

Improved
Productivity
Starts
Here



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More
ways to
control

When to use Diamond vs. CBN

Diamond

- Tungsten carbide
- Glass
- Ceramics
- Composites
- Thermal spray coatings
- Carbide
- Non-ferrous metals

- Cast Iron
- High-carbon steels

CBN

- Tool steels
- Hardened alloy steels
- Bearing steels
- Superalloys
- High speed steel
- Hard ferrous (steel) parts over 45 Rockwell C

quality
and
cost

3M™ Diamond Microfinishing Film

Designed especially for fast finish reduction on hard materials, 675L film helps achieve target finishes in fewer passes for greater productivity and can cut superfinishing time in half or more compared to stones. 675L film provides the finish you need efficiently and economically. Use in conjunction with 3M™ Diamond Lapping Film for finishes <2 Ra.

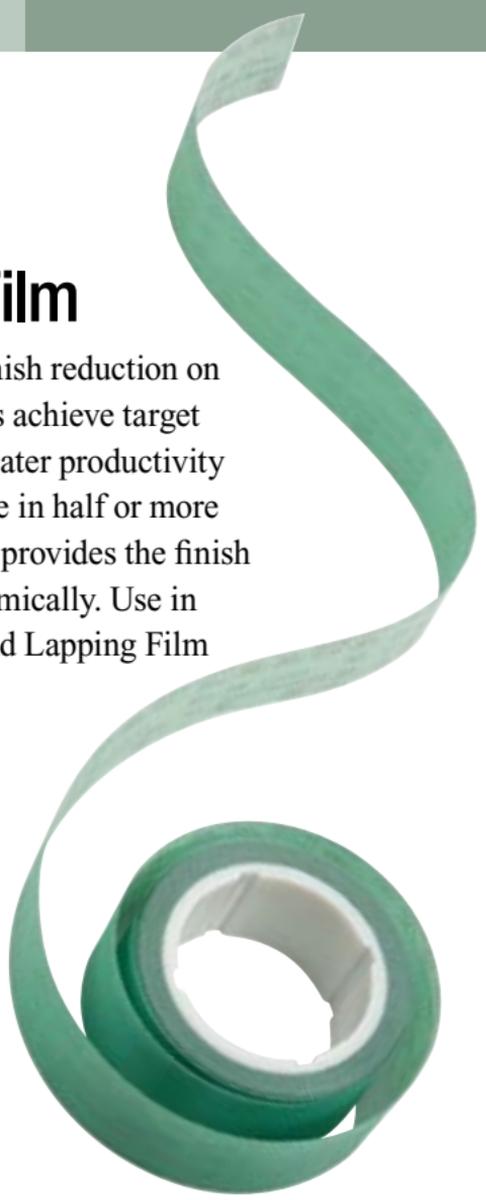
Applications

Superfinishing of hard materials including thermal spray coatings, ceramics, carbides, chilled iron and granite.

Converted Forms: Rolls, belts, discs and sheets

Backing and Attachment Systems:

- 5 mil polyester film
- Discs and sheets available with PSA or Hookit™ attachment system



3M™ Diamond Microfinishing Film 675L

Micron Grade Availability	
20	
30	
45	
74	
125	

All products are not available in all grades or converted forms. Contact your 3M distributor for product availability.

3M™ Trizact™ Diamond Cloth

3M™ Trizact™ Diamond Cloth represents the next generation in abrasive technology – combining ease of use with the ability to predictably produce accurate part geometry. Trizact Diamond Cloth products are constructed with diamond-filled, three dimensional structures, which are bonded to a durable, waterproof cloth backing. As the structures wear, fresh abrasive is continually exposed to the workpiece. The result is a more consistent, predictable process – combined with faster dimensioning and finish attainment.

Applications

Roll grinding and grinding/dimensioning of thermal spray coatings, (including tungsten carbide, chrome carbide and chrome oxide), ceramics, carbides, chilled iron composites and other hard-to-grind materials.

Converted Forms: Belts

3M™ Trizact Diamond Cloth 663FC

Backing	Micron Grade Availability	
YF wt. cloth	20	
	40	
	70	



3M™ Diamond Cloth

Diamond particles coated on a durable cloth backing with a tough resin bond system helps make these products long-lasting and cost-effective. The water-resistant backing performs well in both wet and dry applications. Available in a variety of backings and attachment systems for different applications.

Applications

Thermal spray parts, ceramics, glass, composites, ceramic and carbide coatings, chilled iron, rubber, non-ferrous metal.

3M™ Diamond Cloth

3M ID	Converted Forms	Backing	Grade Availability
631WY	Belts	Lightweight cloth	125μ
632WY	Belts	Heavyweight cloth	120
651WY*	Belts, rolls, discs, sheets	J wt cloth (standard)	1800, 1200, 600, 400, 220, 120, 100 (9-165 μ)
658WY	Discs, sheets	PSA, QRS	1800, 1200, 600, 400, 220, 120, 100
NEW! 674W	Belts, Roloc discs	Heavyweight cloth	120 220
	Discs	QRS	

Products marked with an asterisk () can be used as alternatives for achieving a final finish for customers without superfinishing equipment.



NEW!
3M™ Diamond Cloth 674W

All products are not available in all grades or converted forms. Contact your 3M distributor for product availability.

3M™ Diamond Polishing Cloth

Diamond particles encapsulated in a ceramic bead and resin-bonded to a cloth backing helps make these products long-lasting and cost-effective. Designed for use on materials harder than 7 on Mohs scale (800 Knoop). The water-resistant backing performs well in both wet and dry applications.

Applications

Hard-to-finish materials, including thermal spray parts, ceramics, composites, HVOF coatings, chilled iron and non-ferrous metal.

3M™ Diamond Polishing Cloth

3M ID	Converted Forms	Backing	Grade Availability
652WY*	Belts, rolls, discs, sheets	J wt cloth (standard)	50,000, 8000, 3000 (0.5, 3, 6 μ)
656WY	Discs, sheets	PSA, QRS	50,000, 8000, 3000, 1800 (0.5, 3, 6, 9 μ)
662WY*	Belts	Heavyweight cloth (YF Wt)	1800 (9 μ)

Products marked with an asterisk () can be used as alternatives for achieving a final finish for customers without superfinishing equipment.



