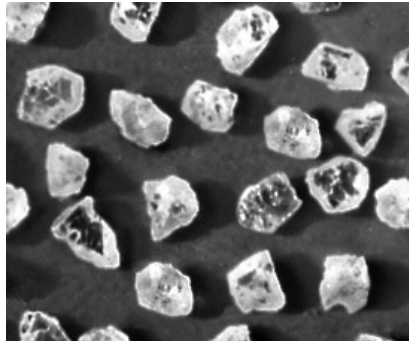


superabrasive
DRESSING TOOLS





Introduction - Diamonds & Dressing Tools

Natural diamonds are available in many shapes: octahedrons, dodecahedrons, flats, elongated shapes, triangles, irregular shapes and grits.

Diamond qualities vary from the finest pure crystals, free from flaws, cracks or impurities, to the lowest grade crystals which can be considerably flawed.

Abrasive Technology's team of associates have the experience to help you choose the best diamond types and quality to match your tooling needs. We also have highly qualified design engineers to custom design a tool to fit your exacting requirements.

Diamond Grades	
APPLICATION	RECOMMENDED
For hard wheels or when very fine finishes and close tolerances are required, such as thread, bearing and gear grinding	"A" quality – 4 resettable points
For demanding requirements and close tolerance work	"B" quality – 3 resettable points
For average grinding conditions	"BC" quality – 2 resettable points
For general purpose work, still resettable	"C" quality – 1 resettable point
For general purpose work, non-resettable	"NR" Non-Resettable

Basic Dressing Applications	
APPLICATION	TOOL TYPE
Dressing straight grinding wheels Simple profiles, thread and gear grinding	Single-Point Dressing Tool
Straight and profile dressing	Profile/Blade Dressers
Large OD wheels, surface and centerless wheels	Multi-Point/Impregnated Dressers
Angle, radius and profile dressing	Chisel & Cone Profile Tools (Plain & Diaform Style)
Custom designed to meet grinding profile requirements	PCD Form Dressers

Recommendations for Single-Point Dressers

1. Mounting the dressing tool

- Mount the tool with minimum overhang to avoid vibration.
- Never mount a dressing tool in an oversized hole.
- Mount the diamond with a 10 to 15 degree drag angle pointing in the direction of wheel travel. When a straight dressing fixture is mounted on the table, position the diamond point past the center. A diamond pointing to the center of the wheel will cause vibration and shorten the tool life. (Figure 1)

2. Coolant

- Dress dry when grinding dry. Dress with coolant if it is used during the grinding cycle.
- Do not turn the coolant on if the dressing cycle was started dry. The thermal shock may fracture the diamond.
- Direct a generous flow of coolant to the diamond at all times.

3. Operating parameters

- Start the dressing cycle in the center of the wheel. (Figure 2)
- Traverse rate: See chart below.

• Infeed:

36 - 60 grit whl .001" (.025mm) to max .002" (.05mm)

80 - 180 grit whl .0005" (.013mm) to max .001" (.025mm)

220 grit and finer .0002" (.005mm) to max .0005" (.013mm)

• Index the diamond dresser frequently

When the diamond wears, the increased contact area will generate more heat and shorten the tool life. Index the dresser 20 to 30 degrees when the wear flat reaches 1/16" (1.6mm). The diamond will then develop a conical wear pattern. (Figure 3)

• Reset the diamond before a 3/32" (2.4mm) flat develops

FOR "SG" WHEELS: Reduce infeed rate by 50% and increase the traverse rate. Use good quality diamonds with a sharp point.

1) General purpose dressing applications

$$\text{Diamond size} = \frac{\text{Diameter of wheel (D)} + \text{Width (W)}}{10}$$

2) Severe dressing applications

$$\text{Diamond size} = \frac{\text{Diameter of wheel (D)} + \text{Width (W)}}{7}$$

4. Truing time cycle

- To calculate the truing cycle, determine:
 - The grit size of the grinding wheel.
 - The speed of the grinding wheel.
 - The width of the grinding wheel.
- To dress an open structure and aggressive grinding wheel, the diamond should not hit each abrasive grain more than once per revolution. Therefore, grit size and wheel speed will determine traverse rate.
- To achieve a better finish, slow down the traverse rate to hit each grain a maximum of 2 times per revolution. If the traverse rate is too slow the diamond dulls the abrasive and the grinding wheel will burnish and cause heat checks.

