our dressing tools
MAKE THE PERFECT POINT

The Norton full line of expertly-crafted stationary and rotary dressing tools - whether stock or custom-engineered - delivers your every application need. And, our expert resetting and relapping services renew used tools to reduce your "cost per dress."

Single Has Advantages

Our extensive single point tool offering leads the industry for resettable and non-resettable products for all abrasive types and the technology-leading "Indexable" tool design.

Exceeding Conventional

Since Norton multi-point tools never need turning or resetting, they pay for themselves time and time again with higher productivity from your grinding wheels and dressing operations.

When Shape Matters

For intricate forms, tight tolerances, and the most difficult applications, Norton customized tools can be made-to-order to meet a special shape and quality requirement.

DIAMOND TOOLS

Our Norton offering is the industry's most comprehensive line of stock and made-to-order products to true (restore the wheel's profile) and dress (opening – to remove stock – or closing to finish) the face of the wheel. In addition to these catalog stock stationary tools, Norton manufactures a full line of custom stationary tools, rotary diamond dressers and truing/dressing devices to meet all your specific application needs.
Contact us at 1-800-438-4773.

Applications:	Truing and dressing conventional and superabrasive wheels, straight, step, radius and form dressing
Tool Types:	Stationary: Single Point, Toolroom, Multi-Point, Blade, Form, and Cluster Tools, and Truing Devices
	Rotary: Reverse Plated and Infiltrated Form Plunge Diamond Rolls, Diamond CNC Traversing Discs, and Dressing Spindles

DETERMINING THE BEST VALUE

- Remember that diamonds are a rare commodity—the larger the stone and the better the quality, the higher the initial cost. The key to successful diamond tool productivity and use is based on the "cost per dress." Normally, higher quality diamonds and a proactive resetting program will result in the lowest "cost per dress."
- In those situations where a resetting program is not feasible or low initial cost is the primary purchasing consideration, Norton offers a complete line of non-resettable tools.

RESETTING YOUR USED DIAMOND TOOLS

Resetting – Minimizing Your Cost

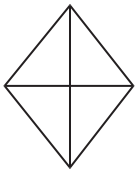
Buying a higher quality diamond is your best value, especially if you participate in a proactive resetting program. Although initial cost may be higher, the payback comes through several factors:

- Diamond durability, providing longer tool life
- Tighter form tolerances
- Consistent finish rates
- Resetting the diamond lowers the overall tooling cost

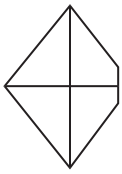
Used properly, the overall cost of a higher quality, resettable diamond will compare favorably with that of an inexpensive, non-resettable diamond. Initially, the best diamond point is selected for use. When returned, the next best diamond point is selected for resetting, and so on.

To ensure you get the best value for your diamond:

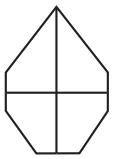
- Rotate the diamond tool ¼ turn periodically to maintain a sharp point
- Use proper flow of coolant to protect the diamond from heat which can create fracturing of the diamond
- Excessive wear on the diamond point may impact the ability to reset the diamond. The widest point of the diamond is referred to as the girth. The diamond girth is buried in a powder metal matrix. Using a diamond into the girth zone might impact the ability to reset other diamond points



New



1st Reset



Multiple Resettings

TECH TIP

Selecting the Correct Diamond Tool

To determine the type of Norton dressing tool to use, it is best to think about the desired shape of the wheel face. Finished wheel face shapes are generally categorized into six types, as illustrated below.

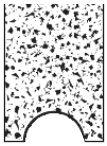
Typical Wheel Forms Dressed by Stationary Diamond Tools

Look for the applicable wheel forms beside each product type to help you choose the correct product for your application

Straight

Tapered

Convex



Concave

Angled

Multi-Angled

Single Point Tools

Our Norton line of single point tools is used in straight and simple form dressing applications. It includes: resettable and non-resettable products, tools for all abrasive types (conventional and advanced ceramic grains) and the technology-leading Norton "Indexable" tool design.

Wheel Forms Dressed by These Tools

SPEC CHECK

Selection Guide

Stock Tools for Ceramic Abrasive Wheels

SG/Ceramic	Engineered for use on ceramic (SG, NQ, Targa, etc.) wheels but may also provide significant benefits when used on conventional abrasive products. These tools are furnished with top quality specially selected diamonds.
BCSG/Ceramic	Economical alternative to an "SG" tool. Best choice when a disposable tool is preferred.

