sup>®</sup> 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.



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



Cutting angle and build-up of tension in the glass

### New Solutions for Glass Cutting

The new structured cutting wheels of Bohle AG improve the cutting quality for different glass thickness considerably. This new, structured wheel, Cutmaster<sup>®</sup> Platinum, a new development in the well-known Silberschnitt<sup>®</sup> product family effect a significant reduction of edge damage by minimum or considerably reduced cutting pressure.

#### What is different compared to standard cutting wheels?

This new cutting wheel achieves excellent cutting results due to its unique micro-structure. The special structure displays a continuously sharp cutting edge over the entire circumference across the peaks as well as the recess areas.

#### Applications of Cutmaster® Platinum

Float glass Straight cutting 0.02'' - 34'' (0.5 - 19 mm) Shape cuts 0.004'' - 544'' (0.1 - 2.0 mm)

Special Glass Types Medical Glass Optical Glass Solar Glass Photovoltaic Glass Straight cutting of borosilicate glass up to 1" (25 mm) Shape cuts over diverse special glass from 0.004"- 1/24" (0.1 – 2.0 mm)

Thin glass Shape cuts  $0.004'' - \frac{1}{2}''$  (0.1 -2.0 mm) Straight cutting  $0.002'' - \frac{1}{2}''$  (0.05 -3 mm)

### » Advantages of Cutmaster<sup>®</sup> Platinum at a glance «

- *Excellent edge quality*
- Minimal cutting pressure
- Minimal splintering

- Longer service life
- Dry cutting



#### Cutmaster<sup>®</sup>Platinum Surfaces after Cutting 28 µm 1:125 1:250 Wheel Structure Details Wheel Structure a = pitch а b = peak width d c = slot widthd = slot depth b a = 50.0 µm b = 20.0 µm c = 30.0 µm С $d = 8.0 \,\mu m$ 1:500



### Cutmaster<sup>®</sup> Platinum PCD Wheels

Art. No.	Dimensions	Slots
82D000P*	2.0 x 0.65 x 0.80 mm	125 - 300
81D000P*	2.5 x 0.65 x 0.80 mm	157 - 375
85D000P*	3.0 x 0.65 x 0.80 mm	188 - 450

Further material specifications (such as Tungster Carbide) and dimensions on request.

### Cutmaster<sup>®</sup> Platinum Carbide Wheels

Art. No.	Dimensions	Slots
66B000P*	3.0 x 0.8 x 0.65 mm	188
12A000P*	4.1 x 1.08 x 1.42 mm	257
02A000P*	5.0 x 1.00 x 1.30 mm	314
03A000P*	5.6 x 1.08 x 1.42 mm	351



#### Cutmaster<sup>®</sup> Gold carbide cutting wheels with 10-fold service life

The innovative Cutmaster<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> Gold achieves over 155 miles 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 comes with the wheel exchange 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<sup>®</sup> Gold wheels are used only in metal holders.

Standard glass cutting machines manufactured by Bavelloni, Benteler, Bottero, Bystronic, Grenzebach, Hegla, Intermac, Lisec, Macotec und Rohmer + Stimpfig can therefore easily be equipped with Cutmaster<sup>®</sup> 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

$\alpha$ = Cutting angle
d = Hole diameter t = Thickness

Туре	02	1	2		03			
D in inches (mm)	0.1969" (5.0)	0.1614	¥" (4.1)		0.2205" (5.6)			
t in inches (mm)	0.0394" (1.0)	0.0425	" (1.08)	(	).0425" (1.08)			
d in inches (mm)	0.0512" (1.3)	0.0559	" (1.42)	(	).0559" (1.42)			
Packing unit	1 / 100 pc	1 / 100	pieces	1	1 / 100 pieces			
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		

# Silberschnitt<sup>®</sup> PCD wheels

The Silberschnitt<sup>®</sup> 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<sup>®</sup> PCD wheels cut cleanly with practically no flaking or splintering. PCD wheels can be re-ground many times and are therefore especially economical. Bohle can produce cutting angles to

04

suit your specific applications. Diamond cutting wheels feature the following characteristics:

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

		The second se			U	ß	I
Wheel holder, complete	Article No.	490D000	494D000	495D000	496D000	497D000	498D000
Wheel holder	Article No.	490.5	490.6	432.0C	432.0C	422.0C	422.0C
Axle	Dimensions inches/mm	ø 0.06" x 0.16" (ø 1.5 x 4.1 mm)	ø 0.03" x 0.16" (ø 0.8 x 4.1 mm)	ø 0.0547" x 0.16" (ø 1.39 x 4.1 mm)	ø 0.0547" x 0.16" (ø 1.39 x 4.1 mm)	ø 0.0547" x 0.35" (ø 1.39 x 9.0 mm)	ø 0.0547" x 0.35" (ø 1.39 x 9.0 mm)
	Article No.	497D200	497D300	497D141	497D141	497D422	497D422
Wheel	Dimensions inches/mm	ø 0.2"x 0.04"x ø 0.06" (ø 5 x 1.08 x ø 1.51)	ø 0.12"x 0.03"x ø 0.03" (ø 3 x 0.65 x ø 0.8)	ø 0.16"x 0.04"x ø 0.06" (ø 4.1 x 1.08 x ø 1.4)	ø 0.22"x 0.04"x ø 0.06" (ø 5.6 x 1.08 x ø 1.4)	ø 0.16"x 0.04"x ø 0.06" (ø 4.1 x 1.08 x ø 1.4)	ø 0.22"x 0.04"x ø 0.06" (ø 5.6 x 1.08 x ø 1.4)
	Article No.	483D000	485D000	487D000	488D000	487D000	488D000

# Silberschnitt<sup>®</sup> carbide cutting wheels



05

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 12 and 13 you will find a table showing the standard wheels available from Bohle ex stock.

Article number	Wheel type	Grind	Cutting angle	Packaging
03A155	03	А	155	10
03A155H	03	А	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 number	Wheel type	Grind	Cutting angle	Packaging
02A155L	02	А	155	10
02A155LH	02	А	155	100



### Customized 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 summarized 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. 

		0			0)			0)						U		
Туре	06	6	6		05			04			12			02		
D in inches (mm)	0.0984" (2.	5) 0	.1181" (3)		0.118	1" (3)		0.15	75" (4)		0.161	4" (4.1)		0.196	69" (5)	
t in inches (mm)	0.0256" (0.	65) 0	.0256" (0.65)		0.039	4" (1)		0.0394" (1)		0.0425" (1.08)			0.0394" (1)			
d in inches (mm)	0.0315" (0.	B) O	.0315" (0.8)		0.051	2" (1.3)		0.05	12" (1.3)		0.0559" (1.42)			0.0512" (1.3)		
Packing unit	10 / 100 pc		10 / 100 p	C.		10 / 100 pc.		10 / 100 pc.		10 / 100 pc.		10 /100 pc.				
Order Number / Cutting angle	06B000 06C0	00 <u>66</u> A00	00 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						422.0 432.0/432. 434A000	1	4	32.3/414.0 416.000 419.000 432.3	00
Axle	496.080		496.080			496.130						496.422		(BO414	Steel axle 4;2025.09;	) 2025.09)

D=	$ \begin{array}{c} \alpha = \pm 1^{\circ} \\ D = \underbrace{\begin{array}{c} 0.0059^{"} \\ 0.15  \text{mm}\\ 0.0118^{"} \\ (0.3  \text{mm}) \end{array}} \overline{d} = \underbrace{\begin{array}{c} + 0.0016^{"} \\ 0.0016^{"} \\ 0.004  \text{mm}\\ \end{array}} $					ple for	orderi	ng:							
	1				A .1 1										
					Articl	le numb	er VVh	eel typ	)e	Grind		Cutting angl	e Packa	aging	
		/			03A	135		03		А		135°	1(	)	
					03A	135H		03		А		135°	10	0	
		= ± 0.0004" (0.01 mm)		0			•			•					
02L			03			13			07			63	08		64
0.1969"	(5)		0.2205	5" (5.6)		0.2205	5" (5.6)		0.236	2" (6)		0.2362" (6)	0.3150" (8)		0.4921" (12.5)
0.0394"	(1)		0.0425	5" (1.08)		0.0394	L" (1)		0.044	9" (1.14)		0.1181" (3)	0.0787" (2)		0.1575" (4)
0.0512"	(1.3)		0.0559	9" (1.42)		0.0512	2" (1.3)		0.061	D" (1.55)		0.0630" (1.6)	0.1024" (2.6)		0.1181" (3)
Thickness (+0.01	ickness tolerance +0.0004" (+0.01mm) 10 / 100 pc. 10 / 100 pc		10 / 100 pc.	10 / 100 pc.					10 / 100 pc.		10 pc.	10 рс. 10 рс.		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					
02A135I	02B135I		03A135	03B135		13A135	13B135		07A135	07B135				08B135	
02,11002	0201002		03A140	03B140		13A140	13B140		07A140	07B140				000100	
02A145I			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			496.422								496.160			496.300



