



# PRECISION GRINDING

## PRODUCT CATALOGUE

# Our Values

## **Professional excellence**

We strive for the highest quality in our products and our service.

## **Integrity and fairness**

We are transparent and reliable in our interactions with all our business partners.

## **Strategic partnerships**

We work diligently to make our customers, our suppliers, and our employees our "strategic partners".

## **Creative innovation**

We harness technological leadership, individual and company initiatives, and the will to change, to keep the organization moving forward.

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# Company Profile

## CGW Company Profile

Established in 1956, CGW – Camel Grinding Wheels has gained international recognition as an outstanding manufacturer worldwide.

CGW's well-equipped R&D department, staffed by highly experienced engineers, enables the development of vitrified and resin bonded wheels for special application, according to customer requirements, as well as ongoing analysis and grinding performance tests in support of product development. CGW sells its products in all-important global markets, including Europe, North America, Latin America, Australia, Asia, and Africa.

Located in Chicago, the US subsidiary CGW-USA maintains a large warehouse and manufacturing facility with a converter of coated abrasives in Los Angeles.



# CGW's 5-Point Manufacturing & Operating Philosophy

## 1 Advanced in-house development and production

Our in-house R&D and engineering teams, supported by laboratories and testing facilities, allow us to continually improve the existing products and develop high-precision solutions to meet customer specifications.

## 2 Efficient planning and scheduling

Our streamlined system for coordinating between the sales and production departments allows a quick turnaround and a fast response to unexpected schedule changes.

## 3 Ongoing, stringent quality control

The manufacturing processes and maintenance of our production facilities comply with strict international quality, safety and environmental standards.

## 4 On-time, error-free shipments

We work diligently to prevent delays in shipment from the time an order is placed until it is shipped.

## 5 "The best service in the world"

Our decades of industry leadership are based on a company-wide commitment to exceptional customer service. Through this unconditional dedication, we have forged long-standing partnerships with customers throughout the world.

*Our attention to details and commitment to excellence is reflected in our products which have earned a worldwide reputation for high quality, consistency and cost-effectiveness.*

## An Industry Leader in Abrasive Products

CGW manufactures thousands of products for use in the aerospace, automotive, gas turbine, oil rig, construction and other industries.

Our broad product range includes wheels for surface grinding | centerless grinding | cylindrical grinding | off-hand grinding | creep-feed grinding

## About the Catalogue

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We are pleased to present the complete catalogue of our standard vitrified bonded abrasive products.

The technical guide at the beginning of the catalogue contains detailed explanations on a number of subjects, including types of abrasive grains, bonds, and structures. Each section shows initial recommendations for choosing the most suitable specifications for various applications.

Leading corporations in over 40 countries around the world choose CGW brand because of the company's quality and cost-effective products.

CGW's application engineers provide fast and effective technical support to customers and with innovative technology, it sets CGW apart from other abrasives manufacturers.

**CGW specializes in the production of grinding wheels for various industries:**

- Aerospace
- Land-based turbine
- Gear grinding

CGW products are manufactured under strict quality control. We are committed to achieve and maintain a comprehensive Quality & Environmental Management System compliant with and certified to the highest industrial standards including EN 12413, EN 13743, ANSI B7.1, ISO 18001, ISO 14001, OSA and EAC.





# Wheel Specifications

## Wheel specification

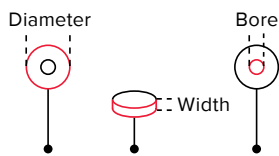
**WA 80 K 7 V**

Abrasive    Grain size    Grade    Structure    Bond



OSA certified & European safety standard

## Wheel dimensions



**177x25.4x31.75**

Maximum safe operating speed

Batch no.

EAN no.

## Abrasive

A	Brown Aluminium Oxide
BAS	High performance Aluminium Oxide
WA	White Aluminium Oxide
WAB	White Aluminium Oxide+Blue Bond
WAR	White Aluminium Oxide+Red Bond
WAY	White Aluminium Oxide+Yellow Bond
WAG	White Aluminium Oxide+Special Bond I
WAP	White Aluminium Oxide+Special Bond II
WAL	Special grain and bond for improved surface integrity
PA	Pink Aluminium Oxide
RA	Ruby Aluminium Oxide
AS1	10% Ceramic Aluminium Oxide
AS2	20% Ceramic Aluminium Oxide
AS3	30% Ceramic Aluminium Oxide
AS5	50% Ceramic Aluminium Oxide
DA	White and Brown Aluminium Oxide
SA	Semi-friable Aluminium Oxide
HA	Monocrystal Aluminium Oxide
KA	Bubble alumina
GC	Green Silicon Carbide
C	Black Silicon Carbide

## Grain Size

Coarse	24, 30, 36
Medium	46, 54, 60
Fine	80, 100, 120, 150
Very Fine	180, 220, 240

## Grade

Soft	B, C, D, E, F, G, H
Medium	I, J, K, L
Hard	M, N, O, P, Q

## Structure

Medium/Standard	Open/Porous
6 7 8 9   10 11 12 13 14 15	

## Bond

V	Vitrified
B	Resinoid
BF	Reinforced Resinoid

## Wheel Dimensions

External Diameter	up to 635mm / 25"
Width	up to 500mm / 20"
Internal diameter (bore)	up to 406mm / 16"



The CGW grinding wheels are made of abrasive grains held together by a bond. The innumerable grinding characteristics are successfully achieved by varying the type of bond and the structure of the wheel.

### Abrasive Grain

There are two main categories of grain:

**Aluminium Oxide** for grinding material of high tensile strength, such as alloy steel, high-speed steels.

**Silicon Carbide** for grinding low-tensile steels, cast iron, carbides, and non-ferrous metals.

### CGW Grain Types

**A** - Brown Aluminium Oxide, the most common of all grains, for heavy-duty general-purpose work.

**BAS** - Blue Fired Aluminium Oxide, specially made for centerless grinding.

**SA (94A)** - Semi-friable Aluminium Oxide, for principal use is in cylindrical and centerless grinding wheels. It can be used to grind both soft and hard steels.

**WA** - White Aluminium Oxide, the high friability of this grain enables fast and cool cutting. Suitable for light grinding of steels of all kinds, particularly tool steel.

**WAB (AZ)** - White Aluminium Oxide + Blue Bond, particularly suited for grinding HSS over 55 RC. Provides exceptionally cool, fast cutting action. Requires minimum dressing. Also available in **WAR - White Aluminium Oxide + Red Bond**.

**AS** - Ceramic Aluminium Oxide, a ceramic grain, blended with white aluminium oxide, creates a wheel with maximum grinding performance, excellent for form holding and cool cut. Available in AS1, AS2, AS3, AS5.

**PA** - Pink Aluminium Oxide, a tough but friable grain for general-purpose wheel. Excellent on large surface areas.

**RA** - Ruby (Red) Aluminium Oxide, harder than PA and WAB, this grain is good for use on high-chromium steel.

**DA** - The combination of A and WA is ideal for precision grinding operations such as large surface grinding.

**WAY** - White Aluminium Oxide + Yellow Bond: are primarily used in wheels that require a very open structure. For creep-feed grinding with continuous dressing.

**WAG** - White Aluminium Oxide + New CGW-developed Bond: are primarily used in wheels with a very open structure. Excellent for creep-feed grinding with non-continuous dressing.

**WAP** - White Aluminium Oxide + New CGW-developed Bond for special wheels with cutting speed of 80 M/S. Designed to perform light, fast passes over the blade or other workpiece.

**WAL** - Special wheel designed for creep-feed grinding. Contains a unique combination of special grain and bond which enables the improved form holding and longer life span. The wheel is characterized by interconnected pores, allowing maximum cooling action and stock removal.

**HA (32A)** - Monocrystalline Aluminium Oxide, a strong, sharp grain, suitable for a wide range of materials and applications. Especially for use on high-alloy steels that are sensitive to heat.

**C** - Black Silicon Carbide is sharper than aluminium oxide and therefore more effective in grinding low-tensile materials and non-ferrous metals.

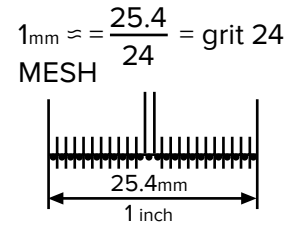
**GC** - Green Silicon Carbide is more friable than C, recommended for grinding cemented carbide cutting tools.

**KA** - Bubble Alumina for grinding soft, malleable materials such as rubber and polyester.



### Grain Size

The grain size is the physical size of the abrasive grains used in making a wheel. It relates to the number of meshes per linear inch of the screen in which the grains will pass through when they are graded. The higher the numbers of grain, the smaller the openings in the screen the grains pass. There are four different groups of the grain size - coarse, medium, fine and very fine. A larger grain size allows fast cutting on a poor surface quality finish. Ultra-fine grain sizes are for fine finishes.



### Grade (Hardness)

The grade of a grinding wheel refers to the strength of the bond to hold the abrasive grains together. The range of grade is represented in alphabetical form - A (soft) to Z (hard). The higher the letter the stronger the bond. A soft grain wheel tends to release grains quickly to expose new, sharper grains where hard wheels retain the abrasive grains longer.

### Structure

Wheel structure refers to the spacing between grain particles within the bond and is measured in terms of the volume content of the abrasive in the wheel. In open structure wheel, the grains are relatively far apart, in close structure, the pores are small and the grains are close together.

### Bond

The function of the bond is to hold the abrasive grains together. Most commonly used are the vitrified and resinoid bonds.

Vitrified Bond are the various clays or ceramics used to form bonds, allowing a wide range of structures with special properties and grinding characteristics. Their strength is developed by firing in kilns to temperatures of up to 1,000°C. The vitrified-bonded wheels are excellent for precision grinding and fast stock removal due to their rigidity and friability.

### Hardness-Structure Diagram

Grade	Structure ← →							
	5	6	7	8	9	10	11	
Soft	H	H5	H6	H7	H8	H9	H10	H11
	I	I5	I6	I7	I8	I9	I10	I11
	J	J5	J6	J7	J8	J9	J10	J11
	K	K5	K6	K7	K8	K9	K10	K11
	L	L5	L6	L7	L8	L9	L10	L11
Hard	M	M5	M6	M7	M8	M9	M10	M11



Structures 6-9:  
medium/standard



Structures 10-15:  
open/porous

# Selecting Grinding Wheels

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Factors to be considered when selecting a grinding wheel:

## Workpiece

Type and hardness of the material: the harder the material, the softer the grade of the wheel required.