3M™ Flexible Diamond Products

3M™ Flexible Diamond belts, discs and sheets are designed to help you achieve improved finishes on a wide range of hard-to-grind materials – without sacrificing cut rates. A metal bond securely anchors micron-graded diamonds to a premium flexible backing in an open dot pattern. This provides durability and long life, while allowing conformance to a variety of contours. In addition, the open dot pattern produces aggressive cutting action while reducing loading.

Applications

Roll grinding, centerless finishing, glass grinding and edge seaming. Grinding and finishing of hard materials including chilled iron, granite, carbide, composites, non-ferrous metals, thermal spray coatings (including tungsten carbide, chrome carbide and chrome oxide) and exotic alloys.

Pattern		
21	Large dots. Used for applications where loading is a problem. Grades 250µ and 300µ only.	
B2	Medium dots. 17 pellets/inch for aggressive cutting action, improved coolant flow and increased swarf removal.	
18	Small dots. 25 pellets/inch for fine finishes. Provides fastest stock removal on very hard materials such as thermal spray coatings and ceramics.	

3M™ Flexible Diamond Abrasive Grade Availability

Micron Grade	Color	
M300	No color (belts)	Orange (6002J) 
M250	Green	
M125	Black	
M74	Red	
M50	Orange	
M40	Yellow	
M20	White	
M10	Blue	
M6	Purple (belts)	 Orange (6002J) 
R30	Yellow	
R10	Blue	
R2	Orange	

“M” is metal plated, “R” is resin bonded

3M™ Flexible Diamond Belts and Rolls

3M ID	Backing Type	Description
6003J	VF	Very flexible backing; available in rolls only.
6450J	C	More flexible than Type G. Best construction for short belts. Suitable for slack belt operations, such as glass seaming, hot roll finishing. Weldlok splice.
6451J	G	Low stretch, for use with contact wheels. Suitable for roll grinding. Use for roll finishing when closer caliper splice is required. Weldlok splice.
6454J	V2S	Most flexible backing. Used for lighter duty applications, such as blending and finishing contours.
6456J	YFB	Least amount of stretch of all backings. Excellent water resistance. Very close to zero caliper splice, for centerless finishing where caliper control is important. Use in roll form for superfinishing.
6457J	VF	Very flexible backing with moderate stretch. Ideal for use on contoured surfaces. Weldlok splice.

The line going through the middle of the splice - blue in this case - indicates the abrasive grade of the belt



3M™ Flexible Diamond Sheets and Discs

3M ID	Backing/Attachment
6001J	X wt cloth (plain back)
6002J	QRS
6008J	PSA
6011J	Type F (5 mil film back)
6018J	Type F (5 mil film back w/PSA)
6022J	Heavy Duty, QRS
6058J	Laminated to Foam w/PSA
6234J	Roloc™ discs



All products are not available in all grades or converted forms. Contact your 3M distributor for product availability.

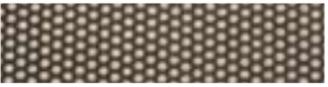
3M™ Flexible CBN Belts

3M™ Flexible CBN belts are designed to help you achieve improved finishes on a wide range of hard-to-grind materials – without sacrificing cut rates. A metal bond securely anchors micron-graded CBN to a premium flexible backing in an open dot pattern. This provides durability and long life, while allowing conformance to a variety of contours. In addition, the open dot pattern produces aggressive cutting action while reducing loading.

Applications

Grinding and finishing of hardened tool steels, superalloys and other ferrous materials.

Converted Forms: Belts

Pattern		
B2	Medium dots. 17 pellets/inch for aggressive cutting action, improved coolant flow and increased swarf removal.	
18	Small dots. 25 pellets/inch for fine finishes. Provides fastest stock removal on very hard materials such as thermal spray coatings and ceramics.	

3M™ Flexible CBN Belts

3M ID No.	Belt Type	Pattern	Grade Availability
1451J	G	B2	M125, M250
		18	M40, M74, M125

3M™ Flexible CBN Abrasive Grade Availability

Micron Grade		Color
M250	Green	
M125	Black	
M74	Red	
M40	Yellow	

“M” is metal plated

All products are not available in all grades or converted forms. Contact your 3M distributor for product availability.



Superabrasive Wheel Basics

Superabrasive wheels are composed of diamond or CBN mineral abrasive bonded to a core. The bond types are described on their respective product pages; the information below is general background on superabrasive wheels.

Abrasive types

- **Diamond** – the hardest substance known to man and the only abrasive capable of effectively grinding, cutting or shaping ultra-hard materials such as cemented carbides, ferrites and ceramics. Available in grit sizes 16-3000.
- **Cubic Boron Nitride (CBN)** – man-made, and second only to diamond in hardness. Durable, with accurate geometric control; it can efficiently grind hardened tool steels and superalloys. Available in grit sizes 50-600.

Wheel hardness

Wheel hardness is an alphabetic indicator of the cutting action; increasing letters are harder bonds. Increased wheel hardness results in longer wheel life, but at decreased cutting rates.

Concentration

Concentration is the amount of abrasive mineral in the bond, in a weight to volume ratio. A concentration of 100 is defined as 72 carats per cubic inch. For a *general* guide to applications at different concentrations, see table below.

Concentration application guidelines

Concentration	Application
100	<ul style="list-style-type: none">• Heavy-duty grinding• Maximum wheel life
75	<ul style="list-style-type: none">• General purpose grinding
50	<ul style="list-style-type: none">• Fine finish with grit <800

Cores

A variety of cores are available, including:

- Aluminum
- Steel
- Composite
- Bakelite
- Abrasive
- Copper

All products are not available in all grades or wheel types. Let our experts help you determine the best superabrasive wheel construction for your application. Call 3M's Customer Service Representatives at 1-800-736-2500.