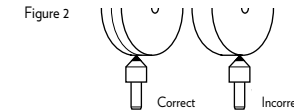
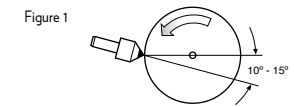


Chart Of Truing Time In Seconds Per Inch*
(Lower figures for open wheel—Higher figures for finish)

Rev/Min.	Grit size								
	36	46	60	80	100	120	150	180	220
500	6-10	8-15	12-20	18-30	24-40	30-50	35-56	40-60	50-80
750	4-7	6-10	8-13	12-20	16-26	20-33	27-42	30-45	38-60
1,000	3-5	4-8	6-10	9-15	12-20	15-25	18-28	20-30	25-40
1,250	2-4	3-6	5-8	7-12	10-16	12-20	14-22	16-24	20-32
1,500	2-3	3-5	4-7	6-10	8-14	10-17	12-19	13-20	17-27
1,750	1.5-3	2.5-4	3.5-6	5-9	7-12	9-14	10-16	11-17	14-23
2,000	1.3-2	2-4	3-5	4-8	6-10	8-12	9-14	10-16	11-17
2,500	1-2	1.5-3	2.5-4	3.5-6	5-8	6-10	7-11	8-12	10-16
2,750	1-2	1.4-2.8	2-3.5	3-5.5	4-7	5.5-9	6-10	7-11	9-15
3,200	.9-1.7	1.3-2.6	1.7-3	2.6-5	3-6	4.5-8	5-9	6-10	8-13
3,600	.8-1.5	1-2	1.5-2.5	2.3-4	2.5-5	4-7	4.5-8	5-8.5	7-12

*To convert truing time into seconds per centimeter, divide table value by 2.54.

Instructions

1. Check the spindle speed.
2. Go to the corresponding grit size column.
3. Multiply the indicated seconds by the width of the wheel.
4. The lower figure applies to dress an open wheel.
5. The higher figure results in a finer finish.

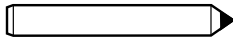
EXAMPLE. For a 36" x 4" (91.44cm x 10.16cm) 46 grit wheel running at 500 RPM, the dressing time will be 8 seconds x 4 = 32 seconds to dress an open wheel, 15 x 4 = 60 seconds to dress for finer finish.

These calculations assume that a relatively sharp diamond is used.

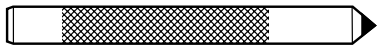
DRESSING TOOLS Single-Point

Shank Designs

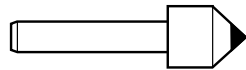
Straight Shank



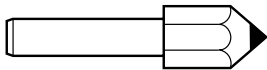
Hand Dresser



Plain Headed Shank



Hexagon Headed Shank



Taper Shank



Plain Headed Taper Shank



Hexagon Headed Taper Shank



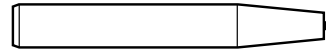
Threaded Shank



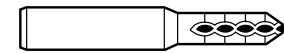
Chisel Shank



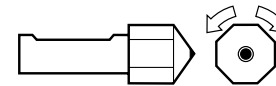
Taper Headed Shank



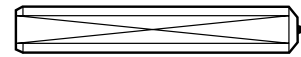
Magazine Dresser (Non-Resetttable)



Turnable Head Dresser



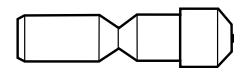
Location Flat



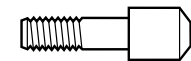
Recess for Location



Recess for Point Location



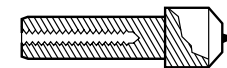
Partially Threaded



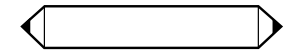
Totally Threaded



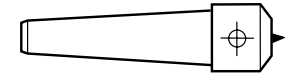
Internal Thread



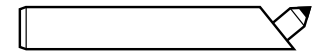
Double Ended



Extraction Hole



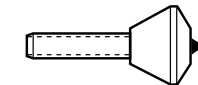
Cranked Head



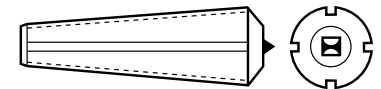
Screw Driver Slot



Tapered Head for Coolant



Coolant Slots



All the above shank designs are available in Resetttable and Non-Resetttable formats.