# Silberschnitt<sup>®</sup> carbide axles



06

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 catalog is available on request. The following standard carbide axles are available ex stock (in packs of 10):

Article No.	Diameter	Length ± 0.0079	Chamfer
496.080	0.0314" (0.80 mm)	0.1811" (4.6 mm)	0.2 x 45° (2x)
496.130	0.0512" (1.30 mm)	0.1654" (4.2 mm)	0.2 x 45° (2x)
496.439	0.0512" (1.30 mm)	0.3149" (8.0 mm)	0.2 x 45° (1x)
496.138	0.0543" (1.38 mm)	0.1654" (4.2 mm)	-
496.138F	0.0543" (1.38 mm)	0.1654" (4.2 mm)	0.4 x 45° (1x)
496.422	0.0547" (1.39 mm)	0.3543" (9.0 mm)	0.2 x 45° (2x)
496.139F	0.0547" (1.39 mm)	0.1811" (4.6 mm)	0.8 x 35° (1x)
496.140	0.0551" (1.40 mm)	0.4724" (12 mm)	-
496.140F	0.0551" (1.40 mm)	0.4724" (12 mm)	0.4 x 45° (1x)
496.150	0.0591" (1.50 mm)	0.2165" (5.5 mm)	0.2 x 45° (1x)
496.160	0.0630" (1.60 mm)	0.3543" (9.0 mm)	0.2 x 45° (2x)
496.300	0.1181" (3.00 mm)	0.4331" (11 mm)	0.5 x 45° (1x)
496.210A	0.0543" (1.38 mm)	0.210" (5.3 mm)	0.4 x 45° (1x)
496.245A	0.0543" (1.38 mm)	0.245" (6.2 mm)	0.4 x 45° (1x)
496.305A	0.0543" (1.38 mm)	0.305" (7.7 mm)	0.4 x 45° (1x)

### 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 in packs of 1.



#### 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).



With modern machines and production methods, shutdown time can be very costly. Silberschnitt<sup>®</sup> 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<sup>®</sup> plastic wheel holders are precision parts with uniformly close tolerances. Thanks to the different colors, 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<sup>®</sup> 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 inexpensive. 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 440

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



			6							
Matarial		4	10			4		414	419	
		hi				hi		Steel	steer tempereu	
Version		CO	lored			CO	lored	natural	black	
Wheel ø		3/16	" (5 mm)			1/4	" (6 mm)	0.221"/0.197" (5,6/5,0)	0.197" (5,0 mm)	
	wheel 02						heel 07		13 / 02	02
Packing unit		10	) / 100			10	) / 100	10	10	
Order number	416A000	416B000	416C000		417A000	417B000	417C000		414.00	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						



	C 135.	0 1350	1350	K.	Contraction of the second	T	Z
	432.	432.	432.	432.10	432.20	432.30	432.60
Material	steel tempered	steel tempered	steel tempered	steel tempered	steel tempered	steel tempered	steel tempered
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	0.2205" (5.6mm)	0.1614" (4.1mm)	0.1614"/0.2205"(4.1/5.6mm)	0.2205" (5.6mm)	0.1614" (4.1mm)	0.1181" (3mm)	0.1181" (3mm)
	with inscription	with inscription	with inscription	without inscription	without inscription	without inscription	without inscription
			without wheels		Suitable for au	tomotive applications	).
127°	432.1271	432.1272	432.127	When	ordering, please inc	licate the wheel angl	e and grind.
134°	432.1341	432.1342	432.134				
135°	432.1351	432.1352	432.135			y 10	N. Contraction
140°	432.1401	432.1402	432.140			Q	<b>\$</b>
145°	432.1451	432.1452	432.145			S.	
148°	432.1481	432.1482	432.148			oto	
150°	432.1501	432.1502	432.150			Van 2	
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		-1	0	
156°	432.1561	432.1562	432.156				
158°	432.1581	432.1582	432.158		1	And the second s	
160°	432.1601	432.1602	432.160		- 100		
163°	432.1631	432.1632	432.163			1. 2.	
165°	432 1651	432 1652	432 165				