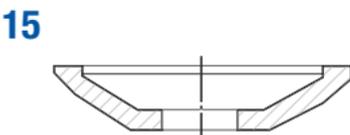
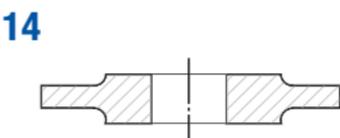
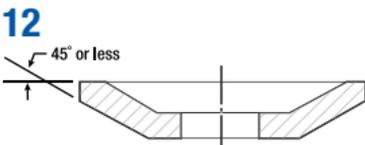
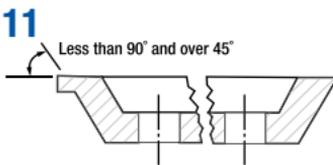
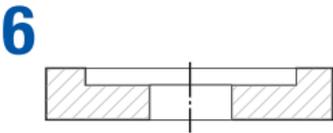
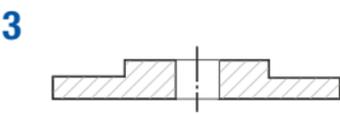
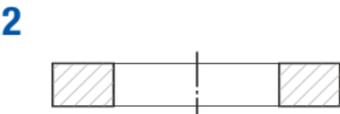
Superabrasive Wheel Shapes

This system is designed to describe the shape of abrasive wheels using a series of numbers and letters. Each position uses a letter or number as shown in the diagram at right; the columns below indicate the range of possibilities for each position. See pages 14-15 for examples.

All products are not available in all grades or wheel types. Contact your 3M Customer Service Representative for product availability.

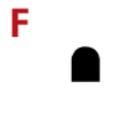
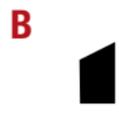
Position 1

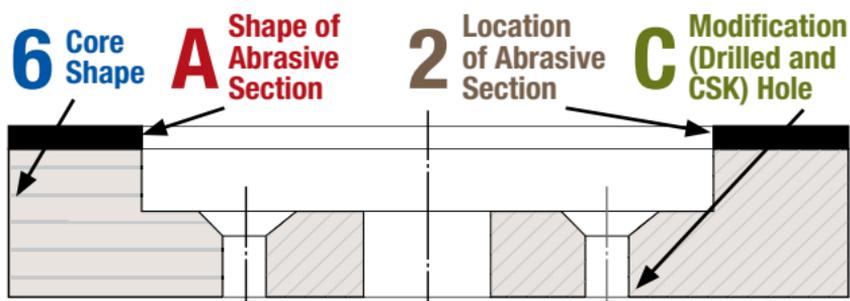
Number designating core shape



Position 2

Letter designating shape of abrasive section





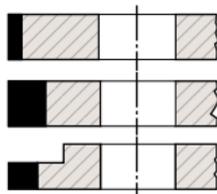
Typical Example of Superabrasive Wheel Cross Section and Designations

Solid black area indicates abrasive placement.

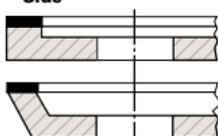
Position 3

Number designating the location of the abrasive section of the core

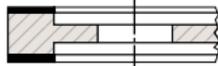
1 — Periphery



2 — Side



3 — Both Sides



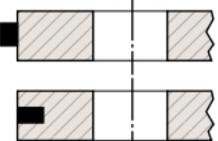
4 — Inside Bevel or Arc



5 — Outside Bevel or Arc



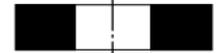
6 — Part of Periphery



7 — Part of Side



8 — Throughout



9 — Corner



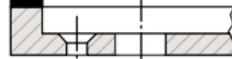
Position 4

Letter designating a modification

B — Drill and Counterbore



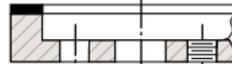
C — Drill and Countersink



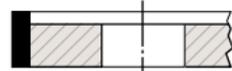
H — Plain Hole



M — Holes Plain and Threaded



P — Relieved One Side



R — Relieved Two Sides



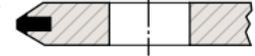
S — Segmental Relieved Sides and Slotted



T — Threaded Holes



Q — Abrasive Inserted



V — Abrasive Inverted



Y — Abrasive Inserted & Inverted



Superabrasive Wheel Shapes with Abrasive Placement

See pages 12-13 for alphanumeric naming diagram and available options.



1A1



1A1R



6A2C

11V9



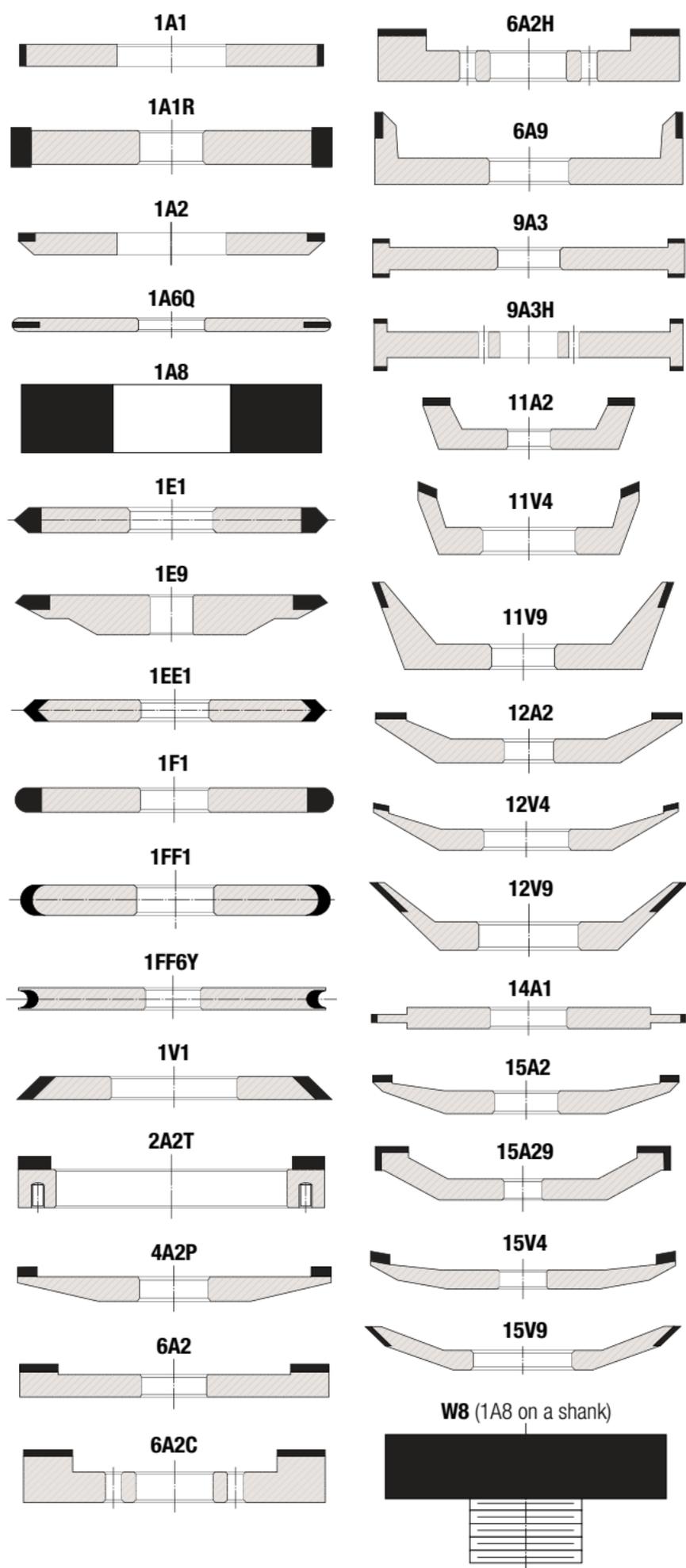
1V1 (45° angle)