Stock Tools for Conventional Abrasive Wheels

NS	Engineered for use on conventional abrasives. These high quality, value-priced tools can be used for a variety of dressing applications.
BC	Economical alternative to an "NS" tool. Best choice when a disposable tool is preferred.

Selecting the Correct Single Point Tool:

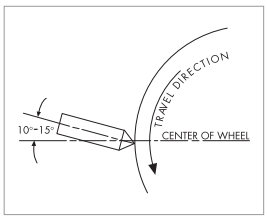
- Identify the wheel abrasive type: aluminum oxide, silicon carbide, or ceramic
- Determine the wheel diameter – to select the optimum carat weight
- Determine the tool holder size – to select appropriate shank diameter

Examples of Single Point Tool Selection

Conventional Wheel Spec:	32A46-IVBE 7" x 1/2" x 1-1/4"	
	Machine has a 7/16" tool holder	
Tool Selections:	Resettable:	NS2M7 or NSUD2 (Indexable)
	Non-Resettable:	BC2M7 or BCUD2 (Indexable)
Ceramic Wheel Spec:	5SG60-JVS or 5NQ60-IVS 10" x 1" x 3"	
	Machine has a 3/8" tool holder	
Tool Selections:	Resettable:	SG3M6
	Non-Resettable:	BCSG3M6

TECH TIP

- Rigidly mount single point tools at a 10° - 15° angle to the wheel centerline with a line drawn through the center of the wheel, pointing in the direction of wheel travel.
- Point of contact should be slightly below centerline of wheel as shown.
- Use coolant whenever possible.
- Normal infeed is .001" per pass.
- Lead selections range from .002" – .010" per wheel revolution.
- Rotate the tool 1/4 turn periodically to maintain a sharp point.



To optimize applications using ceramic abrasives and/or tools, normal dressing parameters must change. Reduce infeed by 25%. Significant reductions in the amount of infeed and frequency of dress will result in substantially lower cost per part ground.

Single Point Dress Traverse Rate

Select a Lead Value based on desired Surface Finish and run the formula below.

Finish	Lead Value (Per Wheel Revolutions)
For Coarse Finish (approx. 64 RMS)	.008" to .010"
For Medium Finish (approx. 32 RMS)	.005" to .009"
For Fine Finish (approx. 16 RMS)	.002" to .004"

Lead Value x Wheel Speed (RPM) = Traverse Rate in Inches/Minute

- Slower traverse rates result in a closed wheel face and lower surface finish readings on the workpiece.
- Faster traverse rates result in an open wheel face that produces greater stock removal and a rougher workpiece finish.

It is the user's responsibility to refer to and comply with ANSI B7.1

Single Point Tools *continued*

Single Point Tools for Truing/Dressing Ceramic Abrasives

SG/CERAMIC SINGLE POINT TOOLS

FEATURES	BENEFITS
• Specially selected broad-shaped, diamond	• Withstands the increased grinding pressures of ceramic abrasives
• Each diamond is hand selected for stone shape, quality and structural integrity	• Consistent tool performance
• Multi-purpose	• Accommodate most straight dressing and simple form dressing applications • Stand up to ceramic (Norton SG, NQ,TG, etc.) abrasive sharpness; can also be used to dress conventional abrasives

RESETTABLE SG/CERAMIC SINGLE POINT TOOLS

FEATURES & BENEFITS

- Norton high quality diamond and a proactive resetting program will result in the lowest dressing cost per part

NON-RESETTABLE BCSG/CERAMIC SINGLE POINT TOOLS

FEATURES & BENEFITS

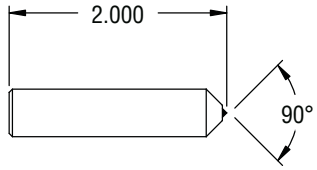
- The best selection when a resetting program is not feasible or low initial cost is the primary purchasing consideration

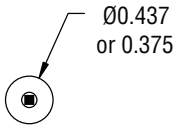
				TIER: BEST		GOOD	
WHEEL DIAMETER	TOOL CARAT WEIGHT	TOOL DIAMETER	TOOL LENGTH	PRODUCT #	3 SETTABLE PTS (2 RESETS) PART #	PRODUCT #	NON-RESETTABLE PART #
Stock Single Point Tools for Truing/Dressing Ceramic Abrasives							
Up to 7"	1/4 (.25)	3/8"	2"	SG2M6	66260195365	BCSG2M6	66260157007
		7/16"	2"	SG2M7	66260195366	BCSG2M7	66260156905
8" to 10"	1/3 (.33)	3/8"	2"	SG3M6		BCSG3M6	66260157008
		7/16"	2"	SG3M7	66260195368	BCSG3M7	66260156906
11" to 14"	1/2 (.50)	3/8"	2"	SG5M6	66260195369	BCSG5M6	66260157009
		7/16"	2"	SG5M7	66260195370	CSG5M7	66260156907
15" to 20"	3/4 (.75)	7/16"	2"	SG7M7	66260195372	BCSG7M	66260156908
21"+	1 (1.00)	7/16"	2"			BCSG10M7	66260157010

