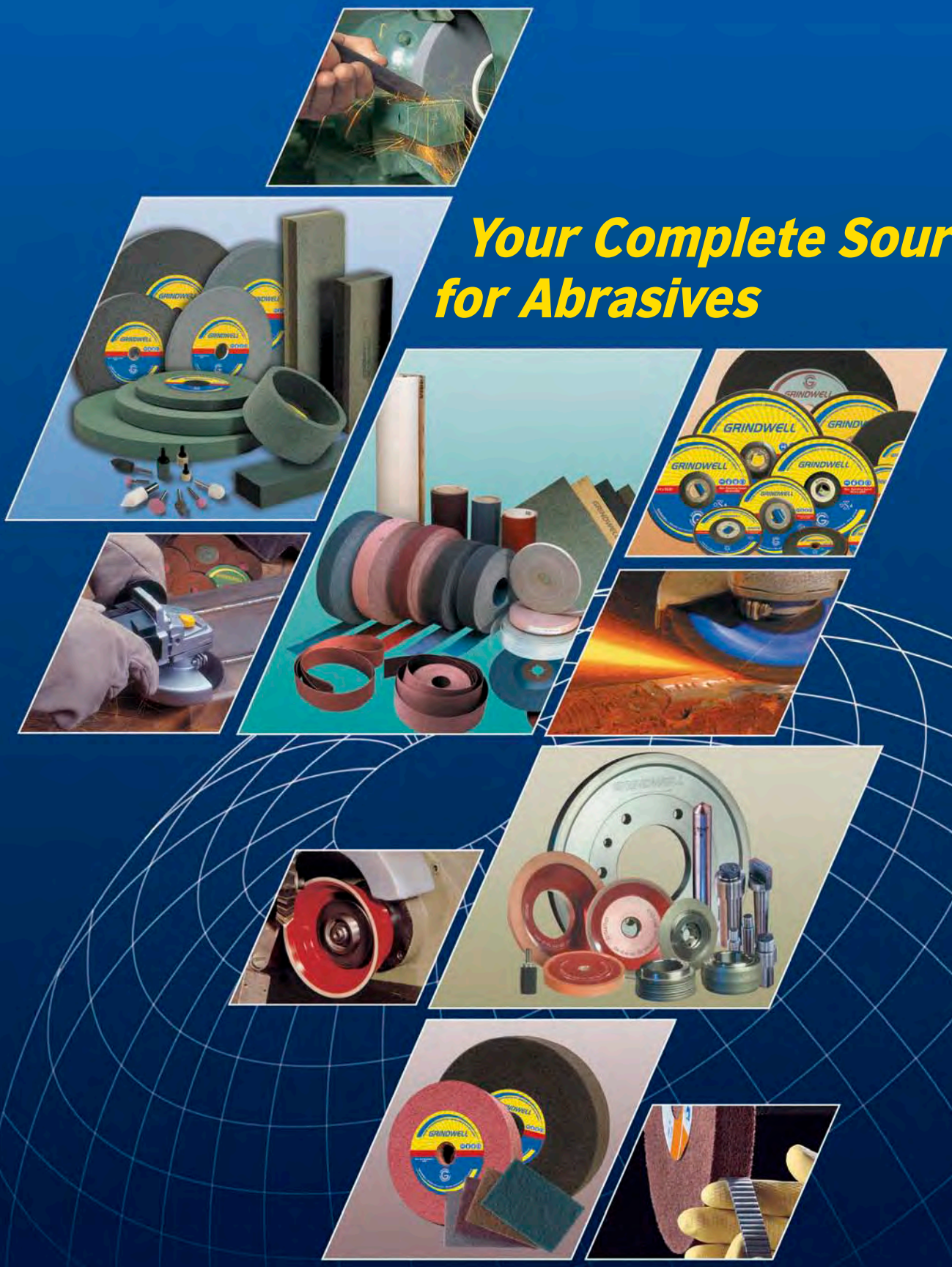
GRINDWELL INTERNATIONAL



Your Complete Source for Abrasives

International Quality, Competitive Prices

GRINDWELL INTERNATIONAL

Contents

GRINDWELL INTERNATIONAL

Grinding & Cutting Discs

Cutting & Grinding Discs

Grindwell International Cutting Discs are pre-engineered to produce the most versatile wheel performance. They are engineered to give you optimum to premium performance in all cutting applications ranging from production to maintenance.

TYPICAL APPLICATIONS

- Notching
- Sheet metal cutting
- Pipe cutting (Cast Iron / Stainless Steel / Mild Steel)
- Foundry Gate / Riser removal
- Metal plate dimensioning
- Bar cutting
- Sample cutting
- Rail cutting

COMMON MACHINES

- Fixed Stroke type machines are quite common
- Chopsaw
- Portable Grinders
- Portable rail cutting machines

USER INDUSTRIES

Investment Castings	✓
Steel - Ingot & Bar Manufacturing	✓
Construction	✓
Foundries	✓
Pipe Manufacturing Industry	✓
Fabrication	✓

CUTTING DISCS

Features	Benefits
Reinforced Cut-off Wheels	Designed to resist breakage caused by severe cross-bending. A reinforced wheel is required on any operation where the work is not securely clamped.
Non-reinforced Cut-off Wheels	Designed for use on “fixed base” types of machines where the work is securely clamped, guarded, and where the wheel operates on a controlled cutting plane.
OSA Certification	OSA certified products adhering to European safety standards.

SPEC CHECK

- **Based on the job and cutting required, the machine availability, wheel needs to be chosen.**
- **It is recommended that a cut-off machine should have 1 HP for every 25 mm of wheel diameter. Make cuts as quickly as possible.**
- **Run wheel at the highest possible speed (marked on the wheel).**

TROUBLESHOOTING GUIDE

Problem	Possible Causes	Suggested Correction
Poor cutting rate	Insufficient power used Wheel thickness may be more Contact are too large	Increase feed or pressure to full power Use thinner oil Reduce contact area
Poor quality of cut	Wheel side out of truth Non-square cuts Workplace burn Wheel too coarse	Check spindle runout See "non-square cuts" See "non-square cuts" Use finer wheel
Non-square cuts	Work not clamped well Misaligned spindle bearing	Check clamp Check bearing truth and alignment
Workpiece burn	Insufficient feed rate Wheel too hard Wheel too coarse Wheel running out Wheel speed too slow	Work machine to maximum power Use softer wheel Use finer wheel Check spindle Ensure no wheel slippage

Grinding Discs

Portable grinding is a process where grinding machine is actually held in the hands of the operator. Weld grinding and notching are usually portable grinding applications performed with Type-27 portable grinders.

GRINDING DISCS	
Features	**Benefits**
Uniqe product segmentation	Products available to suit every imaginable customer segment.
Tested against stringent safety	The safest product in an application where a faulty wheel can be fatal.
OSA Certification	OSA certified products adhering to European safety standards.

SPEC CHECK

- **Based on the job and quantum of cutting required, and the machine availability, wheel needs to be chosen. Typically the machine will limit the maximum size of the wheel used wherever safety guards are used. Based on customer expectation of life and cut rate, products can be chosen among the large availability.**

TECH TIP

- **Follow safe mounting practices as per BIS. Use flanges which support the grinding disc fully.**
- **For maximum performance, run the grinder of the highest possible speed marked on the disc.**
- **For best results, hold your right angle grinder at a**
  - **30^0 angle with grinding disc (T27)**
  - **90^0 angle with notchers**
  - **15^0 angle with saucers (T28)**

TYPICAL APPLICATIONS
Chemical & Process Grinders
Pipe Manufacturing Industry
Grill Manufacruring Industry
Dairy Industry
Storage tank fabrication
Plate / Angle iron fabrication
Petrochemical maintenance
All weld grinding
Ship building
Foundry gates and risers
Pipeline notching and bevelling
Removal of irregualrities on steel rolled flats

COMMON MACHINES
Electric Angle Grinders
Electric Straight Grinders
Pneumatic Grinders
High Frequency Machines

Large Diameter Cutting Wheels

Suitable for low power Chopsaw machines, Reinforced wheels with a unique design engineered for free cutting on all kinds of pipes, angles, channels

Cutting & Grinding Discs

Product Availability Chart

METAL / STEEL

Type	Size (Mm)	Size (Inches)	Specification	Application	M/S	Rpm
T-27	100 X 3 X 16	4 X 1/8 X 5/8	A-30 S B	Cutting	80	15300
T-27	115 X 3 X 22.23	4-1/2 X 1/8 X 7/8	A-30 S B	Cutting	80	13300
T-27	125 X 3 X 22.23	5 X 1/8 X 7/8	A-30 S B	Cutting	80	12200
T-27	180 X 3 X 22.23	7 X 1/8 X 7/8	A-30 S B	Cutting	80	8600
T-27	230 X 3 X 22.23	9 X 1/8 X 7/8	A-30 S B	Cutting	80	6700
T-27	100 X 6 X 16	4 X 1/4 X 5/8	A-24 R B	Grinding	80	15300
T-27	115 X 6 X 22.23	4-1/2 X 1/4 X 7/8	A-24 R B	Grinding	80	13300
T-27	125 X 6 X 22.23	5 X 1/4 X 7/8	A-24 R B	Grinding	80	12200
T-27	180 X 6 X 22.23	7 X 1/4 X 7/8	A-24 R B	Grinding	80	8600
T-27	230 X 6 X 22.23	9 X 1/4 X 7/8	A-24 R B	Grinding	80	6700

STAINLESS STEEL / INOX

Type	Size (Mm)	Size (Inches)	Specification	Application	M/S	Rpm
T-27	100 X 3 X 16	4 X 1/8 X 5/8	A-30 (S-U) B	Cutting	80	15300
T-27	115 X 3 X 22.23	4-1/2 X 1/8 X 7/8	A-30 (S-U) B	Cutting	80	13300
T-27	125 X 3 X 22.23	5 X 1/8 X 7/8	A-30 (S-U) B	Cutting	80	12200
T-27	180 X 3 X 22.23	7 X 1/8 X 7/8	A-30 (S-U) B	Cutting	80	8600
T-27	230 X 3 X 22.23	9 X 1/8 X 7/8	A-30 (S-U) B	Cutting	80	6700
T-27	100 X 6 X 16	4 X 1/4 X 5/8	A-24 (Q-R) B	Grinding	80	15300
T-27	115 X 6 X 22.23	4-1/2 X 1/4 X 7/8	A-24 (Q-R) B	Grinding	80	13300
T-27	125 X 6 X 22.23	5 X 1/4 X 7/8	A-24 (Q-R) B	Grinding	80	12200
T-27	180 X 6 X 22.23	7 X 1/4 X 7/8	A-24 (Q-R) B	Grinding	80	8600
T-27	230 X 6 X 22.23	9 X 1/4 X 7/8	A-24 (Q-R) B	Grinding	80	6700