1V1 (10° angle)

All products are not available in all grades or wheel types. Contact your 3M Customer Service Representative for product availability.

Solid black area indicates abrasive placement.



Recommended Superabrasive Wheel Applications

Materials	Grinding Wheel Type	
	Resin Diamond	Resin CBN
Ceramics	•	
Carbides (including Cermets)	•	
Carbon-Carbon composites	•	
CVD Diamond		
Fiberglass/Graphite composites		
Friction lining		
Graphite		
Hardened steels		•
Ferrite (ceramic magnet)		
Plastics		
Polycrystalline diamond		
Rubber		
High Nickel alloys		•
Stone, concrete		
Titanium		
Thermal spray coatings	•	
Tool steels		•

Industries	Resin Diamond	Resin CBN
Aerospace		
Automotive		
Bearing	•	•
Ceramics	•	
Composites		
Cutting tools manufacturing/repair/sharpening	•	•
Dental tools		
Diamond tooling manufacturing	•	
Die manufacturing	•	•
Foundries		
Grinding services	•	•
Medical device manufacturing		
Oil and gas exploration	•	
Powertrain		
Roll (cylindrical) grinding/repair services	•	•
Stone, concrete		
Toolroom	•	•
Woodworking	•	•

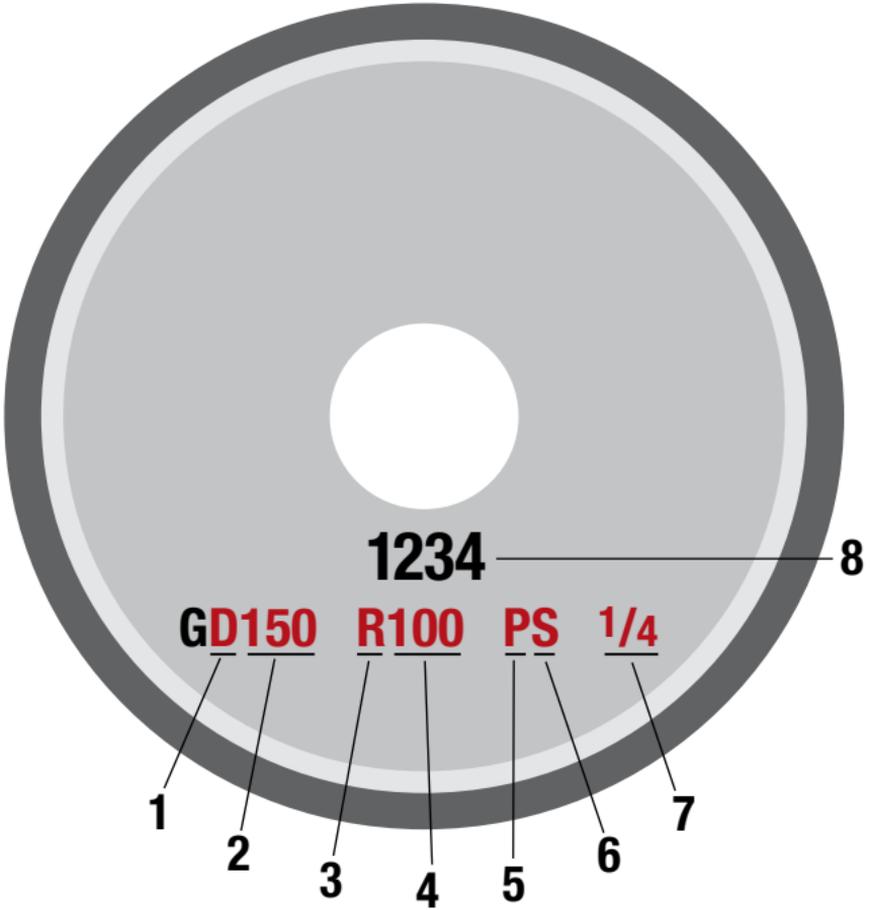
Grinding Wheel Type

Polyimide Diamond	Polyimide CBN	Metal Bond Diamond	Vitrified Diamond	Vitrified CBN	Brazed Diamond	Brazed CBN
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Superabrasive Wheel Specifications

The alphanumeric code on the wheel identifies its construction.



1. Abrasive type (D-Diamond, B-CBN)
2. Abrasive size – grit size
3. Bond hardness – higher letters (closer to Z) are harder
4. Concentration (see p. 10)
5. Bond type
 - B-Resin
 - P-Polyimide
 - M-Metal
 - V-Vitrified
6. Special bond (if any)
7. Abrasive depth in inches (fractions of an inch)
8. Production number



Ordering Information

Call 3M's experts at 1-800-736-2500. Your 3M Customer Service Representative will work with you to determine the best superabrasive wheel specifications for your operation. Useful information could include:

Equipment and operations information

- Machine name and type
- Spindle RPM and HP
- Type of operation
- Plunge or traverse
- Wet (flood or mist) or dry
- Coolant type and ratio
- Stock removal per pass
- Total stock removal
- Finish required
- Size of surface to be ground
- Main emphasis (cutting speed/form retention/overall life)

Material ground

- Solid carbide (grade/cobalt percentage)
- Carbide and other (% carbide/% other)
- Hardened steel (type/Rockwell "C" hardness)
- Other (ceramic, etc.)