**Aluminium Oxide:** most efficient for grinding high-tensile materials such as steel and ferrous castings. The more friable types of alumina are preferred for use on harder steels.

**Silicon Carbide:** for materials with low tensile strength, carbides, and non-ferrous metals.

## Stock removal

The stock removal rate depends on the grain size of the abrasive material and bond type:

- A coarse grit (24-46 MESH) is suitable for high stock removal rates.
- Fine grits are best for fine finishes and tight tolerances.

## Surface finish

High surface finish is achieved by using a fine grit. High quality surface finish results require using a dense or close structure wheel.

## Grinding machine

- The power available defines the rate of stock removal. The greater the power available, the harder the grade of wheel required for efficient operation.
- Deterioration in machine condition leads to vibration and early breakdown of the wheel.

## Grinding fluids

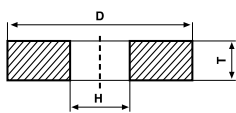
- Grinding fluids provide cooling and/or lubrication. A proper use is an important factor in achieving satisfactory results.
- Coolants and lubricants are capable of reducing heat formation. The relative importance of cooling vs. lubrication determines whether a water-based coolant or an oil-based lubricant is used. Coolants are usually able to transfer the heat away from the workpiece, but are unable to prevent the development of heat.
- In dry grinding, the temperature at the grinding point is not much higher than in wet grinding, but the rate of heat formation is much higher.

**For maximum efficiency in grinding operation, it is essential to have the right wheel for the job.**

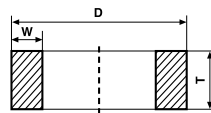
# Standard Types and Shapes of Abrasive Wheels

Types and profiles of CGW abrasives are marked in accordance with international standards.

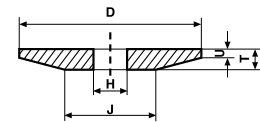
<b>D</b>	Outer diameter	<b>O</b>	Depth of release on other side
<b>E</b>	Thickness around bore	<b>P</b>	Diameter of recess
<b>F</b>	Depth of recess	<b>R</b>	Radius
<b>G</b>	Depth of second recess	<b>T</b>	Thickness (general)
<b>H</b>	Diameter of bore	<b>U</b>	Thickness of edge
<b>J</b>	Diameter of flat outer surface	<b>V</b>	Angle of profiles
<b>K</b>	Diameter of flat inner surface	<b>V1</b>	Second angle of (profiles)
<b>L</b>	Length of segment or abrasive wheel	<b>W</b>	Width of wall
<b>N</b>	Depth of release on one side		



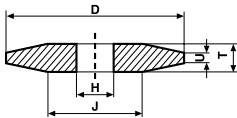
**1** DxTxH



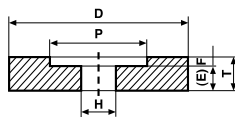
**2** DxTxW



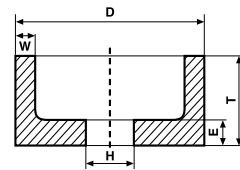
**3** D/JxT/UxH



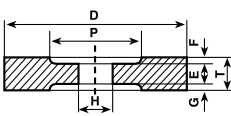
**4** D/JxT/UxH



**5** DxTxH-PxF



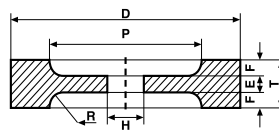
**6** DxTxH-W..E..



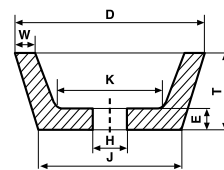
**7** DxTxH-PxF

or if recesses are not the same size:

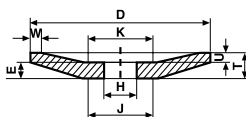
**DxTxH-PxF/G**



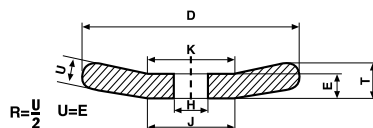
**9** DxTxH-PxF R..



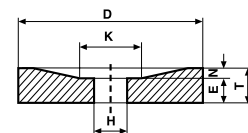
**11** D/JxTxH-W..E..



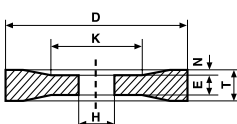
**12** D/JxT/UxH



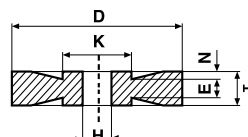
**13** D/JxT/UxH



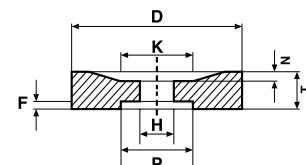
**20** D/KxT/NxH



**21** D/KxT/NxH

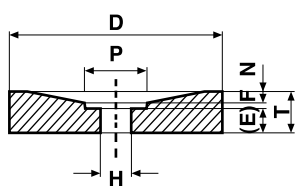


**21A** D/KxT/NxH

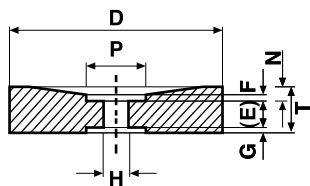


**22** D/KxT/NxH-PxF

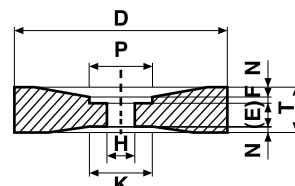
# Standard Types and Shapes of Abrasive Wheels (cont.)



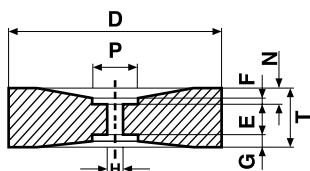
23  $D \times T / N \times H - P \times F$



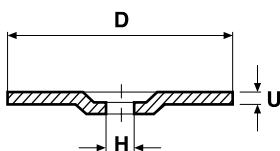
24  $D \times T / N \times H - P \times F$   
or if recesses are not the same size:  
 $D \times T / N \times H - P \times F / G$



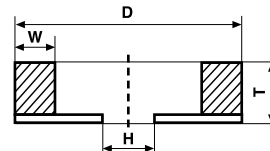
25  $D \times T / N \times H - P \times F$



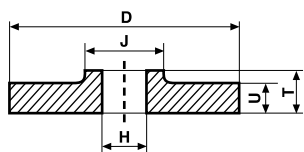
26  $D \times T / N \times H - P \times F$   
or if recesses are not the same size:  
 $D \times T / N \times H - P \times F / G$



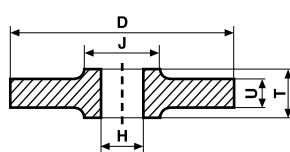
27  $D \times U \times H$



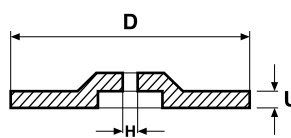
35  $D \times T \times H - W$   
attached to plate



38  $D / J \times T / U \times H$

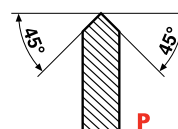
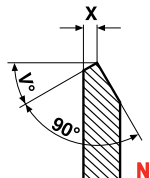
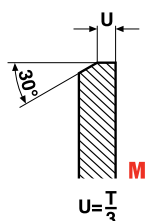
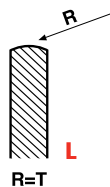
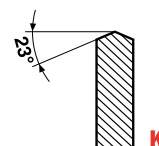
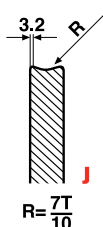
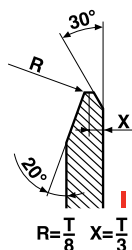
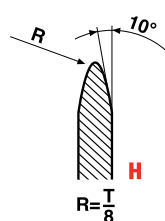
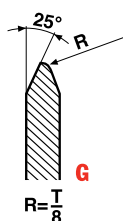
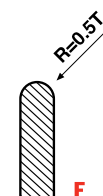
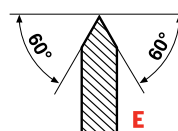
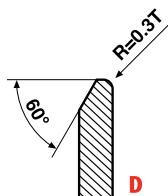
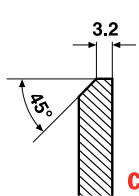
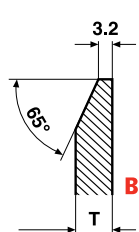


39  $D / J \times T / U \times H$



43  $D \times U \times H$

## Standard Profiles



The background of the cover features a series of dark grey, curved, overlapping bands that create a sense of depth and motion, reminiscent of the blades of a gas turbine. A large, teal-colored curved shape is positioned on the left side, partially overlapping the dark bands. A horizontal teal bar with rounded ends is centered across the middle of the image, containing the title text.

# Aerospace & Gas Turbine



# Wheels for the Aerospace & Gas Turbine Industries

## Wheels for grinding blades & vanes

The Innovative vitrified technology for grinding blades and vanes by CGW are especially designed for the aerospace industry. The wheels are made with CGW special new bond for creep feed grinding applications using either continuous or non-continuous dressing. The open structure wheels allow cool grinding and are able to achieve the delicate balance between self-sharpening and form holding.

- Cool grinding
- Excellent form holding
- Continuous dressing



## Wheels for grinding gas turbine blades

CGW open structure creep feed grinding wheels are ideally suited for high efficiency production of gas turbine blades.

Blades and vanes can be found in their hundreds in just one turbine - in the compressor stage, the combustion stage, and the turbine stage. CGW's advanced technology of soft grinding wheel provides an excellent burn prevention in sensitive inconel parts, especially in large turbine blades.