STONE / MASONRY

Type	Size (Mm)	Size (Inches)	Specification	Application	M/S	Rpm
T-27	100 X 3 X 16	4 X 1/8 X 5/8	C-30 S B	Cutting	80	15300
T-27	115 X 3 X 22.23	4-1/2 X 1/8 X 7/8	C-30 S B	Cutting	80	13300
T-27	125 X 3 X 22.23	5 X 1/8 X 7/8	C-30 S B	Cutting	80	12200
T-27	180 X 3 X 22.23	7 X 1/8 X 7/8	C-30 S B	Cutting	80	8600
T-27	230 X 3 X 22.23	9 X 1/8 X 7/8	C-30 S B	Cutting	80	6700
T-27	100 X 6 X 16	4 X 1/4 X 5/8	C-24 R B	Grinding	80	15300
T-27	115 X 6 X 22.23	4-1/2 X 1/4 X 7/8	C-24 R B	Grinding	80	13300
T-27	125 X 6 X 22.23	5 X 1/4 X 7/8	C-24 R B	Grinding	80	12200
T-27	180 X 6 X 22.23	7 X 1/4 X 7/8	C-24 R B	Grinding	80	8600
T-27	230 X 6 X 22.23	9 X 1/4 X 7/8	C-24 R B	Grinding	80	6700

All Cutting Discs Have 2 Glass Fibre Reinforcements And All Grinding Discs Have 3 Glass Fibre Reinforcements.

EXTRA THIN WHEELS

Type	Size (Mm)	Application	M/S	Rpm
T-1	100 X 1 X 16	Metal & Stainless Steel Cutting	80	15300
T-1	115 X 1 X 22.23	Metal & Stainless Steel Cutting	80	13300
T-1	100 X 1.6 X 16	Metal & Stainless Steel Cutting	80	15300
T-1	115 X 1.6 X 22.23	Metal & Stainless Steel Cutting	80	13300
T-1	125 X 1.6 X 22.23	Metal & Stainless Steel Cutting	80	12200
T-1	180 X 1.6 X 22.23	Metal & Stainless Steel Cutting	80	8600

MULTI PURPOSE WHEELS

Type	Size (Mm)	Application	M/S	Rpm
T-27	100 X 4 X 16	Cutting & Grinding	80	15300
T-27	115 X 4 X 22.23	Cutting & Grinding	80	13300
T-27	125 X 4 X 22.23	Cutting & Grinding	80	12200
T-27	180 X 4 X 22.23	Cutting & Grinding	80	8600
T-27	230 X 4 X 22.23	Cutting & Grinding	80	6700

LARGE DIAMETER CUTTING WHEELS

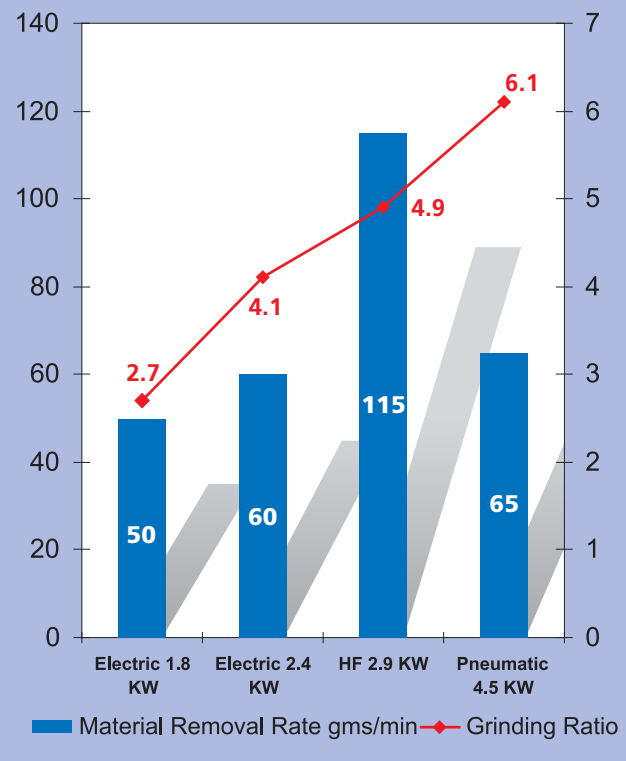
Type	Size (Mm)	Size (Inches)	Glass Fibre reinforcements	M/S	Rpm
T-1	300 X 3 X 25.4	12 X 1/8 X 1	Single	80	15300
T-1	350 X 3 X 25.4	14 X 1/8 X 1	Single	80	15300
T-1	400 X 3 X 25.4	16 X 1/8 X 1	Single	80	15300
T-1	300 X 3 X 25.4	12 X 1/8 X 1	Double	80	15300
T-1	350 X 3 X 25.4	14 X 1/8 X 1	Double	80	15300
T-1	400 X 3 X 25.4	16 X 1/8 X 1	Double	80	15300

Industrywise Application Guide

INDUSTRY WISE APPLICATION GUIDE - THIN WHEELS

	INDUSTRY					
	Foundry/ casting units	Steel & Rolling	Fabrication	Glass	Pipe Manufacturing	Chemical/on-site structural work
Applications	Riser/Runner cutting Investment casting units Scarfing of the castings Grinding of castings	Removal of surface defects Sample cutting Bar cutting	Prepartion of V for welding/ weld removal Deburring Dimensioning of plates	Surfacing/ Bevelling of glass sheets	Pipe cutting Welding of pipes	Erection of structures Fabrication of storage tanks & vessels Pipeline laying Ship building
PRODUCT						
Common Cutting Discs	9” - 16” Discs	12” - 16” Discs	4” - 7” Discs		12” - 16” Discs	4” - 7” Discs
Common Grinding Discs	5” - 9” Discs	7” - 9” Discs	4” - 7” Discs	4” Glass Discs	7” Discs	4” - 7” Discs
Extra Thin Wheels	9” Cutting		All sizes			All sizes

GRINDING MACHINE - PERFORMANCE RELATIONSHIP CHART



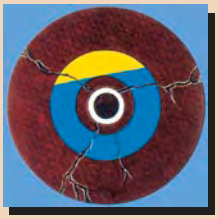
Type of machine has a strong relationship to the performance of the wheel in terms of Grinding Ratio (GR) and Material Removal Rate (MRR).

Here is an example of a test carried out on a Type 27, 180 x 6.5 x 22.23 Grinding Discs of medium hardness with four different machines.

Guidelines for Safe Usage of Grinding Diccs

Grinding Discs is a safe operating tool, if safe methods and practices are followed.

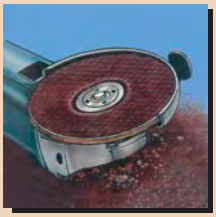
A few simple precautions will ensure not only safe operation but a better performance and a longer life from each of the Grinding Discs you use.



1 Don't overtighten your Grinding Discs. It may result in cracking or breakage.

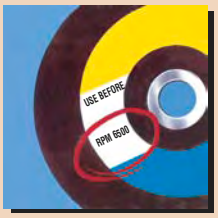
2 Allow the Grinding Discs to run at least for a minute before actual grinding, holding the machine away from body.

3 Never stop a machine by placing the wheel on the ground. Always place machine in proper stand or in an upright position.



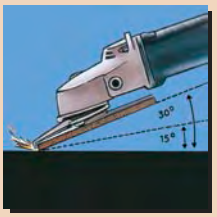
4 Make sure that the Grinding Disc surface and the mounting nut are in the same plane, after mounting.

5 Always use wheel guard covering at least half the disc diameter.



6 Ensure that the rated wheel RPM is in line with the machine RPM.

7 Check the expiry date of the wheel. Do not use wheels beyond the expiry date.



8 While operating, hold Grinding Disc at 15°-30° to the work surface, for the best results.

9 Do not apply excessive pressure while grinding (Recommended pressure 8-10 kg).

10 Store the Grinding Discs one above the other, away from oil and moisture/water and in original packing.

Service your machine regularly and check parameters like RPM, no load and full-load current, noise level, loose machine parts, etc.

GRINDWELL INTERNATIONAL

Bonded Abrasives

Decoding Marking on the Grinding Wheel

ABRASIVE

A	39C
19A	37C
25A	74C
32A	NZ
38A	ZS
	SG

GRADE

Soft	Med.	Hard
A	I	Q
B	J	R
C	K	S
D	L	T
E	M	U
F	N	V
G	O	W
H	P	X
		Y
		Z

BOND TYPE

Vitrified	V
Resinoid	B
Rubber	R
Shellac	E

GRIT SIZE

Coarse	Med.	Fine	Very Fine
8	46	60	220
10	54	70	240
12		80	280
14		90	320
16		100	400
20		120	600
24		150	800
30		180	1000
36			1200

STRUCTURE

1	7	12
2	8	16
3	9	20
4	10	24
5	11	28
6		

BOND MODIFICATION

Designates a variation of modification to bond

VITRIFIED

99	N	BE
CNM	S3	P2
K	KT	THRD
etc.		

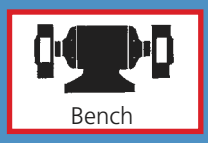
ORGANIC

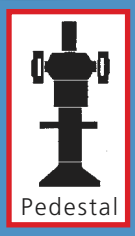
25	27	24
48	50	31
L1	L2	L3
LA	L5	38
EU	etc.	

General Purpose Offhand Wheels

Used on floorstand, bench and portable grinders, for faster cutting action and higher material removal rates where surface finish is not an important consideration. Grindwell International offers a range of wheels specially suited for all kinds of offhand grinding jobs in foundries and forge shops.