Resettable & Non-Resettable Single-Point Dressers

Recommended Non-Resettable Applications

- Toolroom grinders
- Burr grinding wheels
- O.D. and surface grinding wheels
- Centerless regulating wheels
- up to 18" x 3" (4500 x 750mm)
- General purpose work

Recommended Resettable Applications

- Very hard wheels
- Profile grinders
- SG wheels
- To dress small internal grinding wheels
- Thread or gear grinders

HOW TO ORDER Tool specs:

1. Design/description of tool shank
2. Shank size
3. Quality of diamond
4. Size of diamond
5. Dimensions of wheel to be dressed

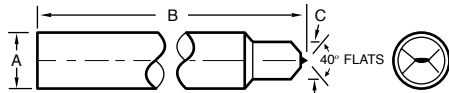
Diameters of 1/4" (6.3mm) to 3/4" (19mm), up to 6" (150mm) long.

Precision Dressing Tools

FOR THREAD GRINDERS

Dressing tools for thread grinders require very sharp crystals. They are center set to .003" (.076mm) T.I.R.

To Dress Concave Radii

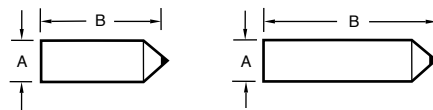


Dimensions					
A		B		C	
Inch	mm	Inch	mm	Inch	mm
3/8	9.5	3	76.20	1/4	6.35

Natural diamonds center set to .003" (.076mm) T.I.R.

To Dress Radius			
Inch	mm	Inch	mm
.010	.254	.032	.813
.015	.381	.062	1.574
.020	.508	.125	3.174
.025	.635		

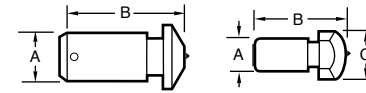
JONES & LAMSON Style



Dimensions			
A		B	
Inch	mm	Inch	mm
1/4	6.35	1	25.40
1/4	6.35	2	50.80

FOR INTERNAL GRINDERS

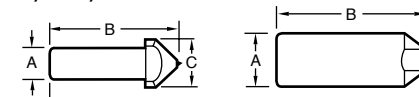
Heald Style



Dimensions					
A		B		C	
Inch	mm	Inch	mm	Inch	mm
1/4	6.35	11/16	17.46	3/8	9.52
7/16	11.10	1	25.40	-	-

Diamond is center set to .002" (.051mm) T.I.R.

Bryant Style

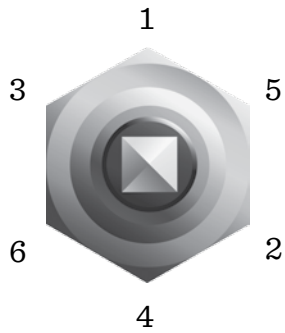
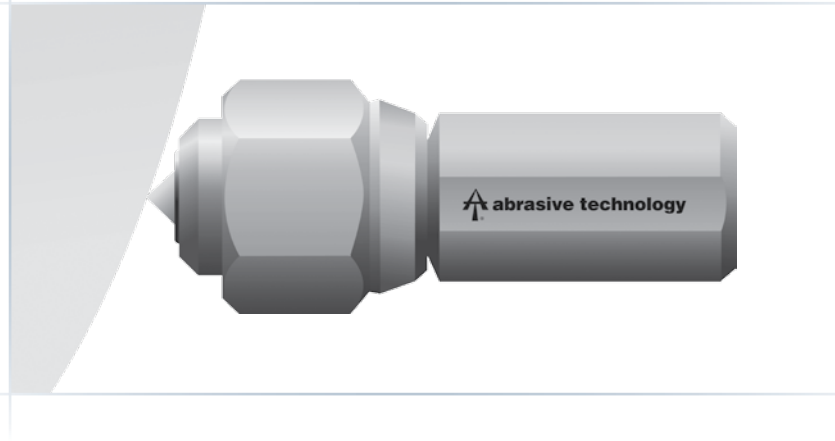


Dimensions					
A		B		C	
Inch	mm	Inch	mm	Inch	mm
1/16	1.59	1/2	12.70	1/8	3.17
1/4	6.35	1	25.40	3/8	9.52
1/4	6.35	1 3/16	30.15	3/8	9.52
7/16	11.10	1 3/32	27.79	-	-
7/16	11.10	1 1/8	28.57	-	-
7/16	11.10	1 5/8	41.27	-	-

Dodecahedron diamonds are center set to within .004" (.1mm) T.I.R.