Current wheel type

- Wheel shape
- Diameter
- Wheel width
- Abrasive depth
- Hole
- Bond type (resin/metal/polyimide/vitrified/brazed)
- Manufacturer

All products are not available in all grades or wheel types. Contact your 3M Customer Service Representative for product availability.

For fastest response, complete a Trial/Engineering Report at www.3M.com/superabrasives.

3M™ Superabrasive Wheels – Resin Bond

Resin bond superabrasive wheels are designed for fast and cool cutting. They perform well in both wet and dry grinding applications. Bond systems available for either wet and dry, or wet applications.

Applications

- **Diamond** – Precision finishing of ceramics; grinding tungsten carbide, cermets, ceramic thermal spray coatings, polycrystalline diamond (PCD) and glass; grinding of carbide-tipped and inserted tools such as saws, cutters, reamers, endmills, etc.; precision grinding on carbide dies, rolls and carbide wear parts.
- **CBN** – Grinding tool and die steels, high-speed steel, bearing steels, cast iron and superalloys.

Standard Options	
Available grit sizes	60/80 to 500 mesh; 40 to 2 micron
Concentration	50, 75, 100, 125, 150
Wheel sizes (O.D.)*	1/2" to 30"
Wheel width*	0.02" to 20"
Abrasive layer depth*	1/8", 3/16", 1/4"; then 1/8" increments up to 2"

*Metric sizes available; depth can be customized.

Most common wheel shapes:

Fluting: 1A1, 1V1, 1F1

Primary and secondary relief or end work: 11V9

Gashing: 1V1, 12V9 – 30° or 45°

Grinding top/bottom inserts: 6A2

Grinding peripheral inserts: 2A2T

OD grinding: 1A1, 1A1J

Centerless grinding: 1A1, 1A1J

Surface grinding: 1A1

Woodworking:

Face grinding: 4A2P, 4V9, 12V9

Top grinding: 6A9, 14V1, 12A2, 11V9

Side grinding: 4A1, 1A1



All products are not available in all grades or wheel types. Contact your 3M Customer Service Representative for product availability.

3M™ Superabrasive Wheels – Polyimide Bond

Polyimide resin superabrasive wheels are specially designed to provide high cut rates and longer wheel life than standard resin bond wheels. Use in wet grinding applications with high volume flood coolant systems. Use for heavy stock removal where superior form retention is required. Requires higher HP grinding equipment.

Applications

- **Diamond** – Fluting, gashing and end work of carbides used in cutting tools and PCB drills; grinding hardened steels and carbide cutting tools.
- **CBN** – Grinding steel, hardened steel, tool steels; ferrous metals where heat generation must be minimized.

Standard Options	
Available grit sizes	60 to 500 mesh; 40 to 2 micron
Concentration	100, 125, 150
Wheel sizes (O.D.)*	1/2" to 16"
Wheel width*	0.02" to 3"
Abrasive layer depth*	For fluting/gashing: 1/4", 3/8", 1/2" For relief: 1/8" depth, 3/8" insert

*Metric sizes available; depth can be customized.

Most common wheel shapes:

Fluting: 1A1, 1V1, 1F1

Primary and secondary relief or end work: 11V9

Gashing: 1V1, 12V9 30° or 45°

Grinding top/bottom inserts: 6A2

Grinding peripheral inserts: 2A2T

Surface grinding: 1A1

Woodworking:

Top grinding: 6A9, 14V1, 12A2, 11V9

Side grinding: 4A1, 1A1



Your 3M Customer Service Representative will work with you to determine the best superabrasive wheel specifications for your operation. Call 3M's experts at 1-800-736-2500.

3M™ Superabrasive Wheels – Metal Bond

Metal bond superabrasive wheels have the hardest matrix and are designed to retain their shape and size under extreme grinding conditions. They grind more slowly and generate more heat, so they must be used with high volume flood coolant systems. Excellent for grinding non-ferrous materials.

Applications

- **Diamond** – Grinding of non-ferrous materials such as ceramics, glass, carbides, ferrites, stone, quartz and concrete.

Standard Options	
Available grit sizes	20 to 500 mesh; 40 to 6 micron
Concentration	25, 50, 75, 100, 125, 150
Wheel sizes (O.D.)*	1/4" to 16"
Wheel width*	0.06" to 8"
Abrasive layer depth*	1/8", 1/4", 3/8", 1/2"

*Metric sizes available; depth can be customized.

Most common wheel shapes:

1A1, 1B1, 1V1, 14A1, 3A1



Your 3M Customer Service Representative will work with you to determine the best superabrasive wheel specifications for your operation. Call 3M's experts at 1-800-736-2500.

3M™ Superabrasive Wheels – Vitrified Bond

Vitrified superabrasive wheels feature a ceramic bond designed to be more free cutting than metal bond wheels. Vitrified bonds provide the better characteristics of both resin and metal bonded products. They are brittle, but thermally stable and suitable for in-process dressing. Their dressibility makes them particularly well-suited for form grinding applications, especially on automatic equipment.

Applications

- **Diamond** – Grinding carbide, ceramics, CVD, PCD and metal matrix composites.
- **CBN** – Grinding hardened steel, tool steels and superalloys; manufacture and repair of cutting tools; cylindrical grinding; automotive powertrain components; bearings; aircraft engine and power turbine components.

Standard Options	
Available grit sizes	40 mesh to 2 micron
Concentration	75, 100, 125, 150, 175, 200
Wheel sizes (O.D.)*	1/4" to 30"
Wheel width*	1/16" to 24"
Abrasive layer depth*	1/8" increments up to 1"

*Metric sizes available; depth can be customized.