- Cool grinding
- Excellent form holding
- High output of blades per wheel





# Gears

## Wheels for Gear Grinding

### Continuous Worm Grinding

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The latest generation of high-performance ceramic abrasives composition developed by CGW for the Worm Grinding application. The open-structure, highly homogenous wheel reduces temperature allowing cooler operation, without burning the wheel and work-piece

- Operating speed up to 80 M/S
- Reduced grinding cycle time
- Cool grinding capability



**CGW Gear Grinding wheels are available in a wide variety of sizes and grains**

- Standard or ceramic grain
- Open or close structure wheel
- Straight or pre-profiled
- For all standard bore sizes
- Up to 635mm diameter size
- For all required thickness for Gear Grinding

## Wheels for Gear Grinding (cont.)

### Single Rib Gear Grinding Wheel

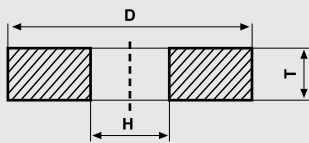
The Innovative technology by CGW using high-performance ceramic abrasives with the new developed bonding system was especially designed for the Single Rib Grinding application. The Single Rib Gear Grinding uses a flexible technique where each tooth flank is ground individually. The open-structure wheel ensures maximum safety against burning:

- Operating speed up to 50 M/S
- High stock removal rate
- Excellent in form holding



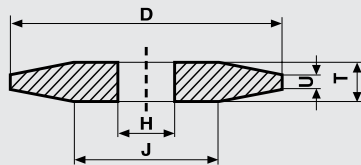
### Standard Wheel Types:

#### Type 1



D-Diameter | T-Thickness | H-Bore

#### Type 4



D-Diameter | T-Thickness | H-Bore  
U-Rim thickness | J-Flat surface diameter

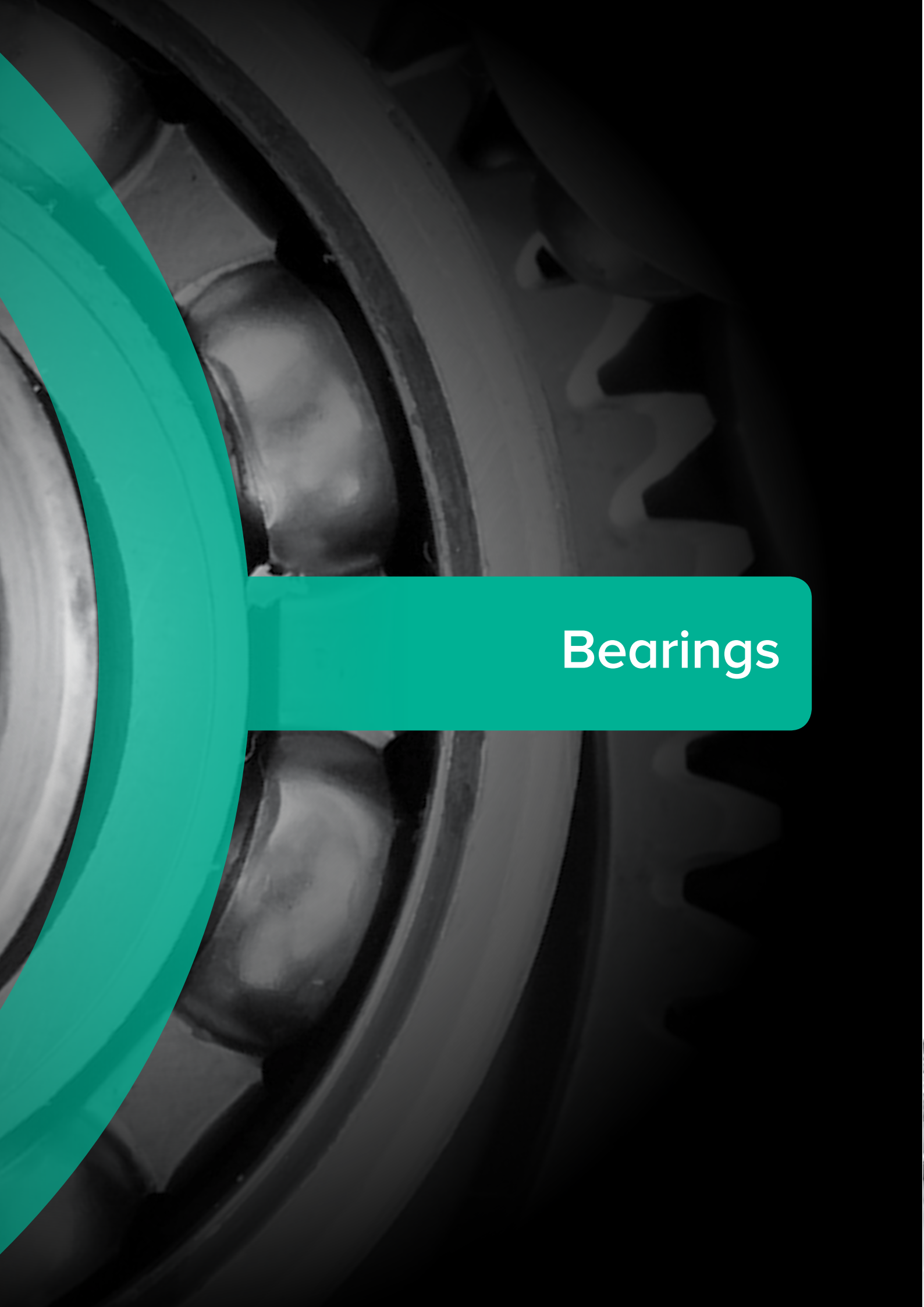
A new designed product representing a special grain combination that result in an excellent shape holding with good self-sharpening, enabling the maximum stock removal rate.











# Bearings

## Grinding wheels for bearing industry

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CGW grinding wheels for the Bearing industry has proven to meet engineering processing high requirements for these steel products including roundness and fine surface finishes at a low temperature.

The Centerless grinding, an outer diameter grinding process is for the outer ring bearing housing and Internal grinding for the inner ring housing. CGW Bearing grinding wheels are available in various specifications to meet customer needs and expectations

Centerless Grinding of outer rings

- General purpose – DA60K7V
- Premium production – PA60-120K-M7VN

Outside Diameter inner ring grinding

- General purpose – PA100K7VN

Bearing rib grinding – PA80-120K9VN

Internal Diameter grinding

- General purpose – DA80K7V
- Premium production - PA80K7V



A close-up, high-angle photograph of a car's alloy wheel, showing the spokes and the tire tread. The image is dark and moody, with a blue graphic overlay on the left side that resembles a stylized wheel or a large letter 'A'. A horizontal blue bar with rounded ends is positioned across the middle of the wheel, containing the word "Automotive" in white, bold, sans-serif font.

**Automotive**



## Wheels for the Automotive Industry

The automotive industry and its derivatives are characterized by a large assembly of parts that require grinding and finishing, from the body of the engine to engine valves, pistons, cylinders, fuel injection units and transmissions.

CGW's offering solutions for the automotive industry consist of vitrified bonded grinding wheels in a variety of compositions and diameters. It includes fine-grained wheels for good finishes and clean smooth surfaces.

CGW's wide range of solutions for all aspects of the automotive industry is based on the need for precision and consistency.

CGW provides a comprehensive product range to suit the individual needs of each customer. Our engineers will find the best solution to match each specific application.

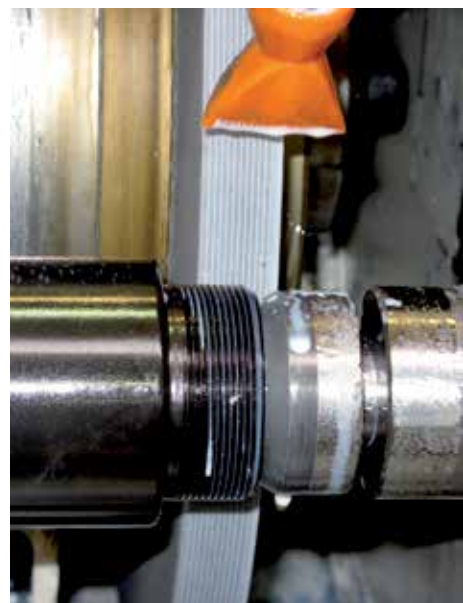
- Wheels for centerless grinding
- Wheels for cylindrical grinding (external & internal)
- Wheels for camshaft & crankshaft applications. Our newly developed PASP 60 K8-VD is formulated for these types of precision grinding applications



## Wheels for Thread Grinding

CGW thread-grinding wheels offer cool cutting with excellent form holding to meet strict tolerance requirements. The wheels are manufactured with very high performance grains, using CGW special WAB bond. The accuracy of the thread depends on the profile of the wheel, which is dressed to the correct form using a diamond roll.

- Up to 400 mesh grain size
- Perfect profile retention







# General Applications

# General Applications

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General recommendations for choosing Abrasive products with reference to applications, various grinding and material types:

- 1** **Wheels for Bench & Pedestal Grinding** are for hand grinding of cutting tools and other rough manual grinding applications.
- 2** **Wheels for Surface Grinding** with straight, recessed or profiled wheels, as well as segments, cups and cylindrical wheels. Soft grade wheels are commonly used for this type of grinding as the size of the contact area is large.
- 3** **Wheels for Cylindrical Grinding** are mostly associated with outside diameter grinding where the part being ground is held and turns between centers, while the grinding wheel turns and moves across the part.
- 4** **Centerless grinding** is the process of removing material from the outside diameter of a workpiece held between two wheels - the grinding wheel and the feed regulating wheel (see p.36 for more details)
- 5** **Tool room grinding** wheels for maintenance, re-sharpening and repair of the cutting tools are available in the following abrasive types:
  - Grinding of end mills, reamers, and cutters, mostly with cup wheels or Type 12 wheels.
  - Surface grinding
  - Cylindrical grinding
  - Internal grinding
  - Cutting off drilling and boring tools
- 6** **Mounted Points** for grinding the internal diameter of a workpiece.
- 7** **Dressing Wheels, Blocks and Sticks** for dressing and cleaning vitrified bonded wheels, CBN wheels, or diamond wheels. Available for various applications such as cleaning and knife sharpening.