DRESSING TOOLS Single-Point

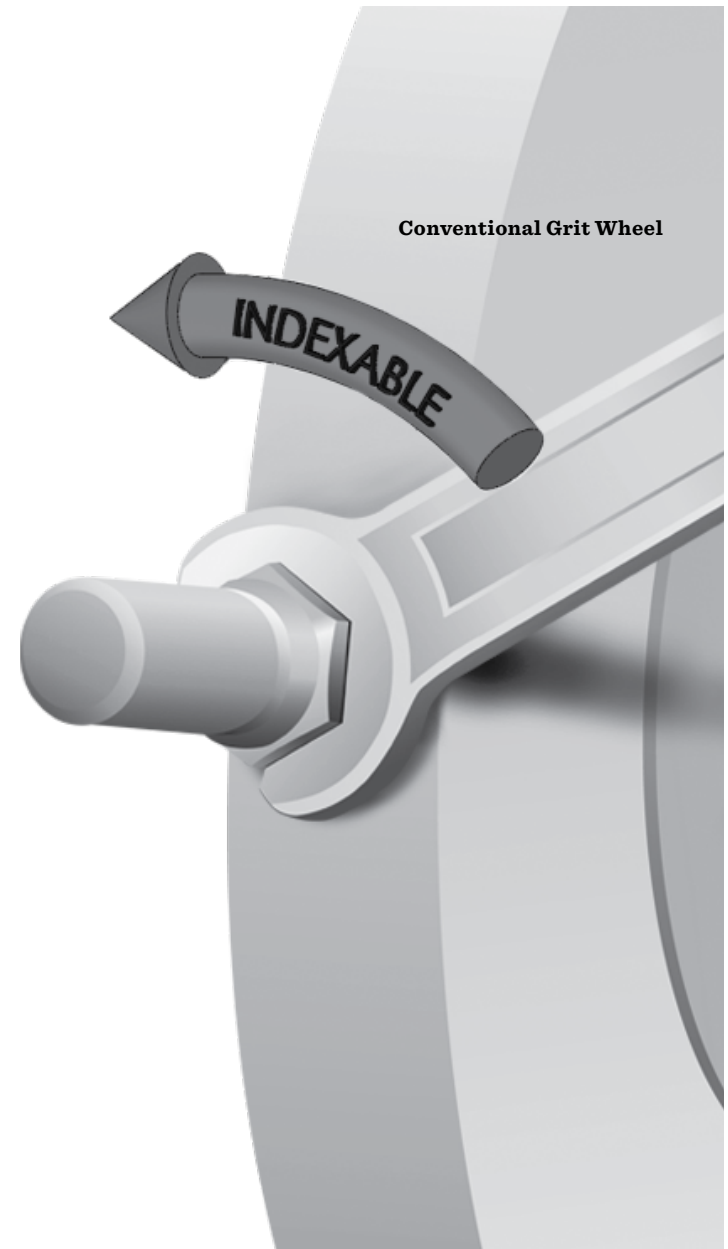
Rotadress™ Dressing Tool



This specialized dressing tool features indexable action promoting sharp diamond exposure to achieve optimum conditions on grinding wheels, resulting in ideal surface finish and material removal rates.

Improved throughput and reduced cost

- Designed for ease of use - Operators turn the dresser quickly with a spanner.
- Easy access to even the most confined areas of grinding machines.
- No re-referencing of dressing position is required after indexing.