Most common wheel shapes:

6A2, 2A2T, 1A1, 14A1, 1E1 and form wheels



All products are not available in all grades or wheel types. Contact your 3M Customer Service Representative for product availability.

3M™ Superabrasive Wheels – Brazed

Brazed wheels consist of a single layer of abrasive chemically attached to a steel core. This allows grain spacing and placement control. They generally cut more aggressively than bonded wheels and offer longer life than plated wheels. Brazed wheels are an excellent choice for form grinding and other heavy stock removal applications, and do not require dressing.

Applications

- **Diamond** – Form grinding and straight grinding of ceramics, carbon-carbon composites, fiberglass-graphite composites, cast iron, ferrite, friction lining, graphite, plastics and rubber.
- **CBN** – Form grinding and straight grinding of hardened steels, superalloys and tool steels, such as those found in medical prosthetics and aerospace.

Standard Options	
Available grades	16 to 220 mesh
Surface coverage	5% to 100% of area (controlled)
Wheel diameter*	1/8" to 24"
Wheel width*	0.06" to 20"

*Metric sizes available.

Most common wheel shapes:

Form wheels made to customer's blueprint.



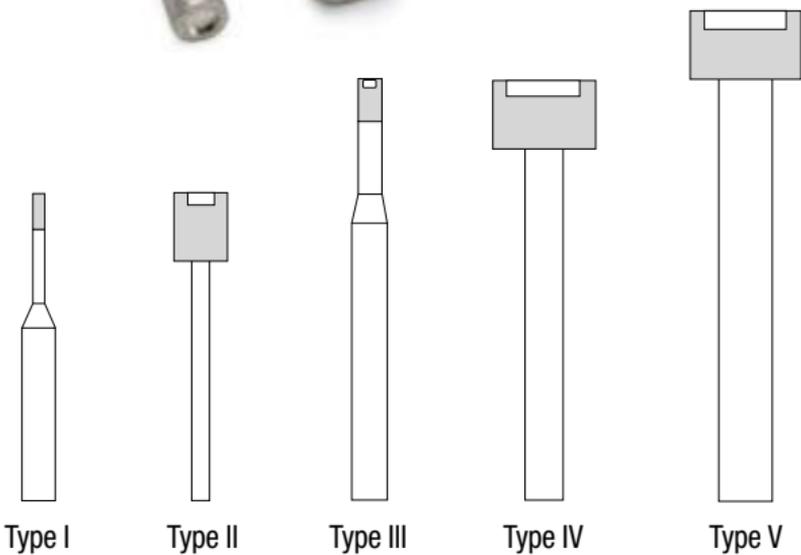
All products are not available in all grades or wheel types. Your 3M Customer Service Representative will work with you to determine the best superabrasive wheel specifications for your operation. Call 3M's experts at 1-800-736-2500. .

3M™ Plated Mandrels

Abrasive grains electroplated on quality mandrels. All shanks are made of hardened and ground steel for assured concentricity – no truing required! Commonly used for ID, jig or contour grinding on extra hard materials. Coolant is optional, but enhances performance. If used with CBN mandrels, coolant should be oil-based.

Available in 120 and 220 mesh sizes (240 mesh available in 0.018" diameter only) in a wide variety of shapes and sizes; straight and tapered shanks. Choose a mandrel sized at 70-80 percent of your hole diameter for best performance.

- **Diamond** – for grinding ceramic, carbide, composite and non-ferrous materials.
- **CBN** – for grinding hardened steels, superalloys and ferrous metals 40 RC or harder. CBN mandrels are identified by a copper dot on the end of the shank.



Mandrel diagrams are not to scale.

3M™ Diamond Metal Bond Discs

These durable products have precisely graded diamond particles electroplated to a 1/16" thick brass plate for heavy stock removal, shaping, and lapping of hard-to-grind materials. For use on lap machines with a rigid, flat support plate, with water or other lubricant to prolong disc life.

Applications

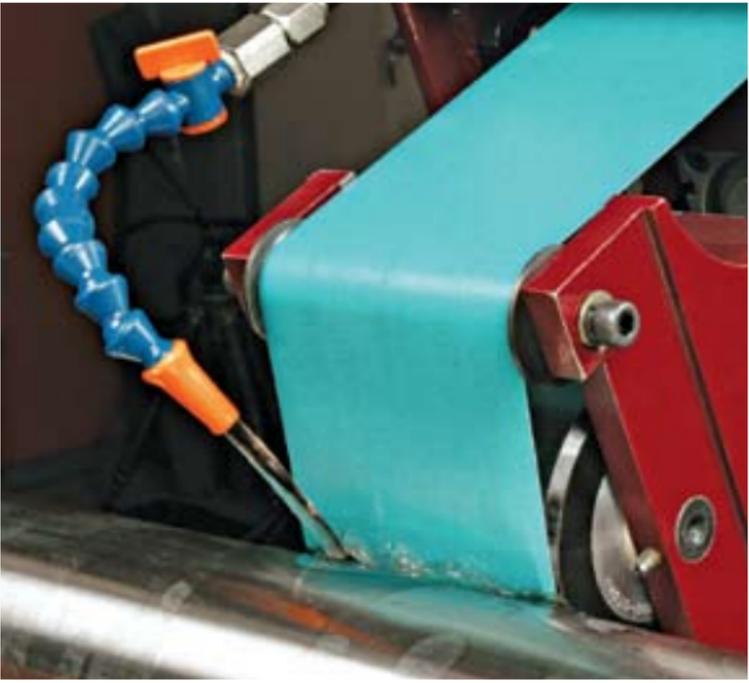
Flat lapping, metallurgical testing, sharpening carbide tools, gem faceting and grinding glassy materials that generate erosive swarf.

Sizes and Grades

3M ID	Backing/Attachment	Sizes	Grades
6MB1 Cup Wheel	—	6" x 1" x 1-1/4" cup wheel only	15, 30, 45 micron; 220 and 100 mesh
6MB1	Plain	6", 8" and 12" diameter discs	6, 15, 30, 45 micron; 220 and 100 mesh
6MB2	Die-cast aluminum		
6MB3	Canvas backing		
6MB8	PSA		



All products are not available in all grades. Contact your 3M Customer Service Representative for product availability.