USER INDUSTRIES	
General Engineering	✓
Hand Tools	✓
Agricultural Implements	✓





GENERAL PURPOSE OFFHAND WHEELS	
Features	**Benefits**
▸ Available in both Aluminium Oxide and Silicon Carbide	▸ Ability to grind a wide variety of materials
▸ Strong bond V99	▸ Safe operation

TYPICAL APPLICATIONS

- Grinding of excess materials in castings and forgings
- Resharpening of single point cutting tools

SPEC CHECK

- **Aluminium Oxide is used for grinding carbon steel, iron forgings, stainless or other alloys.**
- **Silicon Carbide is used for grinding carbides, cast iron and all non-ferrous materials.**

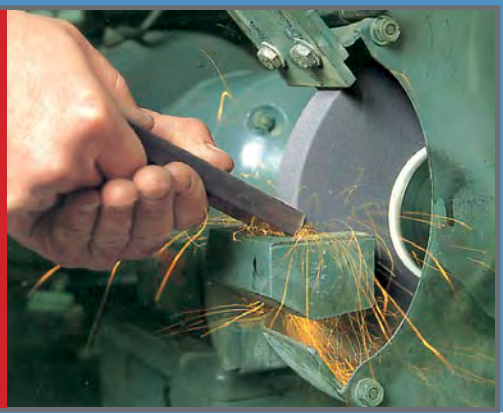
PRODUCT RANGE

Size Range:

– Diameter	: 100 mm	- 600 mm
– Thickness	: 13 mm	- 75 mm
Grit Range	: 24 - 80	
Abrasive	: A, 37C	

TECH TIP

- **Always ensure that the machine bearings are in good condition and check for excessive run-out due to worn bearings before use.**
- **Do not hit the job on wheel face to open grinding face.**
- **Use stainless steel crushers for dressing.**



Silicon Carbide Offhand Wheels

A world class offering from Grindwell International. A complete range of Carbide Grinding Wheels designed to give high performance and to suit every customer's requirements.

USER INDUSTRIES	
General Engineering	✓
Mining	✓

TYPICAL APPLICATIONS

- Carbide tool regrinding
- Mining "Button-bit" grinding

PRODUCT RANGE

Size Range:

– Diameter : 100 mm - 600 mm
– Thickness : 13 mm - 80 mm

Grit Range : 60 - 120

Abrasive : 39C, 74C, 39G

Wheel Types : Type 1
Type 6
Type 7
Type 9
Type 11

SILICON CARBIDE OFFHAND WHEELS

Features	Benefits
39C : Premium Silicon Carbide Abrasives	High efficiency for the right edge and orientation every time
39G	Specially designed to give improved performance in terms of life and cut rate
74C : Optimum mix of 37C & 39C	Specially designed to give optimum cost-productivity efficiency

TECH TIP

- **Forcing the tool into the wheel will not only ruin the orientation of the edge, but also possibly induce a crack or breakage in the wheel.**
- **Oscillation of carbide edge against wheel face during offhand operation avoids burning of carbide tip.**
- **Avoid clearance grinding on steel shank using carbide wheel.**

Sharpening Stones

Grindwell International Sharpening and Polishing Stones, Combination Stone, Glass Stones and Scythe Stones have for long been the industry standard in quality and performance.

USER INDUSTRIES	
Construction	✓
Wood working	✓
Furniture & Decor	✓
Tools & Dies	✓

TYPICAL APPLICATIONS

- Sharpening of carpentry tools, knives, scissors, etc.
- Mould and die polishing
- Deburring

PRODUCT RANGE

Sharpening Stones
Combination Stones
Rubbing Bricks
Finishing Sticks
Honing Sticks
Reaper Files
Glass Stones
Scythe Stones

SHARPENING STONES	
Features	**Benefits**
▸ Choice of Premium Silicon Carbide and smooth cutting Aluminium Oxide	▸ Fast stock removal for quick edge shaping ▸ Keen edges and clean deburring

TROUBLESHOOTING GUIDE		
Problem	**Possible Causes**	**Suggested Correction**
▸ Stone does not cut	▸ Loaded/clogged with metal ▸ Not enough lubricant ▸ Stone too fine	▸ Clean with oil or wire brush or sandpaper ▸ Use more oil ▸ Use coarser stone
▸ Poor surface quality, deep scratches, excessive tool wear	▸ Stone is too coarse ▸ Stone is too soft	▸ Use finer stone ▸ Choose different abrasive
▸ Tool edge not sharp enough	▸ Stone is coarse	▸ Hone with a finer grit

TECH TIP

- **Use a Silicon Carbide Stone (37C) for working on softer metals, such as brass, iron or stainless steel.**
- **Use Aluminium Oxide Stone for harder steels.**

Saw Sharpening Wheels

Saw sharpening wheels are primarily used for shaping and resharpening of various types of saws principally in the timber and wood-working industries as well as saw manufacturers. Grindwell International offers wheels pre-engineered for economy and performance in C, D and F Faces.

USER INDUSTRIES	
Timber	✓
Wood-working	✓
Saw manufacturers	✓

TYPICAL APPLICATIONS

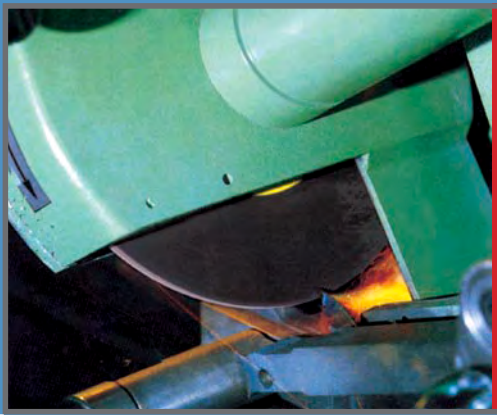
- Resharpening of the teeth of circular band saw blades

PRODUCT RANGE

Size Range:

- Diameter : 150 mm - 300 mm
- Thickness : 6 mm - 13 mm
- Faces : C, D and F

SAW SHARPENING WHEELS	
Features	**Benefits**
▸ Manufactured to tight tolerances and strict quality checks	▸ Efficient and effective resharpening of the teeth of circular or band saw blades
▸ Controlled structure and special bond	▸ Metallurgical damage-free grinding



TECH TIP

- **Always ensure that the established maximum operating speed on the blotter is not exceeded.**

Mounted Points

Grindwell International presents Mounted Points, a vitrified offering of high quality. Available in a variety of abrasives and a broad range of standard shapes and sizes, they are used in a multitude of operations in almost every industry.

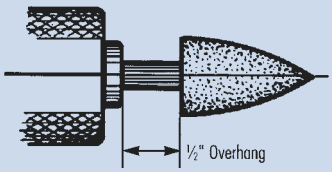
USER INDUSTRIES	
Steel	✓
Foundry & Forging	✓
Tools & Dies	✓

MOUNTED POINTS	
Features	**Benefits**
32A : Pure abrasive for best grinding performance	Excellent performace specially on tool steels, tough vanadium alloy steels
25A, 38A : Semi-friable abrasives	Good cut rate and life, specially on hardened steel & alloy steels Ideal for cool cutting
A : A versatile abrasive and first choice for all general purpose applications	Best suited for all general purpose applications

SPEC CHECK

- **37C : Silicon Carbide abrasive used for grinding of non-ferrous materials, except Tungsten Carbide.**
- **39C : This light green abrasive is ideal for grinding of extremely hard and special types of non-ferrous metals and cast iron.**

Description of Overhang



Distance between the grinder chuck and the abrasive on the spindle – the larger the overhang, the lower the maximum safe operating speed.

Safety Tips

Safe operating speeds for Grindwell International Mounted Points

- Maximum safe operating speeds are presented in the tables for each shape/ spindle combination and are based on 25 mm maximum overhang.

TYPICAL APPLICATIONS

- Deburring
- Tool sharpening
- Removing metal marks and parting lines
- Finishing cavities
- Smoothening intricate profiles of castings, forgings
- Die grinding
- Grinding of steel rolling rolls

PRODUCT RANGE

Size Range:

- Diameter : 5 mm - 40 mm
- Spindle Dia : 3, 3.18, 6, 6.35 mm
- Shapes : A, B & W

Mounted Points are available in various abrasives to suit the end-user's every need.

A : A versatile abrasive and the first choice for all general purpos applications.

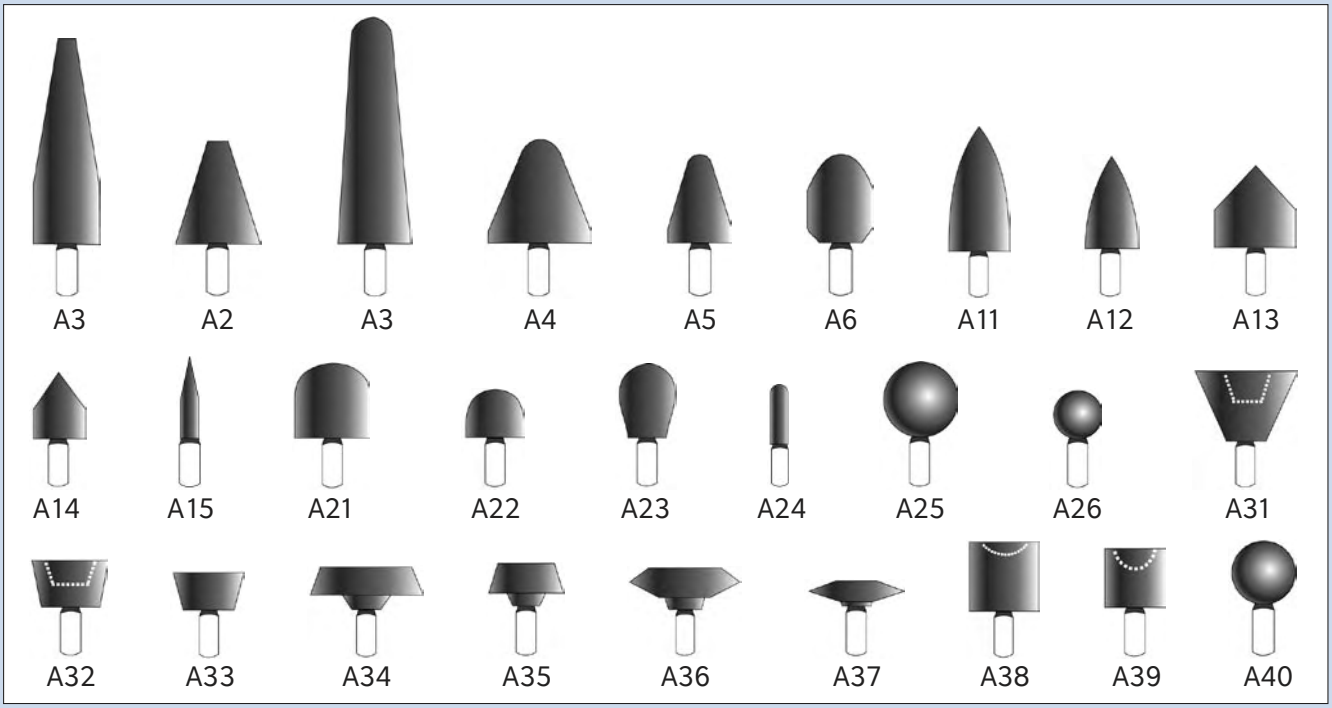
38A : The standard for mounted points. Highly friable and pure, this abrasive is ideal for cool cutting characteristics.