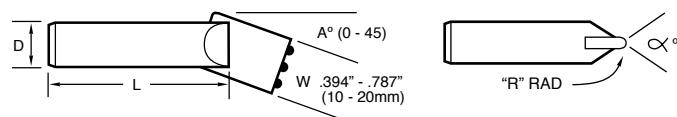
Blade Dressers are available in fixed and swivel formats

- Precision Profile tools are a cost effective alternative to expensive shaped single-point diamond tools.
- Achieve close tolerance profile and finish.
- Available in high quality graded natural diamond grits or hand set needle shaped diamonds.



Fixed Blade Dressers

- RANGE:** Small carat weight (0.4 - 2 carat).
- DIMENSIONS:** Between 10mm (.379") and 20mm (.787") width.
- APPLICATION:**
- High wear applications.
 - Dressing large wheels.
- PLEASE STATE WHEN ORDERING:**
- Shank dimensions.
 - Wheel type.
 - Wheel size (diameter and width).
 - Grit size and type.



All purpose forming tool suitable for all but very fine forms. These blades contain 2 or 3 layers of selected long diamonds.

Standard Replacement Blade Dressers*

Types	Side Set Blades	Center Set Blades																																						
FA Dimensions of the diamond plate PC2 X = 10mm (.379") PC4 X = 15mm (.590")	<table border="1"> <thead> <tr> <th>Inch</th> <th>mm</th> <th>Inch</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>13/16</td> <td>20.5</td> <td>D 3/16</td> <td>5</td> </tr> <tr> <td>B</td> <td>25/32</td> <td>20</td> <td>E 9/32</td> <td>7</td> </tr> <tr> <td>C</td> <td>1/4</td> <td>6.1</td> <td></td> <td></td> </tr> </tbody> </table>	Inch	mm	Inch	mm	A	13/16	20.5	D 3/16	5	B	25/32	20	E 9/32	7	C	1/4	6.1			<table border="1"> <thead> <tr> <th>Inch</th> <th>mm</th> <th>Inch</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>29/32</td> <td>23</td> <td>D 3/16</td> <td>5</td> </tr> <tr> <td>B</td> <td>25/32</td> <td>20</td> <td>E 9/32</td> <td>7</td> </tr> <tr> <td>C</td> <td>1/4</td> <td>6.1</td> <td></td> <td></td> </tr> </tbody> </table>	Inch	mm	Inch	mm	A	29/32	23	D 3/16	5	B	25/32	20	E 9/32	7	C	1/4	6.1		
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A	1/2	13	D 3/16	5																																				
B	13/32	10	E 9/32	7																																				
C	1/4	6.1																																						

*Shown above are standard sizes. Contact customer service for full range. This product is also available in synthetic diamond.

DRESSERS Impregnated

Impregnated Dressers

Small diamonds are carefully screened and are randomly spaced in an abrasion resistant matrix.

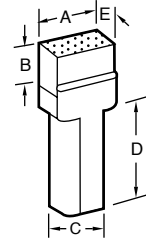
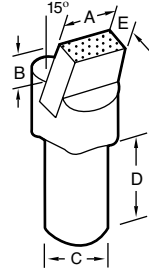
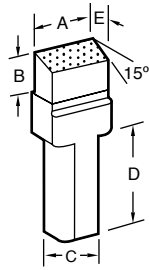
Why they save money:

- Diamonds can be completely consumed, nothing is wasted.
- Longer tool life. Tool wear is shared by many small diamonds.
- Less downtime because of shorter dressing cycle.
- Fewer dressing passes saves wheel wear.

Recommendations:

- Traverse rate: 25 IPM (.06M/min..) and faster.
- Infeed: .002" (.05mm).
- Start the dress in the center of the wheel.
- Use flood coolant.

For Wheels 20" X 6" and Smaller (500mm x 150mm)



	Inch	mm
A	1/2	12.7
B	3/8	9.52
C	7/16	11.11
D	3/4	19.05
E	1/4	6.35

	Inch	mm
A	1/2	12.7
B	3/8	9.52
C	7/16	11.11
D	3/4	19.05
E	1/4	6.35

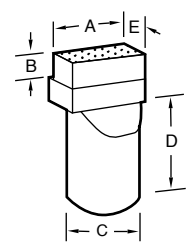
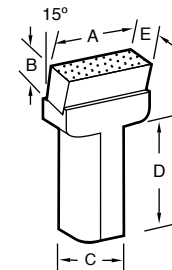
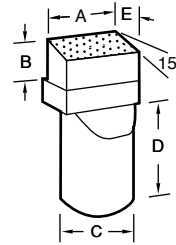
	Inch	mm
A	1/2	12.7
B	3/8	9.52
C	7/16	11.11
D	3/4	19.05
E	1/4	6.35