Standard Package = 1 tool

Wheel Forms Dressed by These Tools

STRAIGHT TAPERED CONVEX



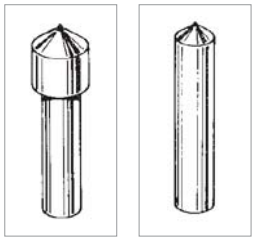


TECH TIP

Stock Single Point Tool Marking System

Diamond Quality	Diamond Size	Shank Design	Shank Diameter
SG/Ceramic	1 = 1/5 (.20) carat	M	6 = 3/8"
BCSG/Ceramic	2 = 1/4 (.25) carat	J	7 = 7/16"
NS	3 = 1/3 (.33) carat		
BC	5 = 1/2 (.50) carat		
	7 = 3/4 (.75) carat		
	10 = 1 carat		

Example: **NS 2 M 6**



SHANK J SHANK M

Single Point Tools *continued*

Single Point Tools for Truing/Dressing Conventional Abrasives

CONVENTIONAL SINGLE POINT TOOLS

FEATURES	BENEFITS
• Consistent diamond structure and shape	• Repeatable dressing performance
• Well defined, sharp diamond point	• Durable; maximum cost effectiveness for dressing conventional abrasives
• Steeper 60 degree included angle head design	• Greater machine and part clearance produce forms with tighter tolerances

RESETTABLE NS (NORTON STANDARD) SINGLE POINT TOOLS

FEATURES & BENEFITS

- High quality diamonds, value priced
- Selection of the correct tool and a proactive resetting program will result in the lowest dressing cost per part

NON-RESETTABLE BC SINGLE POINT TOOLS

FEATURES & BENEFITS

- The best selection when a resetting program is not feasible or low initial cost is the primary purchasing consideration

NON-RESETTABLE TL (NORTON THRIFTLINE) SINGLE POINT TOOLS NEW

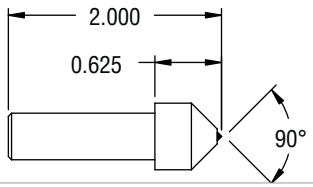
FEATURES & BENEFITS

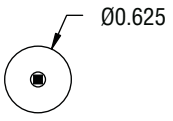
- Good choice for small volume operation when a resetting program is not feasible or low initial cost is the primary purchasing consideration

		TIER:	BETTER		GOOD		GOOD NEW
		TRADENAME:	NS (NORTON STANDARD)		BC		TL (NORTON THRIFTLINE)
WHEEL DIAMETER	TOOL CARAT WEIGHT	TOOL DIAMETER	PRODUCT #	2 SETTABLE PTS (1 RESET) PART #	PRODUCT #	NON RESETTABLE PART #	PRODUCT #	NON RESETTABLE PART #
Stock Single Point Tools for Truing/Dressing Conventional Abrasives								
Internal Wheel	1/5 (.20)	3/8"			BC1M6	66260195021	TL1M6	66260162876
		7/16"			BC1M7	66260195022	TL1M7	66260162904
Up to 7"	1/4 (.25)	3/8"	NS2M6	66260195116	BC2M6	66260195000	TL2M6	66260162908
		7/16"	NS2M7	66260195117	BC2M7	66260195001	TL2M7	66260162985
8" to 10"	1/3 (.33)	3/8"	NS3M6	66260195121	BC3M6	66260195002	TL3M6	66260162988
		7/16"	NS3M7	66260195122	BC3M7	66260195003	TL3M7	66260163010
11" to 14"	1/2 (.50)	3/8"	NS5M6	66260195126	BC5M6	66260195004	TL5M6	66260163011
		7/16"	NS5M7	66260195127	BC5M7	66260195005	TL5M7	66260163083
15" to 20"	3/4 (.75)	3/8"			BC7M6	66260195006	TL7M6	66260163088
		7/16"	NS7M7	66260195132	BC7M7	66260195007	TL7M7	66260163090
		7/16"	NS7J7*	66260195130				
21" +	1 (1.00)	3/8"	NS10M6	66260195136	BC10M6	66260195008	TL10M6	66260163092
		7/16"	NS10M7	66260195137	BC10M7	66260195009	TL10M7	66260163113
		7/16"	NS10J7 *	66260195135				