For:	432.0	432.3	432.1	432.6
Axle	496.138F	496.130	496.138F	496.080
Wheel type	12/03	05/02L	12/03	06/66
Wheel ø	ø 0.1614" /0.2205" (4.1 / 5.6 mm)	ø 0.1181" /0.1969" (3 / 5 mm)	ø 0.1614" /0.2205" (4.1 / 5.6 mm)	ø 0.0984" /0.1181" (2.5 / 3 mm)
	without angle inscription	without angle inscription	with hole for ball pressure piece	

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.

		3	R		6		
	422.0	422.4	422.1	439.1	439.2	439.16	439.16V
Material	steel te	empered	steel tempered	steel tempered	steel tempered	steel	steel tempered
Axle	496.422	496.160	496.160	496.439	496.439	496.140F	496.140F
Wheel type	12/03	16	63	02L	02L	12/03	12/03
Wheel ø	ø 0.1614"/ 0.2205" (4.1/5.6)	ø 0.2205" (5.6)	ø 0.2362" (6mm)	ø 0.1969" (5mm)	ø 0.1969" (5mm)	ø 0.1614"/ 0.2205" (4.1/5.6)	ø 0.1614"/ 0.2205" (4.1/5.6)
				L= 0.4528" (11.5)	L= 0.6496" (16.5)		tempered
	Suitable for the following glass processing machines:						
	Bottero		Bottero	Lisec	Lisec	Bottero	Bottero
	Bystronic		Bystronic				
	Grenzebach		Grenzebach				
	Benteler		Benteler				

# Silberschnitt<sup>®</sup> blades



08

With Silberschnitt<sup>®</sup> blades, films for sandblasting 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<sup>®</sup> blades.





- » Fine contour cuts «
- with the Silberschnitt<sup>®</sup> blades for film cutting



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<sup>®</sup> 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<sup>®</sup> pillar posts trail by 0.079" (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.



**436.220** limited rotation, Grenzebach, Bottero, ø ¾" (19 mm) L= 1.3189" (33.5 mm)



**436.226** can rotate 360°, Grenzebach, Bottero, ø ¾" (19 mm) L= 1.3386" (34 mm)



**436.222** limited rotation, Grenzebach, ø ¾" (19 mm) L= 1.3819" (35.1 mm)





Grenzebach, ø 0.276" (7 mm), 0.55" x 0.71" x 1.59" (14 x 18 x 40.5 mm)



**439.2015** Grenzebach, ø 0.276" (7 mm), 0.55" x 0.71" x 1.59" (14 x 18 x 40.5 mm)



439.1015, 439.2015 and 439.3015 are also available as an assembly inclusive of the pillar post, bearing package, grease seal, flat washer and snap ring.



**439.1115** Grenzebach, ø 0.276" (7 mm), 0.55" x 0.71" x 1.59" (14 x 18 x 40.5 mm)



**439.2115** Grenzebach, ø 0.276" (7 mm), 0.55" x 0.71" x 1.59" (14 x 18 x 40.5 mm)



Grenzebach, ø 0.276" (7 mm), 0.55" x 0.71" x 1.59" (14 x 18 x 40.5 mm)





**438.048** bearing set, 1 needle bearing, 1 seal ring and 1 spring washer





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 become suitable for use with 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.



H = 1.9882'' (50.5 mm)

H = 1.2598'' (32 mm)

H = 1.752'' (44.5 mm)



**436.BYA** Bystronic, Ø 1.1417" (29 mm) H = 1.3779" (35 mm)



**436.3BYA** Bystronic, Ø 1.1417" (29 mm) H = 1.3779" (35 mm)



Biebuyck, for 3 carbide wheels, ø 1.0709" (27.2 mm) Thickness = 0.5748" (14.6 mm)



 $\begin{array}{l} \text{H} = 0.9449^{"} \ (24 \text{ mm}) \end{array}$ 



for Billco 432.0mini, ø 0.4724" (12 mm) H = 0.7874" (20 mm)





**436.1025** Bando, limited rot ø 0.3149" (8 mm) H = 1.7323" (44 mm)



**436.1026** Bando, can rotate 360°, ø 0.6299" (16 mm) shaft ø 0.3149" (8 mm) H = 1.7323" (44 mm)



**436.3015** Grenzebach, Bottero, limited rotation, ø 0.6142" (15.6 mm), H = 0.2362" (6 mm) L = 1.3465" (34.2 mm)

# Cutting fluid

**R R Contribute Worke** 

# ACW Cutting Fluids

We offer the entire range of Acecut best-in-class cutting fluids.