1B-6-D-7
(54 to 100 grit)
1B-8-D-7
(120 grit & finer)

2A-4-E-7
(46 grit & coarser)
2A-6-E-7
(54 grit & finer)

2A-4-D-7
(46 grit & coarser)
2A-6-D-7
(54 to 100 grit)
2A-8-D-7
(120 grit & finer)

For Wheels 20" X 6" and Larger (500mm x 150mm)



	Inch	mm
A	3/4	19.05
B	3/8	9.52
C	7/16	11.11
D	15/16	23.81
E	1/4	6.35

	Inch	mm
A	3/4	19.05
B	5/16	8.26
C	7/16	11.11
D	15/16	23.81
E	1/4	6.35

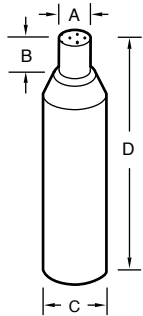
	Inch	mm
A	3/4	19.05
B	5/16	8.26
C	7/16	11.11
D	15/16	23.81
E	1/4	6.35

2B-4-A-7
(46 grit & coarser)
2B-6-A-7
(54 to 100 grit)
2B-8-A-7
(120 grit & finer)

1A-4-C-7
(46 grit & coarser)
1A-6-C-7
(54 to 100 grit)
1A-8-C-7
(120 grit & finer)

1A-4-A-7
(46 grit & coarser)
1A-6-A-7
(54 to 100 grit)
1A-8-A-7
(120 grit & finer)

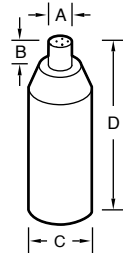
For Wheels 12" and Larger (300mm)



	Inch	mm
A	3/8	9.52
B	3/8	9.52
C	7/16	11.11
D	2 1/2	63.5

2R-6-K-7

For Wheels 10" and Smaller (250mm)



	Inch	mm
A	1/4	6.35
B	1/4	6.35
C	7/16	11.11
D	2	50.8

1R-6-J-7

Crown Dresser



Recommendations:

- Traverse rate: 30 IPM (.76M/min..) and faster.
- Infeed: .001" to .002" (.025mm to .05mm).
- Use flood coolant.

These are starting feeds and speeds and may need adjustment to suit the part specifications. The tool requires periodic indexing.

Specifications:

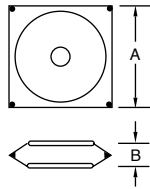
Crown - 1" x 5/8" x 1/8"
(25.4mm x 15.9mm x 3.2mm)

Shank - 7/16" x 1 5/8" OAL
(11.1mm x 41.3mm)

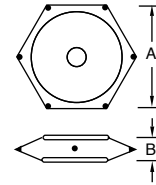
Indexable Disc Type Dresser



Small elongated whole diamonds are carefully selected for quality and uniformity of shape.



Shank Style	Dimensions				Recommended Use
	A		B		
	Inch	mm	Inch	mm	
1	1/2	12.70	5/32	3.81	Small surface grinders maximum 10" (250mm) wheels
1	1/2	12.70	5/32	3.81	O.D., centerless, surface grinders maximum 20" (500mm) wheels
3	11/16	17.46	3/16	4.75	O.D., centerless, surface grinders over 20" (500mm) wheels



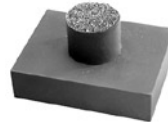
Shank Style	Dimensions				Recommended Use
	A		B		
	Inch	mm	Inch	mm	
1	5/8	15.87	5/32	3.81	Small surface grinders maximum 10" (250mm) wheels
1	5/8	15.87	5/32	3.81	O.D., centerless, surface grinders maximum 20" (500mm) wheels
3	7/8	22.22	3/16	4.75	O.D., centerless, surface grinders over 20" (500mm) wheels

Cluster Type Dresser



Designed for straight pass grinding, these tools are of a robust construction and available in diameters from 1/4" (6.35mm) to 3/4" (19.05mm) as standard. Finest natural diamond grits are used for rapid stock removal and fine finish applications.