25A : This pink, semi-friable type of abrasive is offered for grinding actions required to be intermediate between A and 38A.

Mounted Points Shapes

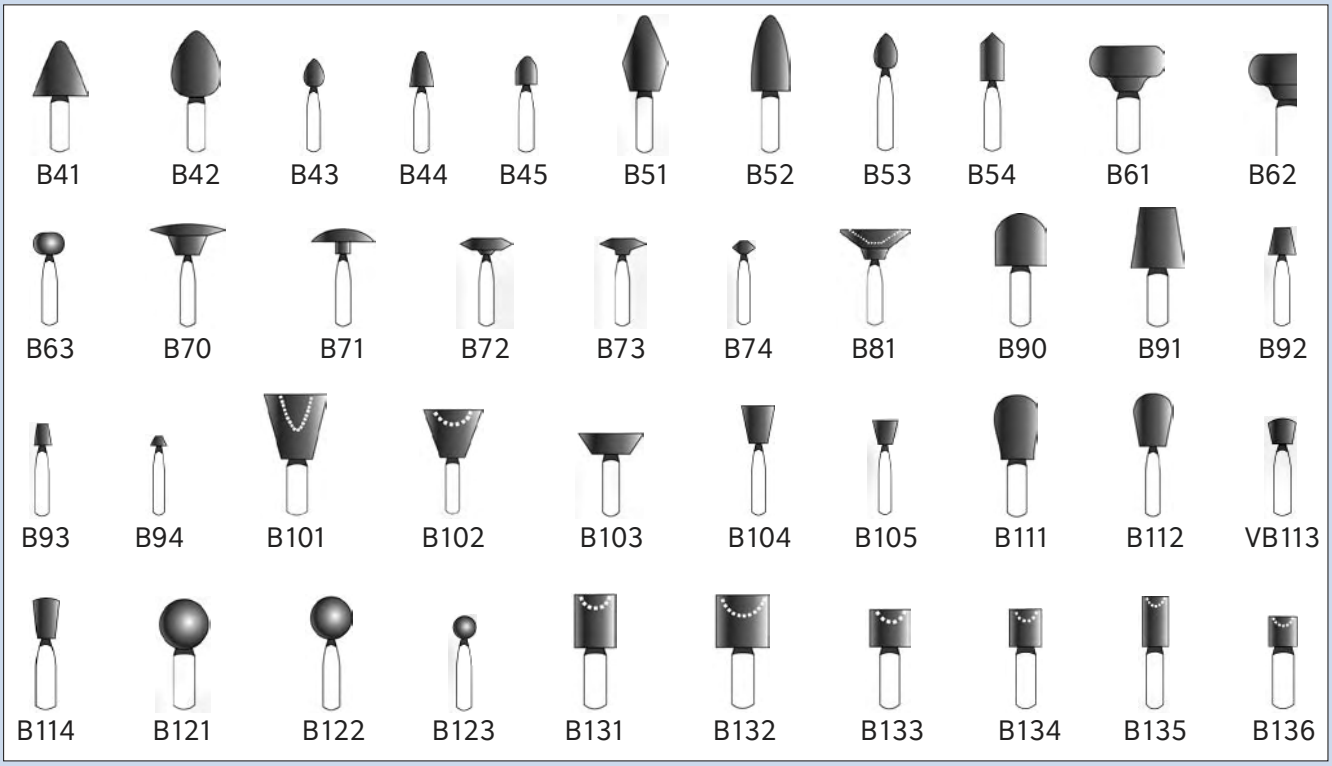
A SHAPES

Spindle length is 40 mm



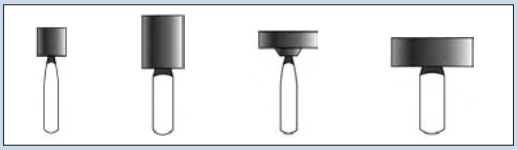
B SHAPES

The standard Spindle length is 40 mm



W SHAPES

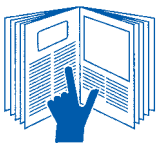
The standard Spindle length is 40 mm



Safety Tips

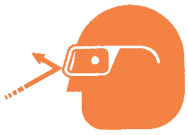
FOR YOUR PROTECTION

SAFETY GUIDES



Grindwell International provides information pertaining to the safe usage of many of its products. Please take time to read it carefully.

EYE PROTECTION



Always wear safety glasses/ goggles for eye protection while using abrasive products.

SPEEDS

Check machine speed against safe maximum operating speed marked on the grinding wheel.

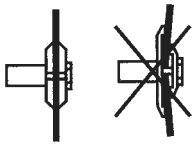
SAFETY GLOVES

Grinding applications are conducted in harsh environments. The use of safety gloves is recommended.

WHEEL GUARD

Always use the wheel guard as supplied by the manufacturer

FLANGES



When mounting cut-off or bench and pedestal wheels, only use flanges of equal diameter.

PROPER USAGE OF GRINDING WHEELS

Safe operating practices must be part of every grinding wheel user's operation. The greatest efficiency and lowest overall abrasive cost can be realized only if proven care and use techniques become standard practice.

Do's

- Always handle and store wheels in a careful manner.
- Before mounting, check all wheels for possible damage in transit.
- Check maximum operating speed established for wheel against machine speed.
- Check that mounting flanges are at least one-third diameter of the wheel and relieved around hole.
- Use the Mounting blotters supplied with the wheels.
- Ensure that work rest is correctly adjusted. (Centre of wheel or above; no more than one-eighth inch away from wheel.)
- Always use a guard covering at least one-half of the grinding wheel.
- Allow newly mounted grinding wheels to run at operating speed (with guard in place) for at least one minute before grinding.
- Always wear safety glasses or some type of eye protection when operating grinding wheel.
- Avoid creating an imbalance of the wheel by turning off the coolant before stopping the wheel.

Don'ts

- Don't use a wheel that has been dropped.
- Don't force a wheel onto a machine. Nor should the size of the mounting holes be altered. If the wheel does not fit the machine get one that will.
- Don't exceed established maximum operating speeds.
- Don't use mounting flanges on which the bearing surfaces are not equal, clean or flat.
- Don't tighten the mounting nut excessively.
- Don't grind on the side of a wheel unless, of course, the wheel has been specifically designed for that purpose.
- Don't start the machine when the wheel guard is not in place.
- Don't jam the work into the wheel.
- Don't stand directly in front of a wheel whenever the grinding begins.
- Don't grind material for which the wheel is not designed.

Coversion Table - Wheel Speeds

Revolutions per minute for various diameters of grinding wheels to give peripheral speed in meters/sec. as indicated.

PERIPHERAL SPEED IN METERS / SEC.																
Diameter in mm	22 m/s	23 m/s	25 m/s	28 m/s	30 m/s	33 m/s	35 m/s	40 m/s	42 m/s	45 m/s	48 m/s	50 m/s	55 m/s	60 m/s	70 m/s	80 m/s
REVOLUTIONS PER MINUTE (APPROX.)																
25	16800	17600	19100	21500	22900	25000	26500	30500	32000	34500	36500	38000	42000	46000		
50	8400	8800	9500	10800	11500	12600	13400	15300	16100	17200	18300	19100	21100	23000		
80	5200	5500	6000	6800	7100	7900	8400	9500	10100	10700	11400	12000	13200	14300		
100	4200	4400	4750	5400	5700	6300	6700	7600	8100	8600	9200	9600	10600	11500		
125	3350	3500	3800	4300	4600	5050	5600	6100	6500	6900	7300	7600	8400	9200		
150	2800	2950	3200	3600	3800	4200	4450	5100	5400	5700	6100	6400	7000	7600		
180	2330	2430	2650	3000	3200	3500	3800	4250	4450	4750	5100	5300	5900	6400	7400	8500
200	2070	2160	2350	2620	2820	3100	3300	3750	3950	4250	4500	4700	5200	5600	6600	7500
230	1820	1910	2070	2320	2490	2740	2900	3320	3490	3730	4000	4150	4670	4980	5820	6600
250	1650	1720	1880	2100	2230	2500	2650	3000	3150	3400	3600	3750	4150	4500	5300	6000
300	1370	1440	1570	1750	1880	2070	2190	2500	2600	2800	3000	3150	3450	3750	4400	5000
350	1180	1240	1350	1500	1610	1780	1890	2160	2250	2400	2600	2700	2950	3250	3750	4300
400	1030	1080	1180	1320	1410	1550	1650	1880	1970	2120	2260	2350	2600	2850	3300	3750
450	900	960	1050	1170	1250	1380	1470	1680	1760	1880	2010	2090	2300	2500	2950	3350
500	830	870	940	1050	1130	1240	1320	1500	1580	1700	1810	1880	2060	2260	2650	3000
550	750	790	860	960	1030	1130	1200	1370	1440	1550	1650	1710	1910	2085		
600	690	720	780	880	940	1030	1090	1250	1320	1410	1500	1570	1750	1910		
650	640	670	720	810	870	960	1020	1160	1210	1310	1390	1450	1615	1765		
700	590	620	670	750	810	890	940	1080	1130	1210	1290	1350	1500	1640		
750	550	580	630	700	750	830	880	1000	1050	1130	1210	1260	1400	1530		
800	520	550	580	660	700	770	820	940	980	1060	1130	1170	1315	1435		
900	460	480	520	580	630	690	730	840	880	940	1000	1050	1170	1275		
1000	415	430	460	530	560	620	660	750	790	850	910	940	1050	1145		
1060	395	415	450	505	540	595	630	720	760	810	865	900	990	1080		
1100	380	400	430	490	520	570	610	690	730	780	830	870				
1200	345	360	400	440	470	520	550	630	660	710	750	780				

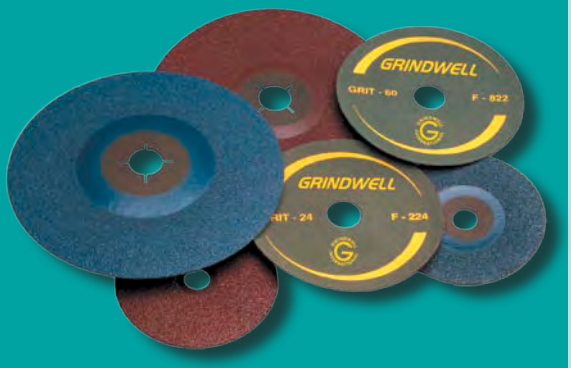
GRINDWELL INTERNATIONAL

Coated Abrasives

Coated Fibre Discs

Grindwell International offers the widest range of Fibre and Cloth backed Coated Abrasive Discs for portable tools. Be it a disc for Rotary Grinder, Dual Action Sander on portable machine or Hand Sanding, Grindwell International has a product for every application and performance category.