Just like with hand glass cutters, the use of the appropriate cutting fluid is indispensable when cutting automatically. For this purpose, Bohle offers a special cutting fluid which is used and recommended by many machine manufacturers and



10

float glass producers (such as Guardian, Cardinal, PPG, Pilkington NSG Group, Saint-Gobain) for use with coated glass and specialist glass. Bohle America also offers a wide variety of appropriate coolants, seperating agents (interleavent powders), washing compounds,

flocculants and polishing agents for glass. All your specialist production chemicals, all in one place, with technical advise and support. Made in Germany.

#### Product lines:

Cutting Fluids  $\cdot$  Coolants  $\cdot$  Washing  $\cdot$  Seperating  $\cdot$  Flocculants and more. Highest quality and performance at affordable prices.

Art. No.	Contents	ACW ID	Washable (A) Evaporating (V)	Applications	Viscosity (20°C)
50 028 08	30 I (8 gallon)	Acelub I	V	Bending aluminum spacer bars on automatic spacer bending machines	ap. 2 mPas
50 028 38	200 l (55 gallon)	Acelub I	V	Bending aluminum spacer bars on automatic spacer bending machines	ap. 2 mPas
50 028 02	30 I (8 gallon)	Acecut 4153	А	Automotive glass, general cutting, shape cutting	ap. 35 mPas
026	1 I (0.26 gallon)	Acecut NT	А	Regular glass cutting and laminated glass	ap. 5 mPas
025	30 I (8 gallon)	Acecut NT	А	Regular glass cutting and laminated glass	ap. 5 mPas
024	200 I (55 gallon)	Acecut NT	А	Regular glass cutting and laminated glass	ap. 5 mPas
50 028 05	30 I (8 gallon)	Acecut 5503	V	Standard product für cutting insulated glass, automotive glass, mirror glass, low-E, general cutting up to 10 mm, 30° - 50°C	ap. 2 mPas
50 028 35	200 I (55 gallon)	Acecut 5503	V	Standard product für cutting insulated glass, automotive glass, mirror glass, low-E, general cutting up to 10 mm, $30^\circ$ - $50^\circ$ C	ap. 2 mPas
50 028 06	30 I (8 gallon)	Acecut 6000	А	Automotive glass, very demanding shape cutting, $40^{\circ}$ - $90^{\circ}C$	ap. 65 mPas
50 028 36	200 I (55 gallon)	Acecut 6000	А	Automotive glass, very demanding shape cutting, $40^\circ$ - $90^\circ\text{C}$	ap. 65 mPas
50 028 07	30 I (8 gallon)	Acecut 5929	V	Coated glass, special applications	ap. 2 mPas
50 028 37	200 I (55 gallon)	Acecut 5929	V	Float glass production, glass thicknesses from 4 - 19 mm, working temperature 40° - 60° C	ap. 2 mPas
50 028 04	30 I (8 gallon)	Acecut 5250	V	Insulated glass, mirror glass, general cutting up to 10 mm, laminated glass, cutting film with blade, 30° - 50°C	ap. 2 mPas
50 028 34	200 I (55 gallon)	Acecut 5250	V	Insulated glass, mirror glass, general cutting up to 10 mm, laminated glass, cutting film with blade, 30° - 50°C	ap. 2 mPas

### Coolants:

Art. No.	Contents	ACW ID	Applications
61 005 02	44 lb	Acecool 6284	Automatic bevelling machines and other high speed glass-processing machines
61 004 20	458 lb	Acecool 5679	Edge working, drilling, sawing glass, processing float glass, technical glass (bososilicate), crystal and lead crystal glass
60 065 11	44 lb	Acecool 6511	Edge working, drilling, sawing of automotive, archetectural and furniture glass