## Bench & Pedestal Wheels

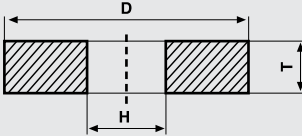
General purpose wheels 5" (127mm) – 18" (455mm)

**35 M/S**





Pedestal  
Grinder
Bench  
Grinder

**Type 1**



D-Diameter | T-Thickness | H-Bore



### Standard Dimensions:

Diameter		Thickness		Bore	
Inches	mm	Inches	mm	Inches	mm
5	127	1/2   3/4   1	12.7   19   25.4	1/2   5/8   3/4   1   1 1/4	12.7   15.88   19   25.4   31.75
6	150	1/2   3/4   1	12.7   19   25.4	1/2   5/8   3/4   1   1 1/4	12.7   15.88   19   25.4   31.75
7	177	1/2   3/4   1	12.7   19   25.4	1/2   5/8   3/4   1   1 1/4	12.7   15.88   19   25.4   31.75
8	200	3/4   1   1 1/4	19   25.4   31.75	1/2   5/8   3/4   1   1 1/4	12.7   15.88   19   25.4   31.75
10	254	1   1 1/4   1 1/2	25.4   31.75   38	3/4   1   1 1/4	19   25.4   31.75
12	305	1   1 1/4   1 1/2   2	25.4   31.75   38   51	3/4   1   1 1/4	19   25.4   31.75
14	356	1   1 1/2   2   3	25.4   38   51   76	1   1 1/4   1 1/2	25.4   31.75   38.1
16	406	1   1 1/2   2	25.4   38   51	1 1/2	38.1
18	455	3	76	1 1/2	38.1

## Recommended Specifications:

	Coarse	Medium	Fine	Very Fine
<b>Metal / Steel</b>	A24Q5V	A36P5V / A46N6V	A60M6V / A80M6V	A100M6V
<b>Tungsten Carbide</b>		GC60J7V	GC80J7V	GC100J7V
<b>HSS &amp; Tool Steel</b>	WA46K	WA60K	WA80K	WA100K

**A** Aluminium Oxide for general purpose off-hand sharpening

**GC** Silicon Carbide for non-ferrous metals, carbide tools

**WA** White Aluminium Oxide for HSS & Tool Steel



## Standard Aluminium Oxide Bench Wheels:

Wheel Size		Wheel Specification & EAN Code							
Inches	mm	A24Q5V	A36P5V	A46N6V	A60M6V	A80M6V	A100M6V	R.P.M.	
6x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	150x19x31.75	053544	053575	053599	053605	053636	053643	4,500	
6x1x1 <sup>1</sup> / <sub>4</sub>	150x25.4x31.75	053803	053834	053841	053858	053872	053889	4,500	
7x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	177x19x31.75	054077	054107	054114	054121	054145	054152	3,750	
7x1x1 <sup>1</sup> / <sub>4</sub>	177x25.4x31.75	054282	054312	054329	054336	054343	054350	3,750	
8x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	200x19x31.75	054718	054756	054794	054817	054831	054848	3,350	
8x1x1 <sup>1</sup> / <sub>4</sub>	200x25.4x31.75	055050	055074	055081	055104	055128	-	3,350	
10x1x1 <sup>1</sup> / <sub>4</sub>	254x25.4x31.75	-	055579	055593	055609	055623	-	2,700	
10x1 <sup>1</sup> / <sub>2</sub> x1 <sup>1</sup> / <sub>4</sub>	254x38.1x31.75	-	055920	055944	055951	055975	-	2,700	
12x1 <sup>1</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	305x31.75x31.75	-	351152	056453	056460	056477	-	2,250	
12x1 <sup>1</sup> / <sub>2</sub> x1 <sup>1</sup> / <sub>4</sub>	305x38.1x31.75	-	056576	380435	380442	056620	-	2,250	
12x2x1 <sup>1</sup> / <sub>4</sub>	305x50.8x31.75	-	056811	056835	056859	-	-	2,250	
14x2x1 <sup>1</sup> / <sub>4</sub>	356x50.8x31.75	-	057375	380534	057312	057436	-	1,950	





### Standard Silicon Carbide Bench Wheels:

Wheel Size		Wheel Specification & EAN Code			
Inches	mm	GC60J7V	GC80J7V	GC100J7V	R.P.M.
6x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	150x19x31.75	075041	075072	075096	4,500
6x1x1 <sup>1</sup> / <sub>4</sub>	150x25.4x31.75	075331	075379	075393	4,500
7x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	177x19x31.75	075829	075843	075850	3,750
7x1x1 <sup>1</sup> / <sub>4</sub>	177x25.4x31.75	075959	075973	075997	3,750
8x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	200x19x31.75	076475	076499	076529	3,350
8x1x1 <sup>1</sup> / <sub>4</sub>	200x25.4x31.75	076680	076727	076765	3,350
10x1x1 <sup>1</sup> / <sub>4</sub>	254x25.4x31.75	077199	077199	077212	2,700



### Standard White Aluminium Oxide Bench Wheels:

Wheel Size		Wheel Specification & EAN Code				
Inches	mm	WA46K7V	WA60K7V	WA80K7V	WA100K7V	R.P.M.
6x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	150x19x31.75	062928	062942	062966	062997	4,500
6x1x1 <sup>1</sup> / <sub>4</sub>	150x25.4x31.75	063062	063086	063109	-	4,500
7x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	177x19x31.75	064168	064205	064243	064250	3,750
7x1x1 <sup>1</sup> / <sub>4</sub>	177x25.4x31.75	598076	631353	064359	064366	3,750
8x <sup>3</sup> / <sub>4</sub> x1 <sup>1</sup> / <sub>4</sub>	200x19x31.75	065202	065257	065288	065295	3,350
8x1x1 <sup>1</sup> / <sub>4</sub>	200x25.4x31.75	065448	065486	065516	065523	3,350
10x1x1 <sup>1</sup> / <sub>4</sub>	254x25.4x31.75	066223	066230	066254	066261	2,700

## Telescopic Plastic Adaptors:

To fit wheel bore to machine arbor.

Bag Qty. 10



EAN No.	Bore Dimensions		Height	
	Inches	mm	Inches	mm
000746	1 ↔ ¾ ↔ ⅝ ↔ ½	25.4 ↔ 19.05 ↔ 15.88 ↔ 12.7	½	12.7
000777			¾	19
000852			1	25.4
000814	1¼ ↔ 1 ↔ ¾	31.75 ↔ 25.4 ↔ 19.05	½	12.7
000890			¾	19
			1	25.4
551828	1¼ ↔ 1 ↔ ¾ ↔ ⅝ ↔ ½	31.75 ↔ 25.4 ↔ 19.05 ↔ 15.88 ↔ 12.7	½	12.7
551811			¾	19
			1	25.4
000913	1½ ↔ 1¼ ↔ 1	38 ↔ 31.75 ↔ 25.4	½	12.7
			¾	19
			1	25.4

# Surface Grinding Wheels

## Horizontal Surface Grinding

The edge of the wheel is in contact with the workpiece.

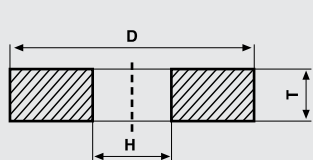


35 M/S



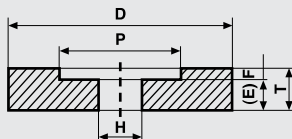
Horizontal Surface Grinder

### Type 1 (straight wheel)



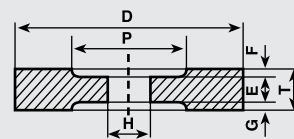
D-Diameter | T-Thickness | H-Bore

### Type 5 (recess one side)



D-Diameter | T-Thickness | H-Bore  
P-Diameter of recess | F-Depth of recess  
E-Thickness around bore

### Type 7 (recess two sides)



D-Diameter | T-Thickness | H-Bore  
P-Diameter of recess | F-Depth of recess  
E-Thickness around bore

## Recommended Specifications:

<b>General Purpose</b>	WA46H8V	<b>WA</b>	The most friable grain - easy cutting action	
<b>Steel &lt; 55Hrc</b>	WA46K7V	<b>WAB (AZ)</b>	Fast and cool cutting	
<b>Steel &gt; 55Hrc</b>	AS46H8V	<b>PA</b>	Tough but friable	
<b>Stainless Steel (soft) 300 series</b>	PA46J8V	<b>RA</b>	Tougher than PA - good for chromium steel	
<b>Stainless Steel (hard) 400 series</b>	AZ46H8V	<b>WAG</b>	Excellent form holding - cool grinding	
<b>Nickel Alloys</b>	WAG60F15V	<b>GC</b>	For carbide and non-ferrous applications	
<b>HSS &amp; Tool Steel</b>	AS360I13V	<b>AS</b>	Submicron crystal structure gives long life with maximum performance	
<b>Carbides / Tungsten</b>	GC60J7V			
<b>Non-ferrous Metals</b>	GC60J7V			

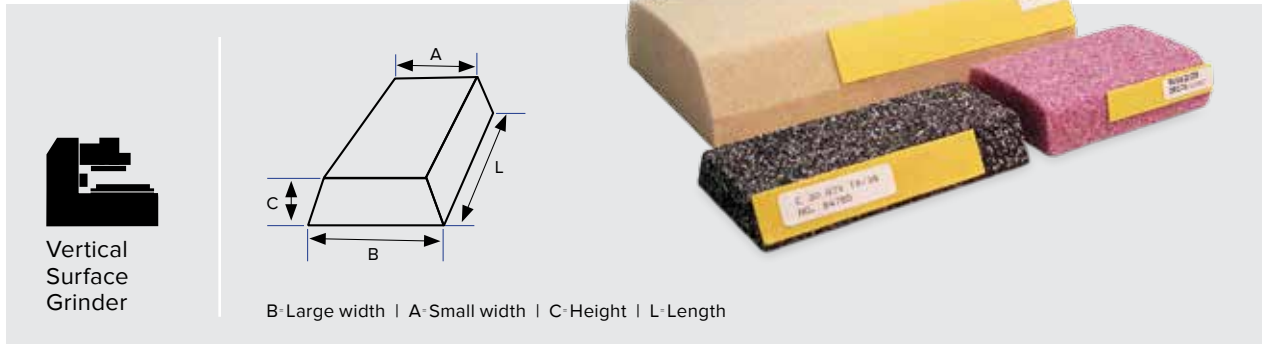
## Standard Dimensions:

	Diameter (D)		Recess Dimensions (P)		Thickness (T)		Bore (H)	
	Inches	mm	Inches	mm	Inches	mm	Inches	mm
Type 1	6	150	-	-	1/4   1/2	6.3   12.7	1/4	31.75
	7	177	-	-	1/4   3/8   1/2	6.3   10   12.7	1/4	31.75
	8	203.2	-	-	1/4   1/2	6.3   12.7	1/4	31.75
	10	250	-	-	3/4   1	19   25.4	2   3   5	50.8   76.2   127
	12	305	-	-	1	25.4	3   5	76.2   127
	14	356	-	-	1   1 1/2	25.4   38	3   5	76.2   127
	16	406	-	-	1 1/2   2   2 1/2	38   51   63	5	127
	20	508	-	-	1 1/2   2   4   6   8	25.4   38   51   102   150   203	5   8   10	127   203.2   254
Type 5	7	177	3x1/4	78x6.3	3/4	19	1/4	31.75
	7	177	3x1/2	78x12.7	1	25.4	1/4	31.75
	8	203.2	3x1/2	78x12.7	3/4	19	1/4	31.75
	8	203.2	3x1/2	78x12.7	1	25.4	1/4	31.75
	12	305	7 1/2 x 1/2	190x12.7	1 1/2   2	38   51	3, 5	76.2   127
	14	356	8x1/2	200x12.7	1 1/2	38	5	127
	14	356	8x1	200x25.4	2	51	5	127
	20	508	by request	by request	1 1/2   2   4   6   8	25.4   38   51   102   150   203	5   8   10	127   203.2   254
Type 7	12	305	7 1/2 x 1/2	190x12.7	2	51	3   5	76.2   127
	14	356	8x3/8	200x10	2	51	5	127
	18	455	11 1/2 x 1/2	290x12.7	2	51	8	203.2
	20	508	by request	by request	1 1/2   2   4   6   8	25.4   38   51   102   150   203	5   8   10   12	127   203.2   254   304.8



## Vertical Surface Grinding

Segments, cylinder or cups are used with the face of the wheel. The workpiece is held on a rotary-table machine while grinding operations produce the flat surface.



### Recommended Specifications:

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**General Purpose** PA30D9V

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**Steel < 55Hrc** WA36G10V

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**Steel > 55Hrc** AZ36D12V

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**Stainless Steel (soft) 300 series** WA36I8V

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**Stainless Steel (hard) 400 series** AZ36D12V

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**Nickel Alloys** AZ46D12V

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**HSS & Tool Steel** AS336D13V

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**Carbides / Tungsten** GC36H8V

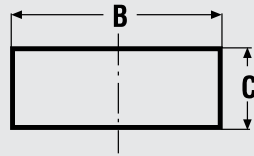
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**Non-ferrous Metals** GC60J7V

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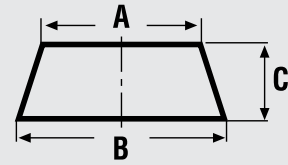
## Standard Shapes & Dimensions:

### Type ST



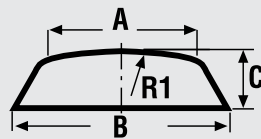
Type	Dimensions (mm) LxBxC
ST-1	210x120x30
ST-2	150x80x30
ST-30	150x90x35
ST-31	150x80x25
ST-32	150x60x25
ST-33	100x50x16
ST-34	100x50x12
ST-35	150x90x30
ST-92	90x70x21

### Type TR



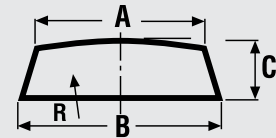
Type	Dimensions (mm) LxBxC
TR-36	100x43/38x20
TR-37	70x65/57x20
TR-38	125x64/45x20
TR-39	150x70/64x25
TR-85	150x60/55x22

### Type OR/B



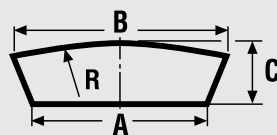
Type	Dimensions (mm) LxBxC
OR/B-12	203x118/78x45

### Type OR/C



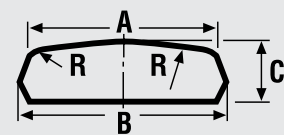
Type	Dimensions (mm) LxBxC
OR/C-14	203x103/83x38
OR/C-71	150x103/83x38
OR/C-72	150x60/50x22
OR/C-73	127x90/70x30
OR/C-74	100x66/57x25
OR/C-88	70x60/55x18

### Type OR/E



Type	Dimensions (mm) LxBxC
OR/E-15	150x118/78x44
OR/E-89	150x56/9x28

### Type OR/F



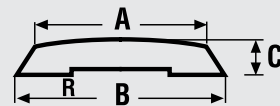
Type	Dimensions (mm) LxBxC
OR/F-16	150x118/94x44

### Type OR/G



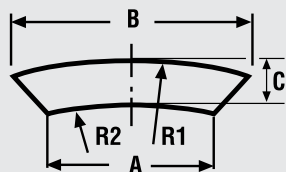
Type	Dimensions (mm) LxBxC
OR/G-11	203x150x48
OR/G-13	286x146x62
OR/G-13 (L)	286x203x62

### Type IR/H



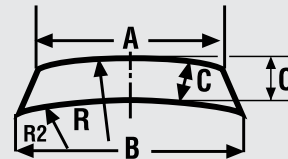
Type	Dimensions (mm) LxBxC
OR/H-86	100x65/61x18

### Type IR/A



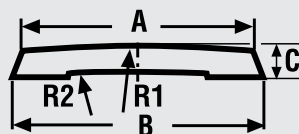
Type	Dimensions (mm) LxBxC
IR/A-22	150x76/61x18
IR/A-23	200x115/90x26
IR/A-46	150x73/38x27
IR/A-52	120x95/72x25
IR/A-54	150x97/72x25
IR/A-55	150x75/50x25
IR/A-82	80x60/45x21
IR/A-87	69/63x37/26x26

### Type IR/C



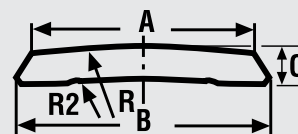
Type	Dimensions (mm) LxBxC
IR/C-24	150x112/90x36
IR/C-53	100x55/46x20
IR/C-80	80x51/45x15
IR/C-81	100x84/74x21
IR/C-82	100x50/45x20
IR/C-83	110x51/45x15
IR/C-84	55x51/45x15

### Type IR/D



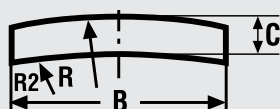
Type	Dimensions (mm) LxBxC
IR/D-51	80x80/70x20

### Type IR/E



Type	Dimensions (mm) LxBxC
IR/E-20	155x127/105x37
IR/E-21	182x120/114x30

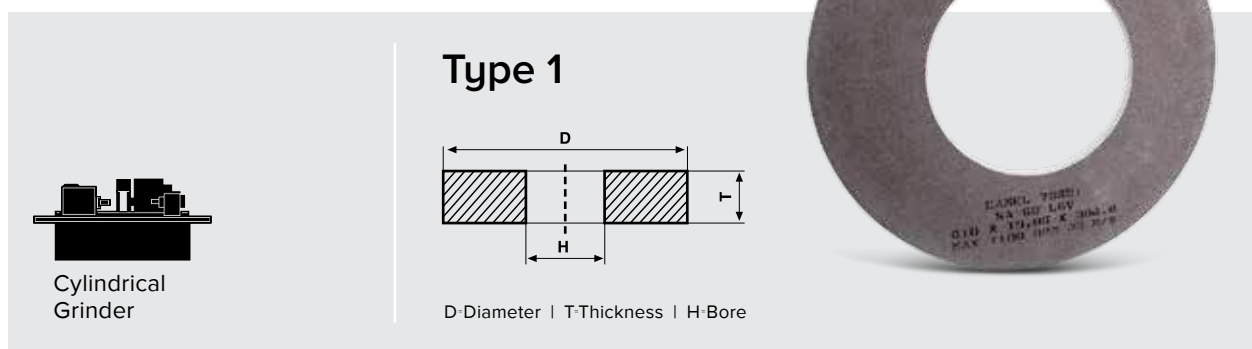
### Type IR/G



Type	Dimensions (mm) LxBxC
IR/G-25	50x50/50x15

# Cylindrical Grinding

A cylindrical part rotates while a wheel grinds along its length.



## Standard Dimensions:

Diameter		Thickness		Hole	
Inches	mm	Inches	mm	Inches	mm
12	305	1   1½   2	25.4   38   51	3   4   5	76   101.6   127
14	356	1   1½   2   3	25.4   38   51   76	3   4   5	76   101.6   127
16	406	1   1½   2   3	25.4   38   51   76	5   8	127   203.2
18	455	1   1½   2   3	25.4   38   51   76	5   8	127   203.2
20	508	1   1½   2   3   4	25.4   38   51   76   102	5   8   12	127   203.2   304.8
24	610	1   1½   2   3   4	25.4   38   51   76   102	8   12	203.2   304.8

## Recommended Specifications:

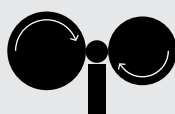
<b>General Purpose</b>	SA60K7V
<b>Steel &lt; 55Hrc</b>	PA60M7V
<b>Steel &gt; 55Hrc</b>	SA60K7V
<b>Stainless Steel (soft) 300 series</b>	SA60M7V
<b>Stainless Steel (hard) 400 series</b>	SA60K7V
<b>Nickel Alloys</b>	WAG80H8V
<b>HSS &amp; tool steel</b>	SA60K7V
<b>Carbides / Tungsten</b>	GC60J7V
<b>New designed composition</b>	PA/WAB 120 F11V

<b>SA</b>	Semi-friable aluminium oxide
<b>WAG</b>	Highly friable grain
<b>PA</b>	Tough but friable aluminium oxide
<b>GC</b>	For non-ferrous metals



## Centerless Grinding

In centerless grinding, the workpiece is held between two wheels - the grinding wheel and the feed-regulating wheel. CGW's centerless grinding solutions give a precision fine finish while maintaining accuracy and control over the process.