Fibre Discs



Grindwell International offers a complete line of high performance fibre discs that are designed to give optimal cut rate, finish and life. To meet the challenge of increasing productivity and lowering costs, Grindwell International offers the following types of fibre discs:

- *F822 Zirconia Discs*
- *F224 Aluminium Oxide Discs*
- *F422 and F424 Silicon Carbide Discs*

These fibre discs incorporate a strong resin bond system with a heavy duty vulcanized fibre backing in their design for increased strength, durability and tear resistance. Grindwell fibre discs are designed for a consistent cut rate and uniform finish throughout their operating life.

TECH TIP

- Select coarsest feasible grit for the application.
- Keep the unused discs under weight once the polythene cover is opened.
- The disc should be at a 5° angle to the surface during sanding for most applications.

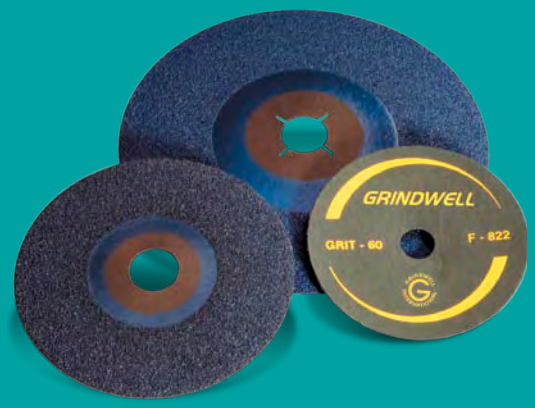
Coated Fibre Discs

Zirconia Fibre Discs

These premium fibre discs offer the customer unparalleled performance in applications wherever rapid material removal is required.

USER INDUSTRIES	
Primary Auto	✓
Auto After	✓
Metal Fabrication	✓
Furniture & Decorative	✓

ZIRKONIA FIBRE DISCS	
Features	**Benefits**
▸ Premium Friable Zirconia Alumina abrasive	▸ High cut-rate ▸ Long lasting ▸ Cooler cutting
▸ High strength backing	▸ Tear resistant ▸ No breakage during operation
▸ Unique individual ESU coating process	▸ Uniform surface finish ▸ Minimum grain shedding



TYPICAL APPLICATIONS

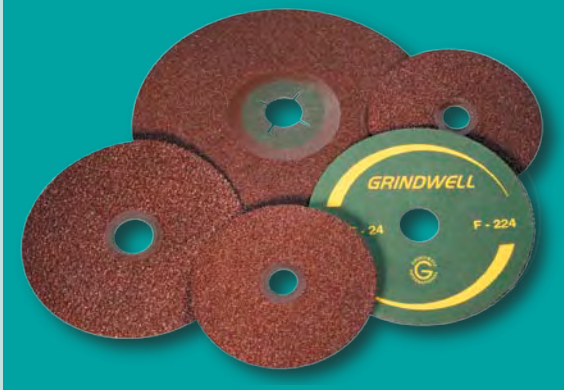
- **Automotive Weld Shops**
  - Weld & Braze Blending
  - Metal Mismatch
- **Heavy Fabrication (Vessels, Heat Exchangers) -**
  - Weld Blending
  - Cladding Burr removal
  - Gas Cut Surface Blending
- **Automotive Machine Shops**
  - Gear De-burring

Aluminium Oxide Fibre Discs

Grindwell International Fibre Discs are the best suited for applications where surface finish is important and the grinding pressures are low.

USER INDUSTRIES	
Primary Auto	✓
Auto After	✓
Metal Fabrication	✓
Composites & Rubber	✓
Furniture & Decorative	✓
Boards & Laminates	✓

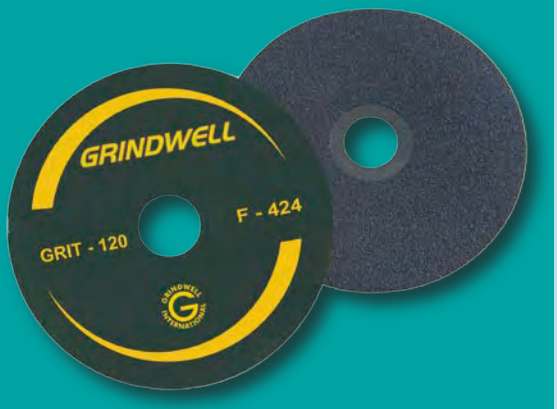
ALUMINIUM OXIDE FIBRE DISCS	
Features	**Benefits**
▸ Treated Aluminium Oxide abrasive	▸ Consistent cut rate ▸ Uniform high quality surface finish
▸ High strength backing	▸ Tear resistant ▸ No breakage during operation
▸ Unique coating process	▸ Resistant to grain dulling ▸ Cooler cutting



TYPICAL APPLICATIONS

- **2 Wheeler Automotive Weld Shops**
  - Fuel tank weld seam blending
- **Aluminium Castings**
  - Deburring & flash removal
- **Light Fabrication**
  - Weld blending
- **Wood Working**
  - Flat stock finishing (post planning) & chamfering

Coated Fibre Discs



TYPICAL APPLICATIONS

- **Wood Furniture & Handicrafts**
  - Flat stock surface preparation (post planning)
  - Edge blending/chamfering of flat stock components
- **Flat Glass**
  - Edge finishing

Silicon Carbide Fibre Discs

Grindwell International Fibre Discs are the best suited for wood working and glass grinding applications.

USER INDUSTRIES	
Furniture & Decorative	✓
Steel	✓
Glass	✓
Composites & Rubber	✓
Boards & Laminates	✓

SILICON CARBIDE FIBRE DISCS	
Features	**Benefits**
▸ Premium Silicon Carbide abrasive	▸ Consistent cut-rate ▸ Uniform high quality surface finish
▸ High strength backing	▸ Tear resistant ▸ No breakage during operation
▸ Unique coating process	▸ Cooler cutting. No burn marks ▸ Resistant to loading (clogging)

Coated Abrasive Belts

Grindwell International offers a wide range of Coated Abrasive Belts for the industry. Be it a glass or wood working industry, Grindwell International has a product for every application.

Aluminium Oxide R209 Narrow Belts

USER INDUSTRIES	
Primary Auto	✓
Metal Fabrication	✓
Non Auto Castings	✓
Non Auto Forgings	✓
Steel	✓
Leather	✓

ALUMINIUM OXIDE R209 NARROW BELTS	
Features	**Benefits**
▸ Tough Premium Aluminum Oxide grain	▸ Good for medium to high pressure applications; Long life; Good cut rate
▸ High strength backing	▸ High strength; Resistance to tearing ▸ Ability to withstand high grinding pressure
▸ Unique coating process	▸ Esnures high cut rate at an acceptable finish

TYPICAL APPLICATIONS

- **Benchstand and Backstand Belts**
  - Heavy stock removal on forged components like hand tools and castings
  - Grinding and de-burring of aluminium castings
  - Blending, dimensioning and shaping of brass castings like sanitary ware fittings
- **Centreless, Conveyor and Platen Belts**
  - Intermediate grinding of stainless and carbon steel
  - Moderate pressure applications in furniture sanding

Narrow Belts

Aluminium Oxide R265 Narrow Belts

USER INDUSTRIES	
Primary Auto	✓
Metal Fabrication	✓
Non Auto Castings	✓
Non Auto Forgings	✓
Steel	✓
Glass	✓

ALUMINIUM OXIDE R265 NARROW BELTS	
Features	**Benefits**
▸ Tough Premium Aluminum Oxide grain	▸ Good for medium to high pressure applications
▸ Flexible Cotton backing	▸ Strength combined with flexibility for grinding over the edge of the contact wheel
▸ High base adhesion	▸ Resistance to grain shedding

TYPICAL APPLICATIONS

- **Benchstand and Backstand Belts**
  - Grinding and de-burring of all metals
  - Final polishing of forged componenets like hand tools
  - Blending and shaping of brass castings like sanitary ware fittings
- **Centreless, Conveyor and Platen Belts**
  - Intermediate grinding of stainless steel and carbon steel
  - Glass edge bevelling
  - Moderate pressure applications in furniture sanding
- **Portable File Belts**
  - Finishing, contour and shape sanding of all metallic surfaces where flexibility and ability to grind hard-to-reach areas is a requirement

TECH TIP

- **Use a smooth contact wheel for finishing operations and use a hard serrated contact wheel for stock removal operations.**
- **For fine finishing, use a grinding aid.**
- **For contact wheel grinding, choose a close kote product specification.**
- **For low pressure grinding, use an open kote product specification.**
- **Portable belts are a superior and quicker option to conventional filing.**
- **For sanding on flat surfaces like wooden floors, use portable belt sanders with platen.**

Silicon Carbide R409 Narrow Belts

USER INDUSTRIES	
Metal Fabrication	✓
Steel	✓
Glass	✓

SILICON CARBIDE R409 NARROW BELTS	
Features	**Benefits**
▸ Sharp Silicon Carbide grain	▸ Ideal for sanding of MDF / Particle Board
▸ Unique coating method	▸ Close koted grains esnure high cut rate with an acceptable finish
▸ Premium synthetic backing	▸ High strength backing ▸ Can be used for wet applications too

TYPICAL APPLICATIONS

- **Centreless, Conveyor and Platen Belts**
  - Glass edge bevelling
  - Dimensioning and finishing of steel coils

Coated Abrasive Rolls

Grindwell International offers the most comprehensive range of rolls in cloth and paper. Rolls are available in a range of widths to suit industry requirements.

Grindwell International offers Coated abrasive rolls that are designed for fast and easy sanding of various surfaces, and can be torn to exact lengths as needed.