### Other Production Chemicals:

Art. No.	Contents	ACW ID	Applications
ACEP6361	44 lb	Aceparen 6361	Anti stick agent for polysulphide, polyurethane and butyl residues
ACEP5446	44 lb	Aceparen 5446	Separating agent for use on racks - for the insulating glass industry - contains neither silicon oil, mineral oil, nor wax
ACEPOL20	44 lb	Acepol AL	Polishing / cleaning of float glass before coating
ACEBR	5 lb	Acecote BR	Seperating agent on steel frames in windscreen production
61 006 02	44 lb	Acedet 5509	Washing agent for insulating glass industry
64 800 20	44 lb	Acedet 6480	Washing agent for removal of contaminants from the glass surface. Modifies the glass surface in such a way that further processing is positively affected.



# Everything else you need



11

### BO 702.0 Silberschnitt® cut running pliers

Heavy-duty model  $\cdot$  all-metal  $\cdot$  for thick glass up to 1" (25 mm)  $\cdot$  precisely adjustable to glass thickness  $\cdot$  optimum transmission of pressure even over a cut length up to 23.6" (6 m)

#### BO 704.0 Silberschnitt® cut running pliers

All-metal  $\cdot$  for glass thicknesses from  $\frac{1}{2}$ " to  $\frac{3}{2}$ " (6 to 15 mm)  $\cdot$  with adjustment screw to set to individual glass thickness  $\cdot$  optimum transmission of pressure  $\cdot$  also ideal to open straight cuts, corner cut-outs, etc.

#### B0 710.0 Silberschnitt<sup>®</sup> cut opening tapper for thick glass

Heavy-duty  $\cdot$  all-metal construction  $\cdot$  operates on the tapper head principle  $\cdot$  adjustable tapper force  $\cdot$  for a controlled break with clean glass edges even for difficult requirements

#### BO 706.0 Silberschnitt® cut opener

For complicated cuts  $\cdot$  ideal for opening corner, lateral or other shaped cuts  $\cdot$  for glass ¼" to %" (6 to 10 mm) thick  $\cdot$  with turnable pressure ring for optimum adjustment to all cuts  $\cdot$  maximum reach 4" (100 mm)

#### B0 51 646 15 Bohle TinCheck - the innovative tin side detector

In our development of TinCheck we have taken care to eliminate the significant disadvantages of conventional measuring devices by using the latest technologies. The application of electronic components from the new LED generation enables our TinCheck to indicate the correct result in the graphic display even with the first measurement. In addition, a green diode lights up to indicate that the tin side has been recognized, while the same is indicated for the atmospheric side by a red diode. Clients with achromatic vision can use an optionally selectable acoustic signal for orientation.

#### BO 701.5 Silberschnitt® glass nibbling pliers with carbide cutting wheels

For efficient removal of shapes from glass strips - the carbide steel cutting wheels can be turned further when worn.

#### BO 50 096 38 Glass breaking pliers

Heavy-duty  $\cdot$  15" (380 mm) long  $\cdot$  with especially long handles  $\cdot$  hand forged  $\cdot$  for glass up to %'' (20 mm) thick



BO 50 080 20 Glass breaking pliers

7 %" (200 mm) long  $\cdot$  jaw width 1" (24 mm)  $\cdot$  lacquered black  $\cdot$  ground head

### BO 50 081 18 Glass breaking pliers

7" (180 mm) long  $\cdot$  jaw width 1" (24 mm)  $\cdot$  lacquered black  $\cdot$  ground head

### BO 50 082 18 Glass breaking pliers

With curved jaw  $\cdot$  7" (180 mm) long  $\cdot$  jaw width  $\%_6$  " (14 mm)  $\cdot$  handles laquered black  $\cdot$  ground head

### BO 50 082 20 Glass breaking pliers With curved jaw $\cdot$ 7 %'' (20 mm) long $\cdot$ jaw width %'' (20 mm) $\cdot$ handles laquered blue

### BO 2740.0 Thick glass cutting kit in aluminum case

This kit contains all necessary tools for cutting circles and straight cuts in glass up to 1" (25 mm) thick and with max. ø of 47.2" (120 cm). Now also includes oil glass cutter BO 2000.P POWER and practical aluminum carrying case.