Centerless  
Grinder

### Types of centerless grinding:

The workpiece enters one side and exits the other side.

#### End feed

The workpiece is fed into the machine in one side and stops for grinding, and then the piece is fed in the opposite direction to exit.

#### In feed

For grinding pieces with complex shapes. The workpiece is entered manually and does not enter / exit as in through feed and end feed.

### Standard Dimensions:

Diameter		Thickness		Bore	
Inches	mm	Inches	mm	Inches	mm
12	305	3 - 5	76 - 127	5	127
14	356	3 - 5	76 - 127	5	127
16	406	3 - 8	76 - 203	5   8   10	127   203.2   254
20	508	3 - 10	76 - 250	12	304.8
24	610	3   4   6   8   10	76 - 250	12	304.8

### Recommended Specifications:

General Purpose	BAS60K7V
Steel < 55Hrc	BAS60M7V
Steel > 55Hrc	BAS60L7V
Stainless Steel (soft) 300 series	BAS60M7V
Stainless Steel (hard) 400 series	BAS60K7V
Nickel Alloys	BAS60K7V
HSS & Tool Steel	BAS60K7V
Carbides / Tungsten	GC60J7V

**BAS** Improved aluminium oxide grain, specially prepared for centerless grinding

# Tool Room Grinding

For maintenance, re-sharpening and repair of the cutting tools

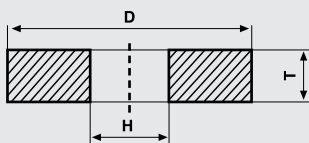
**35 M/S**



Tool Room  
Grinder

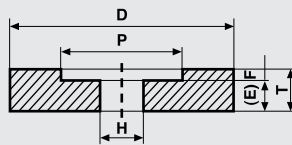


## Type 1 (straight wheel)



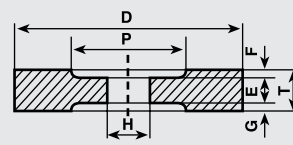
D-Diameter | T-Thickness | H-Bore

## Type 5 (recess one side)



D-Diameter | T-Thickness | H-Bore  
P-Diameter of recess | F-Depth of recess  
E-Thickness around bore

## Type 7 (recess two sides)

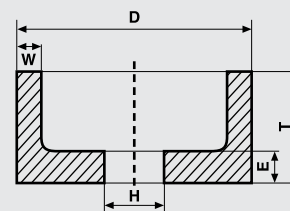


D-Diameter | T-Thickness | H-Bore  
P-Diameter of recess | F-Depth of recess  
E-Thickness around bore

## Standard Dimensions:

	Diameter (D)		Recess Dimensions (P)		Thickness (T)		Bore (H)	
	Inches	mm	Inches	mm	Inches	mm	Inches	mm
Type 1	6	150			1/4   1/2	6.3   12.7	1/4	31.75
	7	177			1/4   3/8   1/2	6.3   10   12.7	1/4	31.75
	8	203.2			1/4   1/2	6.3   12.7	1/4	31.75
	10	254			3/4   1	19.05   25.4	2   3   5	50.8   76.2   127
	12	305			1	25.4	3   5	76.2   127
	14	356			1   1/2	25.4   38	3   5	76.2   127
Type 5	7	177	r/1/s3x1/4	r/1/s76.2x6.3	3/4	19.05	1/4	31.75
	7	177	r/1/s3x1/2	r/1/s76.2x12.7	1	25.4	1/4	31.75
	8	203.2	r/1/s3x1/4	r/1/s76.2x6.3	3/4	19.05	1/4	31.75
	8	203.2	r/1/s3x1/2	r/1/s76.2x12.7	1	25.4	1/4	31.75
	12	305	r/1/s7 1/2 x 1/2	r/1/s190x12.7	1 1/2   2	38   50.8	3   5	76.2   127
	14	356	r/1/s8x1/2	r/1/s200x12.7	1 1/2	38	5	127
	14	356	r/1/s8x1	r/1/s200x25	2	50.8	5	127
Type 7	12	305	r/2/s7 1/2 x 1/2	r/2/s190x12.7	2	50.8	3   5	76.2   127
	14	356	r/2/s8x3/8	r/2/s200x10	2	50.8	5	127

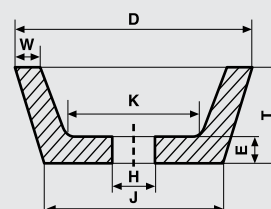
## Straight Cup Wheels | Type 6



D-Diameter | T-Thickness | H-Bore | P-Diameter of recess | E-Thickness of base | W-Thickness of wall

D		T		H		W		E	
Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
4	102	1½   2	38   51	¾   1¼	20   31.75	5/16, 3/8	8   10	3/8	10
5	127	1½   2	38   51	1/4	31.75	3/8	10	3/8	10
6	150	2	51	1/4	31.75	1/2	12.7	1/2	12.7

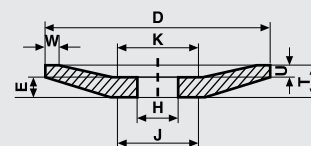
## Flared Cup Wheels | Type 11



D-Diameter | T-Thickness | H-Bore | P-Diameter of recess | E-Thickness of base | W-Thickness of wall

D		T		H		W		E		J		K	
Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
4	102	1½   2	38   51	¾   1¼	20   31.75	5/16	8	1/2	12.7	3¼	82	2 <sup>5</sup> / <sub>8</sub>	67
5	127	1¾   2	45   51	1/4	31.75	5/16	8	1/2	12.7	3¾	95	3	78
6	150	2	51	1/4	31.75	3/8	10	1/2	12.7	4½	115	3¾	95

## Dish Grinding Wheels | Type 12



D-Diameter | T-Thickness | H-Bore | P-Diameter of recess | E-Thickness of base | W-Thickness of wall

D		T		H		W		E		J/K		U	
Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
4	102	½	12.7	½   ¾   1¼	12.7   20   31.75	3/16	5	1/4	6.5	2	51	1/8	3
5	127	½	12.7	1/4	31.75	1/4	6.5	1/4	6.5	2½	63	1/8	3
6	150	½	12.7	1/4	31.75	3/8	10	5/16	8	3	78	1/8	3.2
7	177	½	12.7	1/4	31.75	½	13	5/16	8	3½	90	1/8	3.2

## Recommended Specifications:

	Type of Grinding	Wheel Type	Specification
<b>End Mills</b>	Sharpening	Type 12	WA100K7V
	Grinding	Type 6 & 11	WA100K7V
<b>Milling Cutters</b>	Sharpening	Type 12	WA60K7V
	Grinding	Type 6 & 11	PA80K7V
<b>Carbide Tools</b>	Grinding & Sharpening	Type 1, 6, 11, 12	GC60I7V
<b>HSS &amp; Tool Steel</b>	Grinding & Sharpening	Type 1, 6, 11, 12	PA46J7V

# Internal Grinding

## Internal Grinding Wheels

For grinding inside surfaces of bearings, rings, cylinders and bores.

The recommended wheel for internal grinding has a diameter of up to  $\frac{2}{3}$  of the final bore required.

CGW's internal grinding wheels are available at all sizes up to 150mm(6 inch) in diameter, type 1, 5, 6 with abrasives types of WA, RA, AS, PA, GC

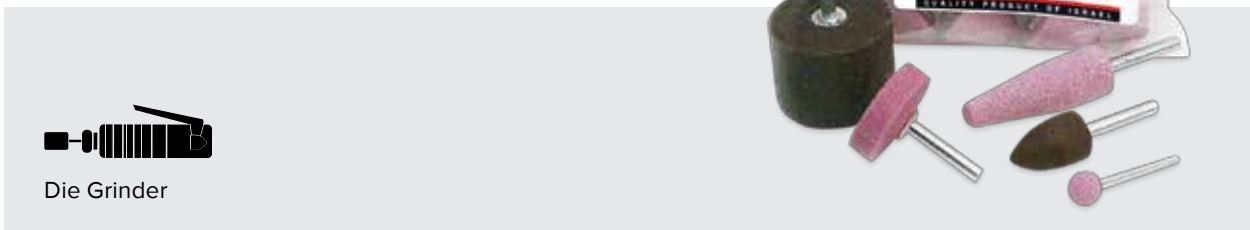


## Mounted Points

Available with, 3mm (1/8") or 6mm (1/4") shanks.

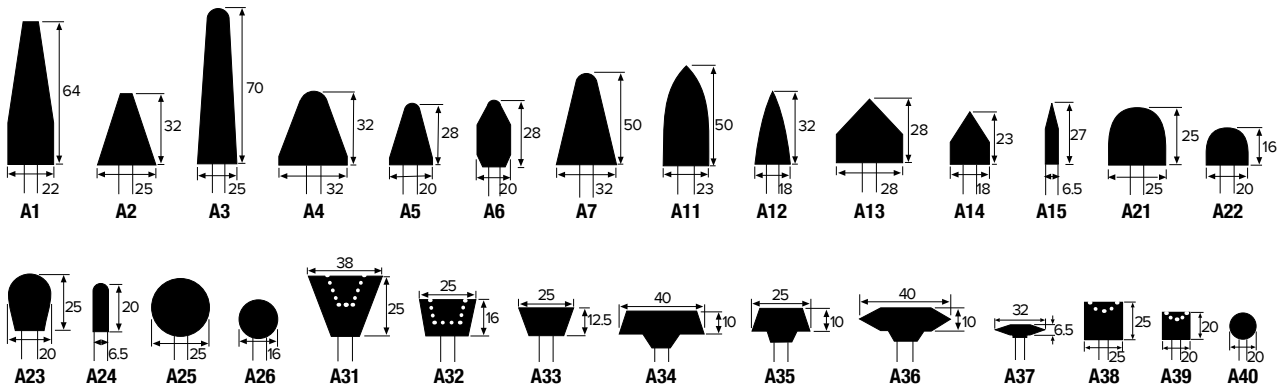
CGW offers a full range of mounted points:

<b>General purpose</b>	PA60P/QV
<b>Heavy duty use</b>	PA36P/QV
<b>Non-ferrous metals and stone</b>	C36QV
<b>Stainless steel</b>	A46QB
<b>Castings</b>	A/PA20S5V