3M™ Hand Tools and Specialties

3M™ Diamond Hand Laps 6200J

Micron graded diamond abrasive bonded to a firm foam handblock. For deburring and finishing non-ferrous metals, stone, glass and ceramic materials.

Grades: metal bond – 250, 125, 74, 40, 20 and 10 micron; resin bond – 30 and 10 micron.



3M™ Diamond Files 6210J

Micron graded diamond abrasive anchored to a rigid plastic file, in a metal bond matrix; open dot pattern. For deburring and finishing non-ferrous metals, stone, glass and ceramic materials.

Grades: 125, 74, 40 and 20 micron.



3M™ Whetstones 6220J

Micron graded flexible diamond abrasive, bonded to a rigid block. Excellent for stone faceting and tool sharpening. Available in 6" x 2" size in 125, 74 and 40 micron grades.



Color chart for 6200J, 6210J, 6220J

Micron Grade		Color
M250	Green	
M125	Black	
M74	Red	
M40	Yellow	
M20	White	
M10	Blue	
R30	Yellow	
R10	Blue	

“M” is metal plated, “R” is resin bonded

All products are not available in all grades. Contact your 3M Customer Service Representative for product availability.

3M™ Diamond Hand Hones

Fine grade diamond in a $\frac{3}{8}$ " x 1" resin bond matrix mounted on one or both ends of a 4" aluminum holder.

Used for hand finishing and deburring dies, hard steel, ceramics, composites and

non-ferrous parts. Available in 120, 220 and 400 mesh sizes.



Mounted Ends	Grade
1	120
1	220
1	400
2	120/220
2	220/400

3M™ Diamond Lapping Compounds and Slurries

In a variety of diamond sizes for use with common carrier vehicles. Available in 5 or 18 gram disposable applicator guns.

Applications	National Bureau of Standards	Micron Size Range	Mesh Size Equiv.	Color	Diamond Concentration
Superfinishing Extra high finish	Super-fine 1/2 1	1/4 0-1 0-2	60,000 50,000 14,000	White Gray Ivory	□ ■ ■ Standard 1/2 – light 1 – light 1 – medium 1 – heavy
Extra high finish	3	1-5	8,000	Yellow	■ 3 – light 3 – medium 3 – heavy
High finish	6	4-8	3,000	Orange	■ 6 – light 6 – medium 6 – heavy
Fine finish	9	6-12	1,800	Green	■ 9 – light 9 – medium 9 – heavy
Light cutting Medium finish	15	8-22	1,200	Blue	■ 15 – light 15 – medium 15 – heavy
Medium cutting	30	20-40	600	Red	■ 30 – light 30 – medium 30 – heavy
Heavy cutting	45	30-60	500	Brown	■ 45 – light 45 – medium 45 – heavy
Fast, coarse cutting	Mesh	60-120	230-325 170 mesh 120 mesh	Purple Grey-black Black	■ ■ ■ Heavy Heavy Heavy

Recommended Superabrasive Dressing and Truing Tool Applications

Grinding Wheel Materials	Dressing and Truing				
	Diamond Dressing Roll	Diamond Dressing Disc	Stationary Dressing Tools	Truing Tool	Dressing Sticks
Conventional Abrasives	•	•	•		
Diamond Resin Bond				•	•
Diamond Vitrified Bond		•			
CBN Resin Bond		•	•	•	•
CBN Vitrified Bond		•			

Industries

Aerospace	•	•	•		
Automotive	•	•	•		
Bearing		•	•		
Ceramics					
Composites					
Cutting tools manufacturing/repair/sharpening	•	•	•		
Dental tools					•
Diamond tooling manufacturing					•
Die manufacturing			•	•	
Foundries			•		
Grinding services	•	•	•	•	
Medical device manufacturing		•	•		
Oil and gas exploration		•	•		
Powertrain	•	•	•		
Roll (cylindrical) grinding/repair services					•
Stone, concrete					
Toolroom			•		•
Woodworking					•





3M™ Rotary Dressing Discs

Powder metal products with natural or synthetic diamond sintered on the periphery of the disc. For use on CNC machines, these precision discs perform better than single-point dressers. Feature greater diamond contact for improved accuracy and surface finish, longer life and shorter dressing cycles.

Applications

For straight and form (CNC) dressing of conventional and superabrasive wheels.

For special applications, brazed diamond construction is available.

NDS – natural diamond specially selected and sintered into a metal bond; high precision, with a wide range of profiles; can be relapped.

IMP – diamond uniformly distributed in a random pattern to various depths; medium precision, with a wide range of profiles.

PCD or CVD – polycrystalline diamond segments or segments made by chemical vapor deposition sintered into a metal bond. High precision, extremely rugged, sharp included angles and radii. Can be relapped multiple times.

NDP – natural diamond positive plated onto steel blanks. Medium precision, wide range of profiles, dresses wheels aggressively. Undamaged blanks can be replated.