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



#### B0 2720.0 Silberschnitt® thick glass cutting sledge System 2000

Used with special Bohle straight edges · together with the Silberschnitt<sup>®</sup> 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 <sup>®</sup> 2000.P POWER oil glass cutter
BO 2045.0	Silberschnitt® transverse handle for glass cutters
BO 5002800	Silberschnitt <sup>®</sup> cutting fluid for thick glass
BO 5002810	Dispenser for cutting fluid





### BO 50 095 25 Carbide steel glass nibbling pliers

with exchangeable jawsBO 5009526Spare jaws for carbide steel glass nibbling pliersBO 5009527Spare spring for carbide steel glass nibbling pliers

#### BO 51 667 81 Blades

Round blades Ø 1" (25 mm), for separating laminated glass films, 5 blades in a small case

### BO 4401.0 Magnifying glass

For assortment case, magnifying glass made of black plastic, 10 x magnification, opening %" x %" (15 x 15 mm), height 1 %" (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 = 35.27 oz.tr. (1 kg))
- 1 Display unit
- 1 Aluminum holder for pressure measuring cell
- 4 Brass spacers
- 1 Plastic carrying case
- 1 Operating manual
- 1 Calibration certificate



### 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 dirty?
- Is sufficient cutting fluid being applied or does it stop dispensing during the cutting process?
- Is the wheel angle correct for the glass thickness/ glass type?
- Is the cutting pressure correct 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 poistioned 100% precisely in the cutting direction?
   (Wheel running slightly offset from the cutting direction?)
   Can be recognized by hard breaking, poor broken edge quality and high wear.
   Please note: This problem develops gradually.
- Are you producing a fine, silvery score line or a white score line? A white score line 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?
- Is your glass heavily coated with separating powder? This impairs perfect cutting and can cause the wheel to jam.
- Are you using glass with high stresses?
- Are you using the correct wheel diameter for your glass?
- Small radii and thin glass should be cut with small cutting wheels.
- Is the wheel worn?

# Workshops



With our training program we invite you to discover familiar as well as new glass processing techniques and technology. Learn from the professionals and share in the wealth of knowledge that Bohle is recognized for. Send an e-mail or fax back now to book! Fax +1 704 887 3456





### Workshops for Manual Glass Cutting

Products for cutting and breaking glass were the first items Josef Bohle started producing in 1923. Brand names like Silberschnitt and Diamantor have since gained a world-wide reputation and remain our core competence. Bohle continues to offer the world's largest selection of products for cutting and breaking flat glass.

Seminars Workshops

### Workshops for Basic and Advanced Glass Bonding

We have everything for the perfect bond. In addition to know-how gained from 20 years of glass bonding experience, we also have the world's largest product range for this technology. A technology which offers clear advantages for your business, practically unlimited design possibilities thanks to invisible bonds and extremely high bonding strengths, very short processing times and minimal investment requirements for equipment.

**Big Frank** 

### » It has improved my business in knowledge and performance. I'll now be able to sell a better product with a higher standard «

Britt E. Hopper, Bohle workshop participant

Frank Ruzicka showing Edgardo Torres how to achieve excellent cutting results

Tools will be provided for use du	ring
the workshop	

 Open up a world of new business opportunities

✓ Learn methods from professionals

l am interested in a workshop Please contact me:	
Customer Number	Company Name
Contact Name	Contact Number
Email Address	Number of Attendees

### Fax back now to book! F +1 704 887 3456

## How to contact Bohle

### Bohle America, Inc.

Bohle Online Shop www.bohle-america.com

If you don't have a contact person yet, dial or write:

Postal address

Bohle America, Inc. 10924 Granite Street Suite 200 Charlotte, NC 28273 Phone Freephone Fax E-Mail +1 704 887 3457 +1 866 939 0053 +1 704 887 3456 info@bohle-america.com

You can download our Terms & Conditions and a Credit Application Form on our website under www.bohle-america.com.

You will find Bohle subsidiaries in:

Austria · England · Estonia · France · Germany · Italy · the Netherlands · Russia · South Africa · Spain · Sweden · USA



### Bohle America, Inc.

10924 Granite Street Suite 200 Charlotte, NC 28273

T +1 866 939 0053 (toll free) F +1 704 887 3456

info@bohle-america.com www.bohle-america.com 9-2499 · 09\_09 · USA