Cloth Rolls

Aluminium Oxide R209 Rolls

USER INDUSTRIES	
Primary Auto	✓
Metal Fabrication	✓
Boards & Laminates	✓

TYPICAL APPLICATIONS

- Dairy equipment polishing with flutter wheels
- Rolls on Vonnegut wheels
- Plywood sanding on drum sanders

ALUMINIUM OXIDE R209 ROLLS	
Features	**Benefits**
Tough Premium Aluminum Oxide grain	Good for medium to high pressure applications; Long life; Good cut rate.
Premium synthetic backing	High strength; Resistance to tearing Ability to withstand high grinding pressure & uniform grain coating.
Uniformly close koted grain	High cut rate at acceptable finish Fine scratch-free finishes

Coated Abrasive Rolls

Aluminium Oxide R265 Rolls

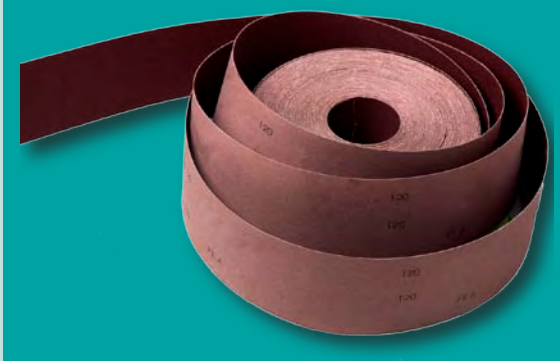
USER INDUSTRIES	
Primary Auto	✓
Metal Fabrication	✓
Boards & Laminates	✓

ALUMINIUM OXIDE R265 ROLLS	
Features	**Benefits**
▸ Tough Premium Aluminum Oxide grain	▸ Good for medium to high pressure applications; Good cut rate.
▸ Flexible cotton backing	▸ Strength combined with flexibility for grinding on edges
▸ Uniformly close koted grain	▸ High cut rate at acceptable finish ▸ Fine scratch-free finishes
▸ Wide grit range	▸ Suitable for applications from roughing to finishing

TYPICAL APPLICATIONS

- Dairy equipment polishing with flutter wheels
- Rolls on Vonnegut wheels
- Plywood sanding on drum sanders

Aluminium Oxide R223 Rolls



USER INDUSTRIES	
Metal Fabrication	✓
Furniture & Decorative	✓
Boards & Laminates	✓

ALUMINIUM OXIDE R223 ROLLS	
Features	**Benefits**
▸ Tough Premium Aluminum Oxide grain	▸ Good for medium to high pressure applications
▸ Flexible cotton backing	▸ Strength combined with flexibility for grinding on edges
▸ High base adhesion	▸ Resistance to grain shedding
▸ Wide grit range	▸ Suitable for applications from roughing to finishing

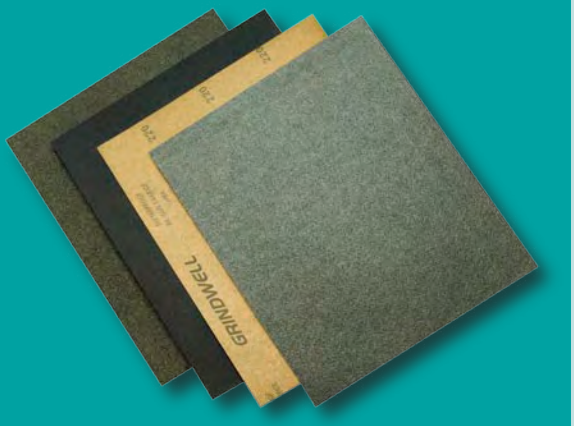
TYPICAL APPLICATIONS

- Funiture and wood hand sanding
- General maintenance and repair operations on metals
- Wall sanding
- Friction material for looms for winding yarns

Coated Abrasive Sheets

For some applications, sheet sanding simply can not be beaten. This aspect becomes critical when working with some of the complicated finishes that are used in wood working, in the paint and clear coat business, in solid surface material sanding and in many other metallurgical testing and finishing situations.

Grindwell International offers a wide range of technical sheet products for wet as well as dry sanding operations.



T485 & T440 Silicon Carbide Waterproof Paper

Grindwell Silicon Carbide Waterproof sheets are best suited for general purpose sanding for decorative & wood working applications where operators prefer the paper to have some body.

Grindwell International offers T440 Silicon Carbide Waterproof papers in grits ranging from P80 to P800.

TYPICAL APPLICATIONS

- Hand sanding of paint, primer & putty in primary automotive and car re-finishing garages
- Die polishing to eliminate defects or scratches
- Paint sanding in wall and construction

USER INDUSTRIES	
Primary Auto	✓
Auto After	✓
Metal Fabrication	✓
Furniture & Decorative	✓

ALUMINIUM OXIDE R209 ROLLS	
Features	**Benefits**
Sharp Silicon Carbide grain	Good cutting action
C weight paper	Extra body and strength
Flexible bond	Does not flake at the point of folding

Safety Tips

Personal Protection

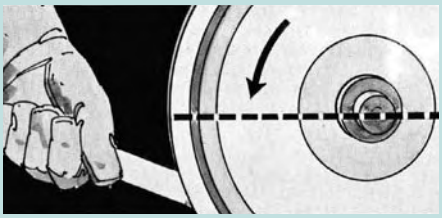
- Face-shield
- Eyeglasses
- Dust mask
- Gloves
- Safety shoes
- Aprons
- Long pants, long sleeves (no loose or baggy clothes)

Equipment Precautions

- Always observe safety recommendations supplied by the manufacturer of your grinder.
- Use a sheet metal hood/guard.
- Enclose abrasive belt, idler pulley and contact wheel to confine flying sparks, grinding dust and fumes.
- An adequate exhaust system should be used. At the grinding area and at the idler pulley.
- Check grinder spindle for run-out.
- Wobble usually caused by worn bearings.
- Make sure the spindle speed of the grinder does not exceed the maximum RPM recommended by the wheel manufacturer.
- Check contact wheel for balance and run-out.
- Inspect contact wheels for nicks or damage that could cause the belt to tear or the workpiece to catch between the belts and the workpiece.
- Check idler pulley(s) spindle for run-out and balance.
- Use a workpiece fixture whenever possible. The fixture holds the workpiece more securely and affords protection if the workpiece jams.

Abrasive Belt Precautions and Use

- Never use an abrasive belt with nicked or cut edges, creases or other visual damage.
- For lap joints - find the arrow on back of the abrasive belt and install in running direction of contact wheel.
- Butt joint belts are non-directional.
- Make sure the abrasive belt fully covers the face of the contact wheel.
- A partially uncovered contact wheel face will cause snagging and throw off the workpiece.
- Jog the machine to start abrasive belt tracking.
- A sudden full power start could cause the belt to track off the machine.
- Check the sound of the running abrasive belt.
- If a ticking sound or bumping noise occurs, stop the machine and check for possible belt or machine damage.
- Check with abrasive belt supplier and machine manufacturer for information on belt speeds to be used with varying types of material being ground.
- Present the workpiece to the abrasive belt below the horizontal center line of the contact wheel.
- Presenting above the line, will cause the workpiece to chatter and is difficult to hold.



- Always use an upward stroke to present the workpiece to the abrasive belt.
- This method both improves the cutting and increases safety by drawing hands away from the belt.

- Too much tension can break the belt
  - Adjust belt tension to the minimum sufficient to insure good contact with the drive and idler pulley so that the belt will track properly under both start-up and grinding conditions.
  - Excessive belt tension puts undue stress on bearings and can harden softer contact wheels.

Safety Tips

Additional Coated Abrasive Product Precautions

- Do not use coated discs that have excessive curl.
- Never use a coated disc in excess of the safe operating speed of the proper back-up pad that is recommended for the machine.
- Only use appropriate back-up pads for the right machine and inspect back-up pads for nicks and damage.
- Make sure that PSA back-up pads are clean and free of oil – as dirt and oil will interfere with adhesion.
- Always check the core around a flap wheel or flap disc for cracks or defects.
- Only use specially designed waterproof coated abrasive products when sanding or grinding wet.
- Do not use excessive pressure on a coated product as this may cause damage to the backing and cause the product to fail.
- Only use pressure that is appropriate to the application and the machine.
- Never use a machine for coated abrasives in excess of the speed designated by the machine manufacturer.
- Always pay attention when controlling a portable machine or a handheld workpiece.
- Always maintain control of the workpiece as it is presented to the coated abrasive product in applications where the work is applied to the machine.

Proper Handling and Storage

- Do
  - Store products as shipped.
  - Store products off the floor on horses or skids.
- Do not
  - Expose products to water, solvents, extreme humidity or freezing temperatures.
  - Store products on concrete floors.

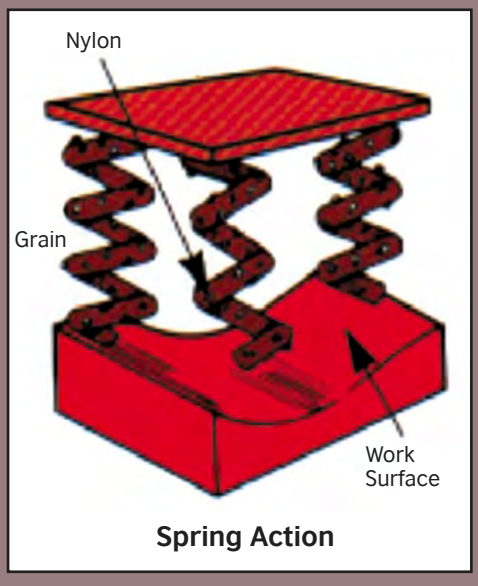
GRINDWELL INTERNATIONAL

Surface Finishing Products

Surface Finishing Products

Products for polishing, deburring, finishing & cleaning

The majority of Grindwell surface finishing products consist of a non woven web of nylon fibres... impregnated throughout with abrasive grain... and bonded with synthetic resins... this design produces a cushioned, three dimensional material that is extremely pliable and long lasting. The uniform dispersion of abrasive throughout the web provides a constant supply of new abrasive grain, as the old grain and fibres wear away during use.



Spring Action

Grindwell products with their open mesh construction, are waterproof, washable, resilient, conformable, non loading, non conductive, non metallic, non rusting. Individual forms and shapes of this material may offer additional features. For example, Grindwell wheels are easily performed to conform to special-shaped work-pieces.

Since these products are designed for use where stock material is not required, it is often said that Grindwell surface finishing products begin where other abrasive items leave off. The utility of these products can be best appreciated by an understanding of the relatively non aggressive nature of nylon and the grit selection, inherent in the Grindwell material. Whereas 60 to 80 grit may be considered intermediate sizes in other abrasive products, they are considered coarse for Grindwell items. In fact, it is common in Grindwell products to find grit blends extending up through the microfine (1000 grit) range.