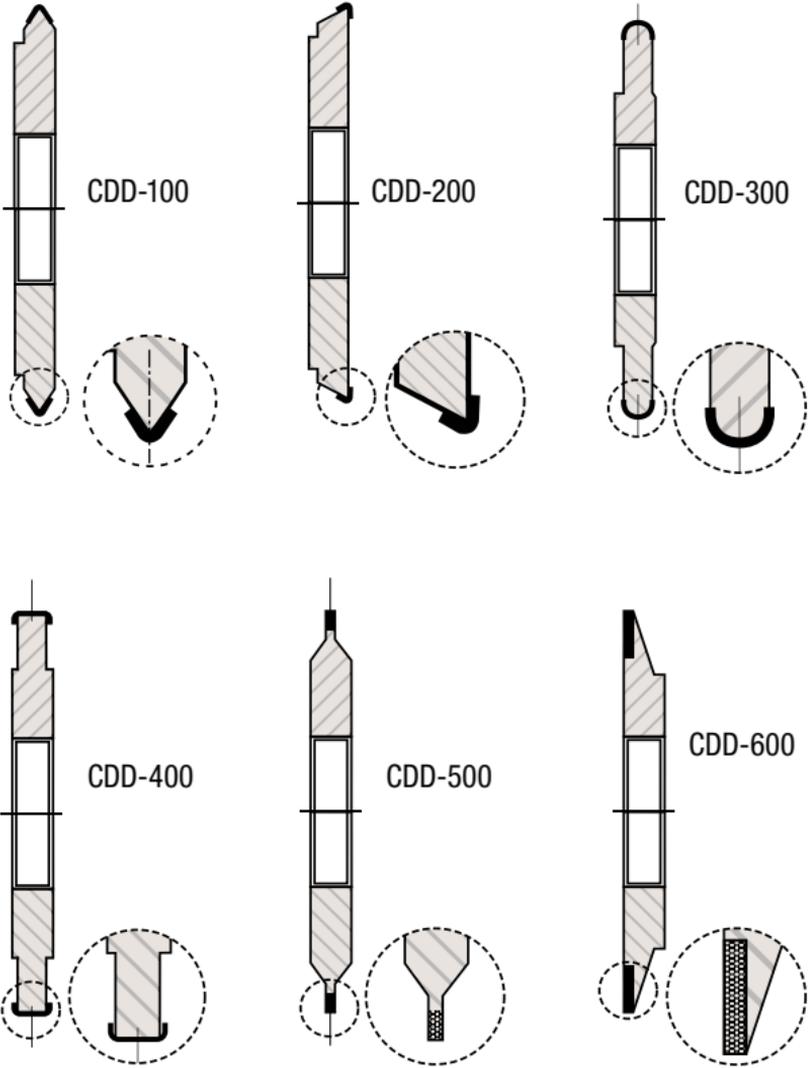
3M™ Brazed Discs – constructed of a proprietary alloy. Will true straight, angled or sides of wheels, with or without coolant.

Rotary dressing disc dimensions

	Standard Options
Disc diameter	1" to 8"
Disc thickness	1/4" to 3"



Rotary Dressing Disc Popular Shapes



3M™ Diamond Dressing Roll

A single layer of diamond set in a powdered metal matrix bonded to a steel core. Brazed and plated diamond construction also available for special applications.

Application

Full form dressing of abrasive grinding wheels. For use on superalloys, particularly automotive and powertrain component grinding.

Standard Options	
Available grit sizes	18 to 40 mesh
Roll diameter	1" to 8"
Roll width	1/4" to 4"

3M Stationary Dressing Tools

Natural diamond stone set in steel shanks of various shapes for straight or form dressing.

Applications: Truing and dressing of conventional grinding wheels, and occasionally used on resin and vitrified CBN wheels.

Configurations – Single-point, multi-point, chisel shape, straight, angle, cylindrical, conical.

3M™ Single-point Dressing Tool

Standard grade – diamond tip for face dressing. Available in $\frac{3}{8}$ " or $\frac{7}{16}$ " shank; 0.25, 0.33, 0.50, 0.75 or 1.0 carat weight.

Premium-grade – a more durable diamond for use on ceramic grain wheels and other difficult-to-dress wheels. $\frac{3}{8}$ " or $\frac{7}{16}$ " shank; 0.33 or 0.50 carat weights.



3M™ Phono-point Dressing Tool

Sharp, sturdy diamond tip for internal radii dressing applications; maximum 0.005" tip radius; available in $\frac{1}{8}$ " \times 1" or $\frac{7}{16}$ " \times 2" shanks and 60°, 75° or 90° included angles.



We have many different sizes and shapes of stationary dressing tools available. Your 3M Customer Service Representative will work with you to determine the best ones for your operation.

Call 3M's experts at 1-800-736-2500.

3M™ Multi-point Dressing Tool

5 or 7 high-quality diamonds configured in a single layer; metal bond matrix.

Applications: Dressing applications requiring the highest removal rates.



3M™ Diamond Dresser

Multi-point dresser containing whole natural diamonds. Used in severe dressing applications for heavy stock removal.

Applications: Straight dressing where single-point tools are not economical.

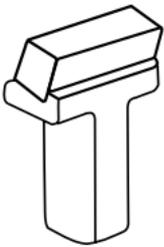


3M™ Impregnated Grit Dressing Tool

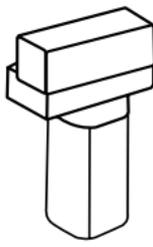
Durable diamond grains in a metal bond matrix in straight or offset configurations (15° offset, straight, or cylindrical straight round); designed for common dressing applications.



15°



Straight



Cylindrical, Straight Round



3M™ Dressing and Truing Tools

3M™ Truing Tool

The proprietary alloy is excellent for truing resin bond diamond and CBN wheels; will true straight, angles or sides of wheels. Must be used without coolant. Available in 1/4", 3/8", 1/2" and 5/8" diameters for use with 3M™ Holding Blocks.



3M™ Holding Blocks

Used to mount 3M™ Truing Tool (shown together in photo above); available in Heavy Duty for 1/4" or 3/8" diameter tools and Extra Heavy Duty for 1/2" and 5/8" diameter tools.

3M™ Dressing Sticks

The most common means of dressing superabrasive wheels. Made of aluminum oxide; available in 150 and 220 grits in popular sizes.



Size	Grit
1/2" x 1/2" x 4"	220
3/4" x 3/4" x 4"	150
1" x 1" x 6"	220

3M™ Truing and Dressing Machine E339V

An accurate and versatile machine used to true and dress diamond and CBN wheels and wheel packs so they grind at maximum efficiency. Used by superabrasives manufacturers to true forms accurately, as well as by end users to re-true and re-dress forms. Accommodates a wide variety of wheel sizes. Self-contained optical inspection equipment allow form inspection without removing it from the machine.

Features

- GenCAD v3.0 provides the user with a standard shape library and the ability to import DWG & DXF files.
- Quick-change spindle systems.
- Internal Dust Extraction System.
- Motorized linear rail slides for rigidity and tight tolerances. Digital readouts enable users to accurately measure wheel diameters and to position wheels at the push of a button.
- Powerful 2 HP motor on work wheel, and 1 HP motor on truing wheel, provide efficient truing of wheel packs and larger wheels.
- Equipped with 19" high-resolution LCD monitor.
- Software features user-selectable language interface (English/German). Other languages available on request.



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