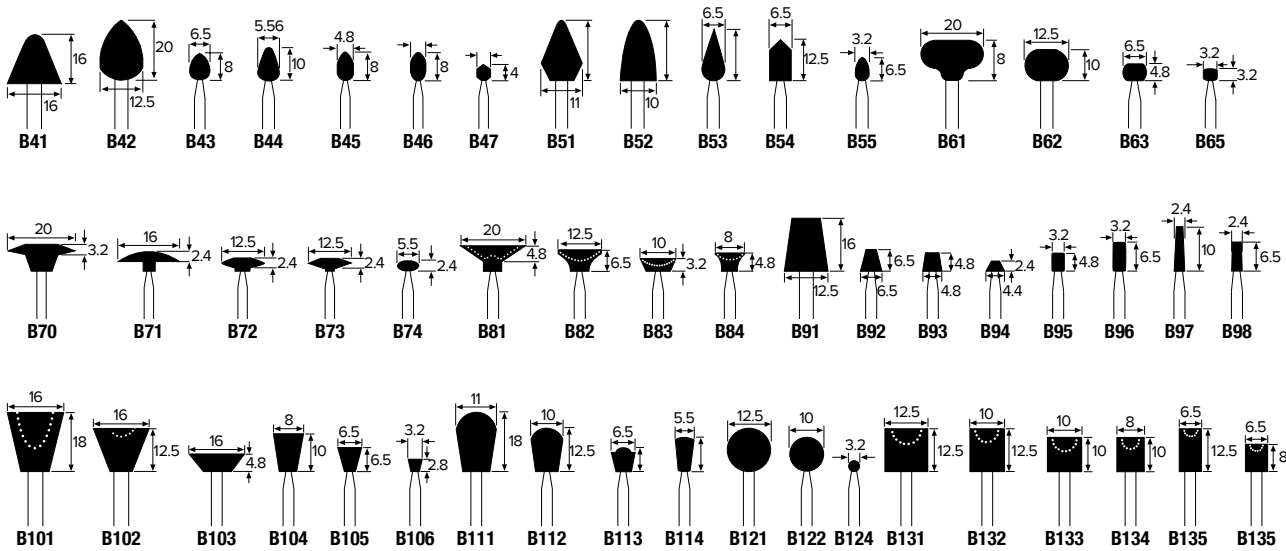




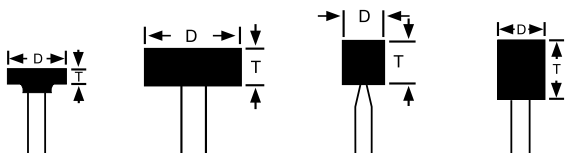
## Group A - 6mm (1/4") mandrel



## Group B - 3mm (1/8") mandrel



## Group W - 3mm (1/8") and 6mm (1/4") mandrel



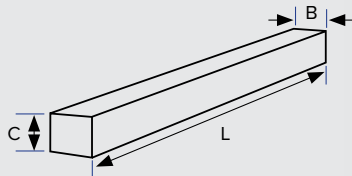
D = Diameter (from 3.2mm to 50mm)  
T = Height (from 3.2mm to 50mm)



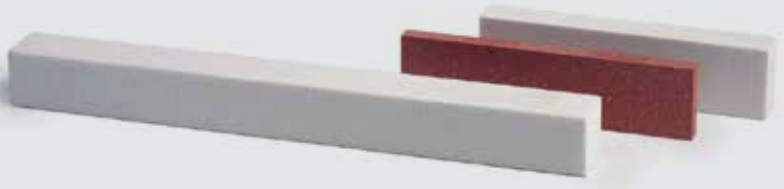
# Sharpening Stones

## Sharpening Sticks for Super Diamond and CBN Wheels

### Manual Work



B-Width | C-Height | L-Length

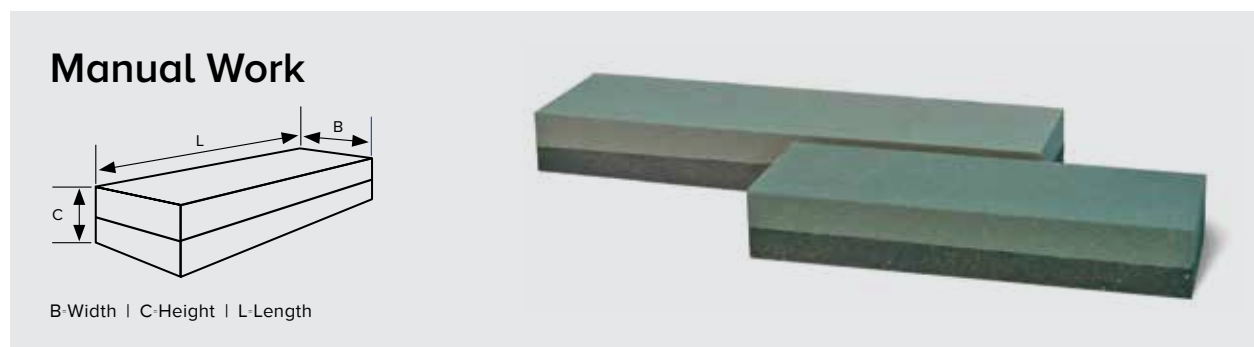


EAN No.	Dimensions (LxCxB)		Specification
	Inches	mm	
042128	4x1x1/4	100x25x6	WA280E8V
042142	4x1x1/2	100x25x13	WA220J8V
367764	4x1x1/2	100x25x13	WA280E8V
042159			WA280E8V
673490			WA320G8V
042166			WA400H8V
042234	6x3/4x3/4	160x20x20	WA150I7V
370160	8x3/4x3/4	200x20x20	WA150I7V

- Other dimensions and specifications are available by request.

## Combination Grit Sharpening Stones

For the sharpening of knives and various cutting tools.



EAN No.	Dimensions (LxCxB)		Grit	Specification
	Inches	mm		
041930	6x1x2	152x25.4x50.8	C46/GC150	Coarse/Fine
041947			C80/GC150	Medium/Fine
041954			C180/GC280	Fine/very Fine
041978	8x1x2	200x25.4x50.8	C46/GC150	Coarse/Fine
041985			C80/GC150	Medium/Fine
041992			C180/GC280	Fine/very Fine

## Speed Conversion Table

Recommended operating speed for various wheel diameters

Wheel Diameter		Cutting Speed (M/S)					
Inch	mm	10	16	20	25	32	35
1/4	6	31,900	51,000	64,000	80,000	102,000	112,000
5/16	8	24,000	38,200	48,000	60,000	76,500	84,000
3/8	10	19,100	30,600	38,200	48,000	61,200	67,000
1/2	13	14,700	23,550	29,500	35,600	47,100	51,500
5/8	16	11,950	19,100	23,900	29,850	38,200	41,800
3/4	20	9,550	15,300	19,100	23,900	30,600	33,500
1	25	7,650	12,300	15,300	19,100	24,500	26,800
1 1/2	40	4,800	7,650	9,550	11,950	15,300	16,750
2	50	3,850	6,150	7,650	9,550	12,250	13,400
2 1/2	63	3,050	4,850	6,100	7,600	9,750	10,650
3	78/80	2,400	3,850	4,800	6,000	7,650	8,400
4	100/102	1,950	3,100	3,850	4,800	6,150	6,700
4 1/2	115	1,700	2,700	3,350	4,200	5,350	5,850
5	125	1,550	2,450	3,100	3,850	4,900	5,350
6	150/155	1,300	2,050	2,550	3,200	4,100	4,500
7	175/180	1,100	1,700	2,150	2,700	3,400	3,750
8	200/205	955	1,550	1,950	2,400	3,100	3,350
9	230	830	1,350	1,700	2,100	2,700	2,950
10	250/254	765	1,250	1,550	1,950	2,450	2,700
12	300/305	640	1,050	1,300	1,600	2,050	2,250
14	350/356	550	875	1,100	1,400	1,750	1,950
16	400/406	480	765	960	1,200	1,550	1,700
18	450/457	425	680	850	1,100	1,400	1,500
20	500/508	385	615	765	960	1,250	1,350
24	600/610	320	510	640	800	1,050	1,150
30	750/762	255	410	510	640	820	895
32	800/813	240	385	480	600	765	840
36	900/914	215	340	425	535	680	750
40	1000/1015	195	310	385	480	615	670

**Equation for converting cutting speed (M/S) to and from R.P.M.**

$$\frac{\text{cutting speed (M/S)} \times 60,000}{\text{wheel diameter (mm)} \times 3.14} = \text{R.P.M.} \qquad \frac{\text{R.P.M.} \times \text{wheel diameter (mm)} \times 3.14}{60,000} = \text{cutting speed (M/S)}$$

- mm sizes are approximate
- cutting speed = peripheral operating speed.