The broad range of shapes, types, abrasives, grit sizes and densities offered in Grindwell material results in a product that can be used on a wide variety of surfaces. These include aluminium, brass, copper, nickel, chrome plate, stainless steel, zinc, titanium, ceramic, glass, plastic, fiberglass, wood, plywood and others. Applications include deburring, cleaning, scrubbing, scouring, blending, polishing, highlighting, deflashing plastics, defuzzing plywood, dulling laminates, removing oxides and rust, scuffing paint before repaint, rubbing sealers, removing raised fibres in wood and imparting satin and decorative finishes. It might even be safe to say that there is a Grindwell surface finishing product for nearly all cleaning and finishing operations.

Grindwell products offer the following advantages:

- A controlled cut without stock removal
- No discolouration of workpiece
- Ability to automate operations
- Conforms readily to irregular surfaces
- No dust generation

Conventional Surface Cleaning Products:

Grindwell products offer an excellent alternative to bristle brush, set up wheels, greaseless compounds, wire brush and steel wool.

Abrasives in Grindwell Products:

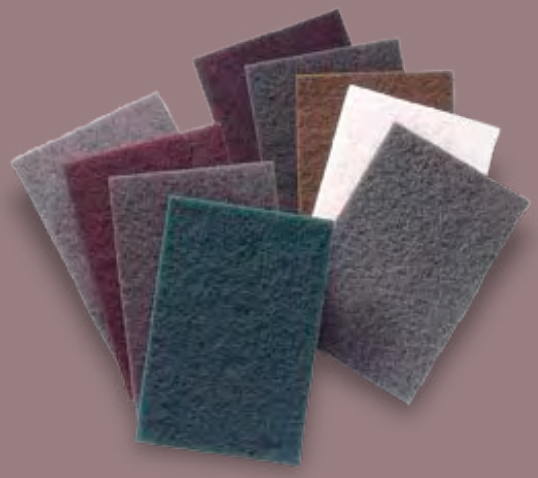
Grindwell products are manufactured by either using Silicon Carbide or Aluminium Oxide abrasive grain.

Silicon Carbide grains are sharper and tend to cut faster and produce a fine scratch pattern on most surfaces. Aluminium Oxide is more aggressive on most steel applications and produces a coarser scratch pattern compared to silicon carbide. Silicon Carbide products are grey in colour and Aluminium Oxide products are available in maroon or tan colour.

Hand Pads

For polishing, cleaning & finishing

Range of grits are available in a convenient size of 150 x 230 mm. Hand Pads are available from 120# to 1000# grits in Silicon Carbide and Aluminium Oxide. Since they are made from nylon, hand pads are very flexible and they can reach areas and conform to various shapes of the workpiece, Hand Pads also non loading and waterproof.



USER INDUSTRIES			
Brass	✓	Food Industry	✓
Utensils	✓	Ordance Factories	✓
SS & SS Fabrication	✓	MRO	✓
Watch Strap	✓	Converter Market	✓
Ceramics	✓	Wood working	✓
Auto Components	✓	Furniture & Decor	✓
Jewellery	✓	PCB	✓

TYPICAL APPLICATIONS
Rust removal, Cleaning, Blending, Polishing and Deburring
Matt Finishing off SS & Brass
Dufuzzing of Wood

HX04: Maroon: Type 22NM - Aluminium Oxide - Very Fine Grit	
Features	**Benefits**
General Purpose Hand Pad	Used for the widest range of applications
Large proportion of abrasives	Long lasting with consistent performance
Open structure	Resists loading
Waterproof	Can be washed and reused

APPLICATION: Matt finishing on SS & Brass. Polishing of Ceramic ware & light deburring of components

HX02S: Maroon: Type 18NB - Aluminium Oxide - Medium Grit	
Features	**Benefits**
Tough fibre	Used for heavy cleaning application
Medium grit	Aggressive cutting action

APPLICATION: For aggressive cutting and suited for polishing, cleaning and deburring

HX13: Maroon: Aluminium Oxide - Very Fine Grit	
Features	**Benefits**
Flexible pad	Conforms to intricate shapes

APPLICATION: Suited for polishing & finishing of intricate profiles in wood. Ideally suited for matt finishing of SS and Brass

HX166: Grey: Aluminium Oxide - Very Fine Grit	
Features	**Benefits**
Stiff pad	Used for heavy cleaning application
Larger proportion of abrasives	Longer lasting

APPLICATION: Suited for cleaning and polishing of ceramic sanitary ware

Hand Pads

HX01: Grey: Silicon Carbide - Microfine	
Features	**Benefits**
▸ Micro fine grains of Silicon Carbide	▸ Suitable for fine polishing application

APPLICATION: Suited for generation of semi bright or glossy finish on SS, defuzzing of wood

HX450: Maroon: High Strength Aluminium Oxide	
Features	**Benefits**
▸ Tough nylon fibre	▸ Long lasting
▸ High strength	▸ Suitable for deburring

APPLICATION: Polishing and finishing of aerospace components

HX467: Silicon Carbide - Medium Grit	
Features	**Benefits**
▸ Silicon Carbide in medium grit	▸ Generates coarse scratch patterns

HX10: Non Abrasive	
Features	**Benefits**
▸ Non abrasive	▸ Suited for scratch free finishing operation

APPLICATION: Cleaning of dairy equipment and polishing of Teflon coated items

HX100: Aluminium Oxide - Very Fine Grit	
Features	**Benefits**
▸ Very flexible	▸ Suitable for polishing intricate wood profiles

TECH TIP

- **Ideal replacement for steel wool.**
- **Substitute to fine grit waterproof paper.**

SPEC CHECK

HAND PADS FOR FINISHING

Least aggressive — **Most aggressive**

Starting Point Recommendation

Fine Finish HX10	Fine Finish HX01	HX04	Coarse Finish Aggressive HX02S	Very Aggressive HX450

Unified Wheels

Grindwell Unified Polishing wheels are made by compressing layers of Grindwell flat stock to obtain wheel of different densities. Grindwell Unified Wheels serves as a cost effective option for light duty deburring, decorative finishing, rust removal and cleaning applications. Ideally suited for decorative finishing on brass, SS, watch straps, dairy & kitchen equipment. By choosing the right grade and density, Grindwell Wheels are effective substitutes to Set up wheels. This helps avoid messy operation of making the Set Up wheels and the heavy pollution associated with them.

USER INDUSTRIES			
Brass	✓	Auto Components	✓
Utensils	✓	Centreless	✓
SS & SS Fabrication	✓	OEM Grinders	✓
Watch Strap	✓	Jewellery	✓
Surgicals / Cutlery	✓	MRO	✓

TYPICAL APPLICATIONS

- **CLEANING**
  - Rust removal and preparation
  - Surface preparation
- **POLISHING**
  - Dent removal on Brass, SS & Auto Components
  - Polishing and blending of upstream Coated Abrasive grit lines
- **FINISHING**
  - Matte finishing on SS & Brass Hardware
  - Imparting high glossy finishes
- **DEBURRING**
  - Deburring of milled and stamped components

PRODUCT OFFERINGS

- **U Series Beartex Unified Wheels**
- **P Series Beartex Unified Wheels**
- **Q Series Beartex Unified Wheels**

U Series Grindwell Unified Wheels

These wheels are non smearing and can withstand higher pressures. Ideal wheel for matt finishing on SS and final finishing of precision parts. Suited for dent removal applications on watch straps and watchcases. Extensively used for light deburring of burrs caused by stamping, punching and other machining operations.

Unified Wheels

P Series Grindwell Unified Wheels

These wheels are non smearing and can withstand higher pressures. Ideal wheel for matt finishing on SS and final finishing of precision parts. Suited for dent removal applications on watch straps and watchcases. Extensively used for light deburring of burrs caused by stamping, punching and other machining operations.

Q Series Grindwell Unified Wheels

These wheels impart a special hairline glossy finish on components as they are made with special fibres and resins. The unique resin system has a high resistance to wear and hence the wheels are long lasting. Ideally suited for imparting high glossy finish and deburring applications. Q series wheels are cost effective options for deburring SS, alloy steel and other milled and machined components.

Large diameter Q Series Grindwell Polishing Wheels are extensively used in imparting high glossy finish on Bright bars, SS rods and piston pins. Imparts special finishes on jewellery, surgical instruments and medicinal implants.

GRINDWELL INTERNATIONAL

Super Abrasives

TYPICAL APPLICATIONS
Bore grinding (using small wheels)
Profile grinding
Low cost option in place of Multipoint
Dressers for Surface grinding
Double disc grinding
Cylindrical grinding
Centreless grinding

Grindwell International offers a wide variety of Diamond Tools for various applications.

Single Point Dressers

The dressing tool performs the key functions of dressing and truing thereby ensuring the productivity and quality and hence, is a key component in the grinding system. Only a correctly chosen and properly used dressing tool allows full utilization of the abrasive and the machine. Maintaining tight tolerances, repeatability of dimensions and automation in grinding and dressing depend on the usage of a good quality dresser.

In spite of a comprehensive range of dressing tools available today, single point dressing continues to take a major chunk of usages as it remains the most versatile dressing solution. It is very difficult to replace single point dressers even today, unless the demands on quality, productivity and cost are critical and consistently is an issue. The quality and reliability of single point dressers depend significantly on the quality of diamonds used. There are no international standards for diamond quality and much depends on the consistent supply of good quality tools from the supplier. Grindwell International offers a range of single point dressers, optimally designed to give you consistent and reliable performance.

Availability

Single point dressers are offered by Grindwell International in three different categories:

- PNS Type dressers use a standard quality throwaway type diamond with a rugged shape and bruted point. They are economical and long lasting.
- SC Type dressers are available with superior quality diamond and 2 settable points.
- Gem Type dressers are made with crystal clear, high quality diamond in smaller carat sizes with natural points. These dressers are best suited for applications when continuous dressing is required.

The dressers are stocked in standard shank sizes of 12.5 mm x 150 mm. They are made to other shanks on request.

SPEC CHECK

SELECTION OF DIAMONDS

The selection and classification of diamonds require a lot of experience and access to best quality sources of buying.

Diamonds used for dressing are graded as follows:

- **Regular octahedron shape with 4-6 points used in gem quality GS dressers with best mine sources.**
- **Round shape bruted to give a good point and accurate centrallity used in SC type bruted dressers.**
- **Cubic shape regular, base quality throwaway type, with one bruted set point used in NS type dressers.**

Performance of diamond dressers depends significantly on the quality of diamond used in the tool. Grindwell Norton dressers use optimally selected diamonds from the best sources.