Single-Layer Dressing Block



Designed to dress straight wheels on tool room surface grinders. Quickly removes all previous forms or shapes.

Off-Hand Dresser

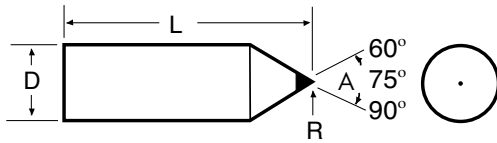


For hand trueing and dressing of abrasive grinding wheels.

Profile Tools

Cone Lapped Dressing Tool

Fine quality elongated diamonds are used in our cone shaped dressing tools. They are lapped to .003" (.076mm) T.I.R.

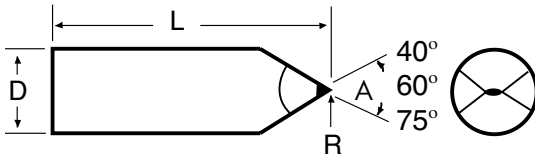


Specify "A" angle, "D" diameter, "L" length, "R" radius

Radius	
Inch	mm
.005	.127
.010	.253
.015	.381
.020	.508

Polished Chisel Dressing Tool

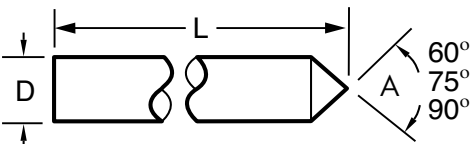
The finest quality flat elongated diamonds are used in our chisel edge dressing tools. They are lapped to .005" (.127mm) chisel width within .003" (.076mm) of center.



Specify "A" angle, "D" diameter, "L" length, "R" radius

Radius	
Inch	mm
.005	.127
.010	.253
.015	.381
.020	.508

Phono Points



For dressing small radii fine grit wheels

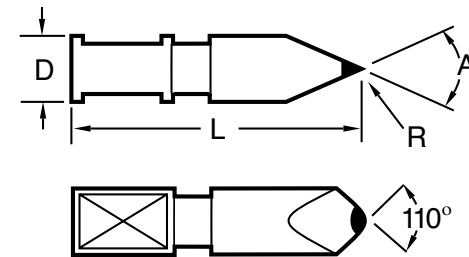
Dimensions		
	Inch	mm
D	.125	3.2
L	1	25.4

Diaform Style

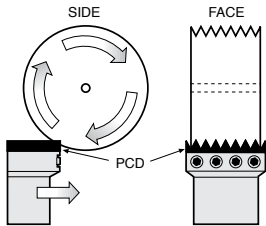
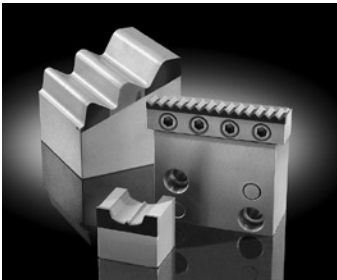
Diaform and Pantocrush style dressers are made with the finest quality triangular shaped diamonds.

The grain is oriented to expose the hardest direction of the diamond to the abrasive forces of the grinding wheel. This yields longer tool life.

Polycrystalline diamond (PCD) tool blanks can be used on very selective applications.



Specify "A" angle, "D" diameter, "L" length, "R" radius



PCD Form Dressers

- A cost effective alternative to roll dressing and Diaform style dressing.
- Can impart complex and highly accurate forms to grinding wheels.
- Long lasting.
- Less machine downtime.

Range: Custom designed to meet customers' grinding profile requirements.

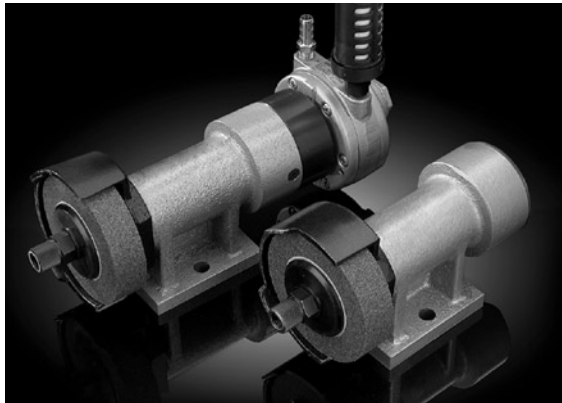
Dimensions: .05" - 4" (1mm - 100mm) wide.