Cutting Speed (M/S)						Wheel Diameter	
40	50	63	80	100	125	Inch	mm
128,000	160,000	201,000				1/4	6
95,500	120,000	150,500	191,000			5/16	8
76,500	95,500	120,500	153,000	191,000		3/8	10
58,800	73,500	92,100	118,000	147,000	184,000	1/2	13
47,800	59,700	75,200	95,500	120,000	150,000	5/8	16
38,200	47,800	60,200	76,500	95,500	120,000	3/4	20
30,000	38,200	48,200	61,200	76,500	95,500	1	25
19,100	23,900	30,100	38,200	47,200	59,700	1 1/2	40
15,300	19,100	24,100	30,600	38,200	47,750	2	50
12,150	15,200	19,100	24,300	30,250	37,900	2 1/2	63
9,500	12,000	15,100	19,100	23,900	29,850	3	78/80
7,650	9,550	12,100	15,000	19,100	23,900	4	100/102
6,650	8,350	10,500	13,300	16,650	20,800	4 1/2	115
6,150	7,650	9,650	12,250	15,300	19,100	5	125
5,100	6,400	8,050	10,200	12,700	16,000	6	150/155
4,250	5,350	6,700	8,500	10,650	13,300	7	175/180
3,850	4,800	6,050	7,650	9,300	11,650	8	200/205
3,350	4,200	5,250	6,650	8,350	10,400	9	230
3,100	3,850	4,850	6,150	7,650	9,400	10	250/254
2,550	3,200	4,050	5,100	6,400	8,000	12	300/305
2,200	2,750	3,450	4,400	5,500	6,850	14	350/356
1,950	2,400	3,050	3,850	4,800	6,000	16	400/406
1,700	2,150	2,700	3,400	4,250	5,350	18	450/457
1,550	1,950	2,450	3,100	3,850	4,800	20	500/508
1,300	1,600	2,050	2,550	3,200	4,000	24	600/610
1,050	1,300	1,650	2,050	2,550	3,200	30	750/762
960	1,200	1,550	1,950	2,400	3,000	32	800/813
850	1,100	1,350	1,700	2,150	2,700	36	900/914
765	960	1,250	1,550	1,950	2,400	40	1000/1015



## Grain Size Conversion Table

Mesh	Inches	Microns
4	.2577	6848
6	.2117	5630
8	.1817	4620
10	.1366	3460
12	.1003	2550
14	.0830	2100
16	.0655	1660
20	.0528	1340
24	.0408	1035
30	.0365	930

Mesh	Inches	Microns	Radius (from - to)
36	.0280	710	
46	.0200	508	xx - 0.5
54	.0170	430	0.43 - 0.5
60	.0160	406	0.4 - 0.5
70	.0131	328	
80	.0105	266	0.25 - 0.5
90	.0085	216	
100	.0068	173	0.2 - 0.25
120	.0056	142	0.12 - 0.2
150	.0048	122	0.1 - 0.15

Mesh	Inches	Microns	Radius (from - to)
180	.0034	86	
220	.0026	66	0.07 - 0.12
240	.00248	63	
280	.00175	44	
320	.00128	32	
400	.00090	23	
500	.00065	16	
600	.00033	8	
900	.00024	6	

## Minimum Quantities for Production of Vitrified Abrasive Products

Product	Qty
Segments, blocks	50
Sticks	100
Mounted points	200
Wheel diameter less than 3"	100
Wheel diameter 4" - 5"	50
Wheel diameter 6", 7", 8"	40

Product	Qty
Wheel diameter 10" - 12"	10
Wheel diameter 14" - 16"	5
Wheel diameter 18"- 48"	2
Non-reinforced cutting discs	200
Reinforced cutting discs	500
Wheel thickness up to 5mm, diameter up to 250mm	50

## Inch/Millimeter Conversion Table

Inches	mm	Inches	mm	Inches	mm	Inches	mm
1/64	0.397	9/16	14.287	1 <sup>15</sup> / <sub>16</sub>	49.212	6	152.400
1/32	0.794	5/8	15.875	2	50.800	7	177.800
3/64	1.190	11/16	17.462	2 <sup>1</sup> / <sub>8</sub>	53.975	8	203.200
1/16	1.587	3/4	19.050	2 <sup>1</sup> / <sub>4</sub>	57.150	9	228.600
5/64	1.984	13/16	20.637	2 <sup>3</sup> / <sub>8</sub>	60.325	10	254.000
3/32	2.381	7/8	22.225	2 <sup>1</sup> / <sub>2</sub>	63.500	11	279.400
7/64	2.778	15/16	23.812	2 <sup>5</sup> / <sub>8</sub>	66.675	12	304.800
1/8	3.175	1	25.400	2 <sup>3</sup> / <sub>4</sub>	69.850	13	330.200
9/64	3.571	1 <sup>1</sup> / <sub>16</sub>	26.987	2 <sup>7</sup> / <sub>8</sub>	73.025	14	355.600
5/32	3.968	1 <sup>1</sup> / <sub>8</sub>	28.575	3	76.200	15	381.000
3/16	4.762	1 <sup>3</sup> / <sub>16</sub>	30.162	3 <sup>1</sup> / <sub>8</sub>	79.375	16	406.400
7/32	5.556	1 <sup>1</sup> / <sub>4</sub>	31.750	3 <sup>1</sup> / <sub>4</sub>	82.550	17	431.800
1/4	6.350	1 <sup>5</sup> / <sub>16</sub>	33.337	3 <sup>3</sup> / <sub>8</sub>	85.725	18	457.200
9/32	7.144	1 <sup>3</sup> / <sub>8</sub>	34.925	3 <sup>1</sup> / <sub>2</sub>	88.900	19	482.600
5/16	7.937	1 <sup>7</sup> / <sub>16</sub>	36.512	3 <sup>5</sup> / <sub>8</sub>	92.075	20	508.000
11/32	8.731	1 <sup>1</sup> / <sub>2</sub>	38.100	3 <sup>3</sup> / <sub>4</sub>	95.250	21	533.400
3/8	9.525	1 <sup>9</sup> / <sub>16</sub>	39.687	3 <sup>7</sup> / <sub>8</sub>	98.425	22	558.800
13/32	10.319	1 <sup>5</sup> / <sub>8</sub>	41.275	4	101.600	23	584.200
7/16	11.112	1 <sup>11</sup> / <sub>16</sub>	42.862	4 <sup>1</sup> / <sub>4</sub>	107.950	24	609.600
15/32	11.906	1 <sup>3</sup> / <sub>4</sub>	44.450	4 <sup>1</sup> / <sub>2</sub>	114.300	25	635.000
1/2	12.700	1 <sup>13</sup> / <sub>16</sub>	46.037	4 <sup>3</sup> / <sub>4</sub>	120.650	26	660.400
17/32	13.494	1 <sup>7</sup> / <sub>8</sub>	47.625	5	127.000	27	685.800

## Safety Guide for the Use of Abrasive Wheels

Bonded abrasive products are fragile and must be handled with utmost care. Follow these safety rules to prevent injury.



### Do

- Always handle and store wheels in a careful manner.
- Before mounting, visually inspect and ring test all wheels for possible damage (ILL. 1 and 2).
- Check machine speed against the maximum safe operating speed marked on the wheel.
- Check mounting flanges for equal and correct diameter (ILL. 3).
- Use mounting blotters when supplied with wheels (ILL. 3).
- Be sure work rest is properly adjusted: leveled with or above the center of wheel; no more than 1/8" away from wheel (ILL. 4).
- Always use a safety guard covering at least one-half of the grinding wheel (ILL. 4).
- Allow newly-mounted wheels to run at operating speed, with guard in place, for at least one minute before grinding.
- Always wear safety glasses or any type of eye protection when grinding.
- Be sure to employ dust controls and/or protective measures appropriate to the material being ground.
- When shutting down a wet grinding operation, the fluid must be first shut off and allowing the wheel to rotate until the coolant has been spun out.



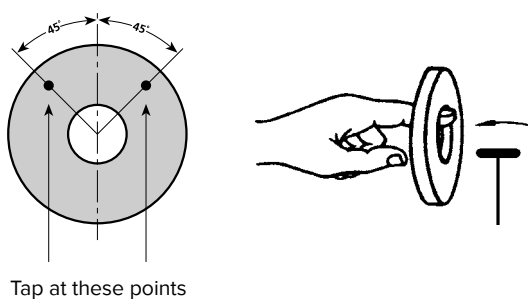
### Don't

- Don't use a cracked wheel or one that has been dropped or damaged.
- Don't force a wheel onto the machine or alter the size of the mounting hole.
- Don't alter the shape of the wheel in any way.
- Never exceed the maximum operating speed marked on wheel.
- Don't use mounting flanges on which the bearing surfaces are not clean, flat and free of burrs.
- Don't tighten the mounting nut excessively.
- Don't stand or allow another person to stand directly in front of or in line with a grinding wheel when the grinding machine is started.
- Don't grind on the side of the wheel (see safety code for exception).
- Don't start the machine until the wheel guard is in place.
- Don't forcefully jam the workpiece into the wheel.
- Don't force grinding so that the machine noticeably slows down or the workpiece becomes overheated.

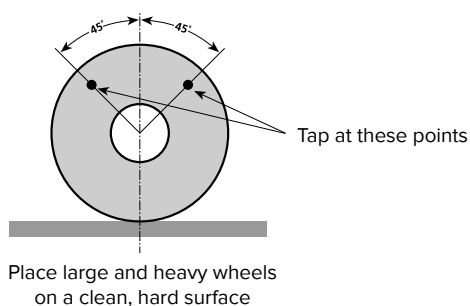
## Ring Test

A visible difference between the sharp, clean tone produced by an intact abrasive wheel, and the dull tone produced by a cracked wheel, makes it possible to further examine the wheel, in addition to visual inspection, by performing a ring test on it before mounting (ILL. 1 and 2).

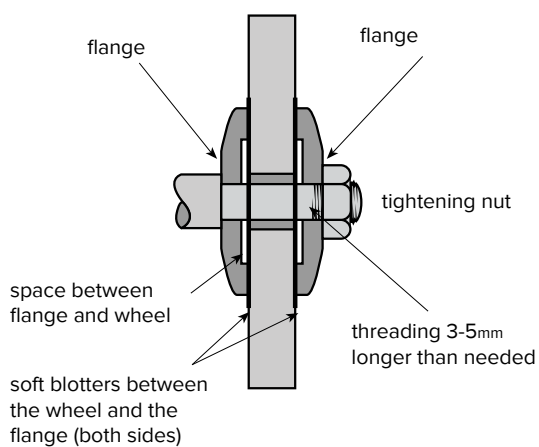
### 1) Ring testing small wheels



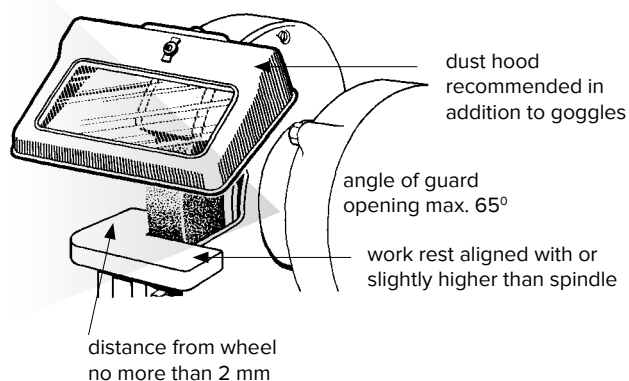
### 2) Ring testing large wheels



### 3) Mounting



### 4) Guard, work rest and dust hood



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