Grit Impregnated Dressers

Diamond Grit Impregnated Dressers also called Nib dressers are made with a number of fractional carat diamonds set in a matrix bond. The cost per carat of crushed diamonds used in these dressers is lower than the whole diamond crystal used in single point dressers. These dressers dress quickly as a number of diamonds work on the wheel face simultaneously. These dressers produce an even, rib free grinding wheel face. Since the amount of exposed diamond remains the same throughout the life of the dresser, the dressing action is consistent and generates uniform dressing surface. This means that the grinding wheel is consistently sharp and cuts freely even after repeated dressing. The work piece is ground to the same tolerance and surface finish.

PARAMETERS
Traverse rates: 5 mm/sec to 10 mm/sec
Depth of cut: 50 to 70 microns for initial dressing
15-35 microns for regular

ADVANTAGES / BENEFITS
Long life with reduced dressing costs
Self sharpening ensuring complete use
Fast dressing as diamond is continuously exposed
Less abrasive lost due to dressing - More parts per dress
Need no resetting and truing
Entire diamond matrix is usable

TYPICAL APPLICATIONS
Cylindrical Wheels
Centreless Wheels
Roll Grinding Wheels
Side Dressing Crank Wheels
OD Dressing Thread & Gear
Dressing Rubber Bond Wheels

TECH TIP

Carat selection - The diamond used in the dresser should be large enough so that it has enough surface area to be held well in the shank. Where higher dressing infeeds and traverse rates are required, the carat size of diamond must be higher. Multiply the diameter (in mm) of the wheel by its thickness (in mm). Refer the above value to the chart that follows and select the carat size of diamond. This is a rough method.

Carat	0.35	0.5	0.75	1.0
	Upto	6000	12000	25000
	6000	to 12000	to 25000	and above

Given above is a rough guide. Use multipoint dressers above 1.0 carat for best results.

Diamond & CBN Grinding Wheels

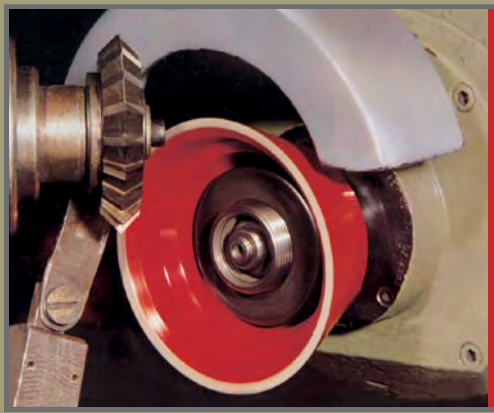
Diamond and CBN (Cubic Boron Nitride) grinding wheels are available in a wide range of Resin, Vitrified and Metal bonds.

Diamond and CBN wheels are designed to grind very hard materials like Tungsten Carbide, HSS, Hardened Steel, Aero space alloys, Ceramics, Glass and Refractory materials to a high level of precision and quality. Various factors affect selection of the right superabrasive grinding wheel. Application/ Product Engineers from Grindwell will help you select the right product fine-tuned to meet the exact application need. Grindwell also offers a wide range of Resin bond, Metal bond, vitrified bond and Electro-plated wheels for tool regrinding and for job working applications on Carbides, Tool Steels, HSS, Ceramics, Glass, and Refractory materials. These wheels have been optimised in design for various wheel factors like Diamond & CBN type, grit, concentration, bond, and grade to suit a variety of jobs.

TYPICAL APPLICATIONS
Diamond Wheels
Tungsten Carbide
Hard alloys
Ferrites & Ceramics
Wear resistant Coatings
Glass
Gem stones
Plastics
Graphite
Cast Iron

TYPICAL APPLICATIONS
CBN Wheels
High Speed Steel
Alloy Tool Steels
Super Alloys
Case hardened Steels

Diamond & CBN Wheels	
Features	**Benefits**
Best manufacturing techniques	Best performance Superior value
Optimised specifications	Affordable price
Full range of wheel	Low intentories
Stocked to variety of shapes, sizes & bonds	Overall economy



TECH TIP

- **Truing makes the wheel concentric with the spindle.**
- **Dressing opens the wheel's cutting face.**
- **Always true and dress diamond and CBN wheels prior to use.**
- **Diamond and CBN wheels of grit sizes 100 - 180 mesh can be trued with a Brake Controlled Truing Device mounted with AlO or SiC wheels.**

How to Designate?

Grindwell Diamond & CBN Wheels are fully designated by Wheel Type, Abrasive, Mesh Size, Grade, Concentration and Bond Type. To designate and order a special wheel fully, the following important steps have to be followed:

1. Specify wheel type
2. Specify Abrasive type, mesh, concentration
3. Specify dimensions

1. Specify Type of Wheel:

The wheel shown below is a 6A2 wheel

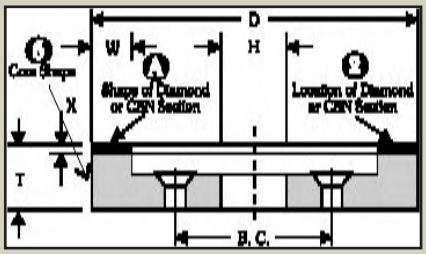


Fig. 1

2. Specify Abrasive, Mesh Size, Grade, Conc.:

Wheel Type	Abrasive	Mesh Size	Grade	Conc	Bond
6A2	ASD	126	R	75	B2
Choose from chart	Choose diamond or CBN type	Choose mesh size in FEPA	Choose proper grade	Choose right concentration	Choose bond type

3. Specify Dimensions:

The important wheel dimensions to be specified are

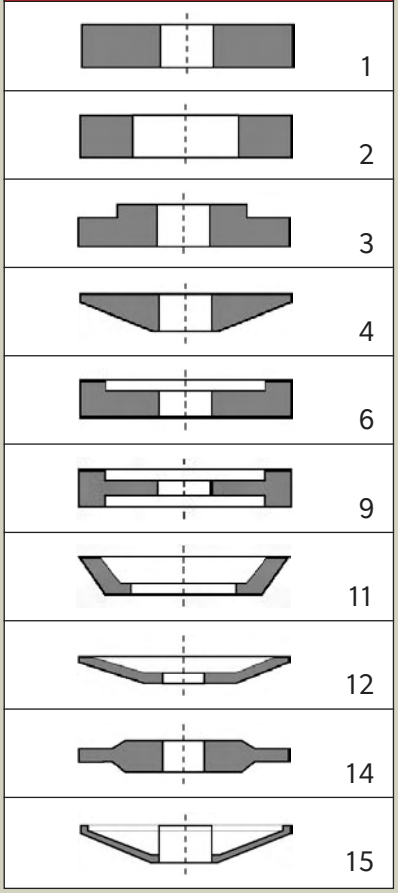
1	=	Diameter of the wheel	'D'
2	=	Width of the Abrasive Section	W or V
3	=	Depth of Abrasive	X
4	=	Overall thickness of wheel	T
5	=	Bore of the wheel	H

Note: See example in Fig. 1

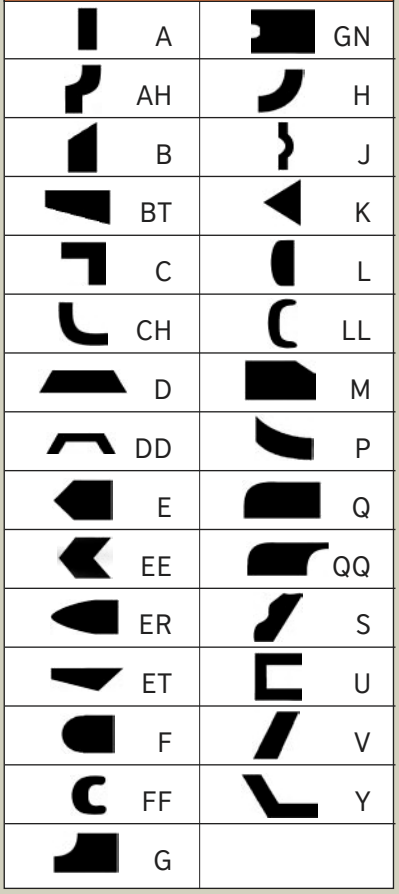
Type of Wheel:

This indicates the shape of the wheel and is typified by 4 digits.

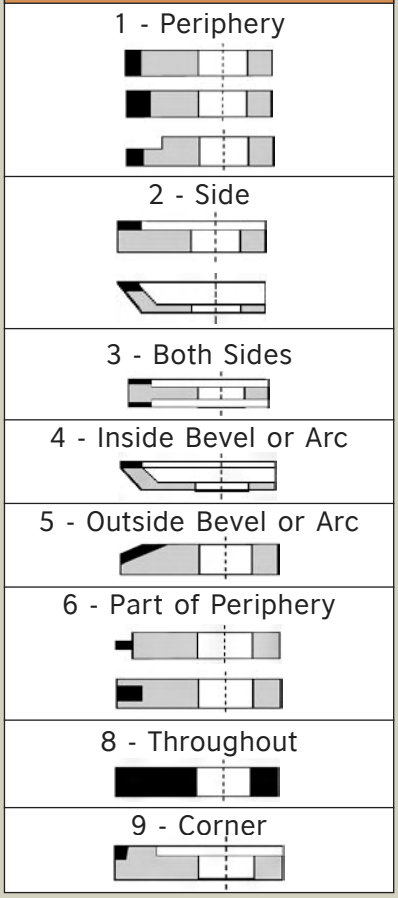
1ST DIGIT
INDICATES CORE SHAPE WHICH CAN BE 1, 2, 3, 4, 6, 9, 11, 12, 14, 15



2ND DIGIT
INDICATES SHAPE OF THE ABRASIVE SECTION AND IS INDICATED BY 1 OR 2 ALPHABETS AND CHOSEN FROM CHART



3rd Digit
INDICATES THE LOCATION OF THE ABRASIVE SECTION



Diamond CRS & Segmented Blades

Grindwell Diamond Blades are available ex-stock in 4" (105 mm) for cutting marble, granite, soft stones and tiles with portable hand held cutters. These blades can be used wet or dry and work on a variety of materials. They are free cutting and specially suited for use on low power machines.

TYPICAL APPLICATIONS

- Cutting marble, granite and soft stone
- Cutting, moulding and grooving at construction sites.

PRODUCT OFFERINGS

- Segmental and CRS designs in 105 mm dia.

DIAMOND CRS & SEGMENTED BLADES	
Features	**Benefits**
High quality diamond	Long life, good cut-rate
Wear resistant bond	Long life, high feeds
Optimally designed	Economically priced
Specially balanced and tensioned blanks	Trouble-free operation

GRINDWELL
INTERNATIONAL

Abrasives for Every Application

GRINDWELL
INTERNATIONAL

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