Application:

- Highly accurate form dressing applications.
- Alternative to roll dressing.
- Alternative to profile dressing.

Please state when ordering:

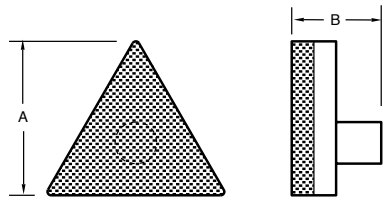
- Wheel type.
- Wheel size (diameter & width).
- Grit size and type.
- A tool or component drawing will also be required.



Rotatrim Devices for Dressing and Trueing

For a fast, easy and cost effective way to restore, dress and true Diamond and CBN wheels.

Item	Stock No.
Centrifugal Braking - For general purpose use	C4710001
Air Driven - For large and very small diameter wheels	C4720001
Replacement Wheels 60 SIC (5 pack)	C4730001



PCD Dressing Tools for CNC Profile Grinders

Our polycrystalline diamond dressers are ideal for Voumard & Studer CNC Profile Grinders. The carbide post allows for secure mounting. Random diamond grain orientation on the dresser's points provide consistent results.

	Inch	mm
A	.217	5.51
B	.125	3.20

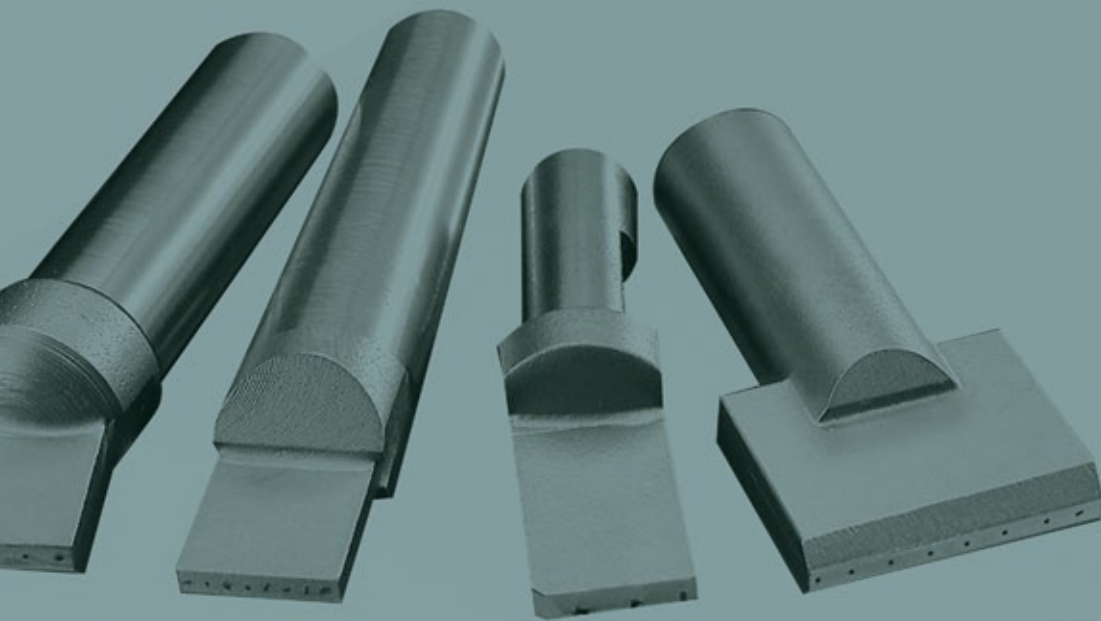
Natural Dressing Tool Service

Single Point Dressers

We can reset all our resettable diamonds into a completely new shank.

Polished Diamond Tools

Both Chisel tools and Cone tools can be relapped and regenerated.



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Go to www.abrasive-tech.com to order online or find a distributor near you.

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