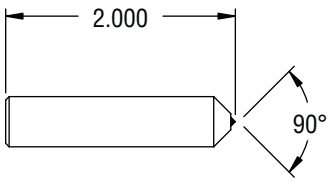
** J-shank tools are available in 7/16" diameter with 5/8" head. Standard Package = one tool*

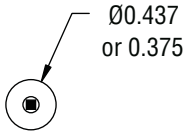
Shank J





Shank M





Wheel Forms Dressed by These Tools

Refer to our Diamond and cBN Superabrasive Standard Product Catalog #8068 sections on www.nortonabrasives.com or your Norton representative for more in-depth information on all Norton superabrasive stock and made-to-order products.

Single Point Tools *continued*

Indexable Single Point Tools

Indexable tools are specifically designed to alleviate any misalignment issues and are the tools of choice for CNC grinders. They feature a two-part construction with the head and shank as separate pieces. After the initial installation, operators simply turn the indexable head with a wrench, while the tool shank remains secure (and aligned) in the tool holder.

INDEXABLE SINGLE POINT TOOLS

FEATURES	BENEFITS
• Easily turned without removing tool from the holder	• Easier for operators to turn than conventional tools – increasing frequency of beneficial tool turning • Extended life; less downtime and increased productivity
• U-Dex-It and Mini-Dex tools have a 60° included angle head design	• Provides additional form versatility through better machine and part clearance • Excellent choice for regulating wheels

Indexable Single Point Tools for Truing/Dressing Ceramic Abrasives

NON-RESETTABLE BCSGUD/CERAMIC U-DEX-IT INDEXABLE SINGLE POINT TOOLS

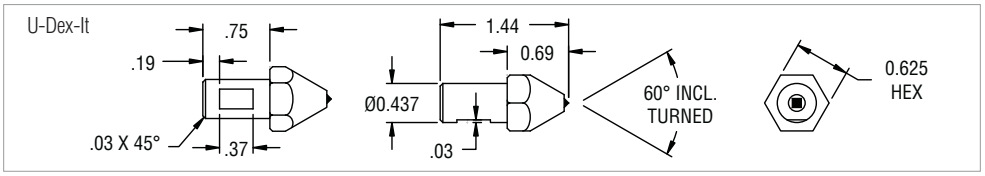
FEATURES AND BENEFITS

- These U-Dex-It tools contain specially selected diamonds to withstand increased ceramic (SG, Quantum NQ, Targa TG, etc.) grinding pressures
- Ideal for centerless grinders; using standard 5/8" wrench, the head can be turned through the hole in the side of the wheel guard without removing the guard
- The best selection when a resetting program is not feasible or low initial cost is the primary purchasing consideration

TIER: **GOOD**

WHEEL DIAMETER	TOOL CARAT WEIGHT	TOOL SIZE	PRODUCT #	NON-RESETTABLE PART #
Stock Indexable Single Point Tools for Truing/Dressing Ceramic Abrasives				
11" to 14"	1/2 (.50)	7/16" x 1-7/16" with 5/8" head	BCSGUD5	66260159894

Standard Package = one tool



Wheel Forms Dressed by These Tools

Indexable Single Point Tools for Truing/Dressing Conventional Abrasives

RESETTABLE NORTON STANDARD NSUD U-DEX-IT INDEXABLE SINGLE POINT TOOLS

FEATURES AND BENEFITS

- High quality diamonds, value priced
- Ideal for centerless grinders; using standard 5/8" wrench, the head can be turned through the hole in the side of the wheel guard without removing the guard
- Selection of the correct tool and a proactive resetting program will usually result in the lowest dressing cost per part

RESETTABLE NORTON STANDARD NSMD MINI-DEX INDEXABLE SINGLE POINT TOOLS

FEATURES AND BENEFITS

- High quality diamonds, value priced
- Use a standard 7/16" wrench to turn; designed for internal, bearing race, and twist drill flute machines
- Selection of the correct tool and a proactive resetting program will usually result in the lowest dressing cost per part

Single Point Tools *continued*

Indexable Single Point Tools for Truing/Dressing Conventional Abrasives continued

NON-RESETTABLE BCUD U-DEX-IT INDEXABLE SINGLE POINT TOOLS

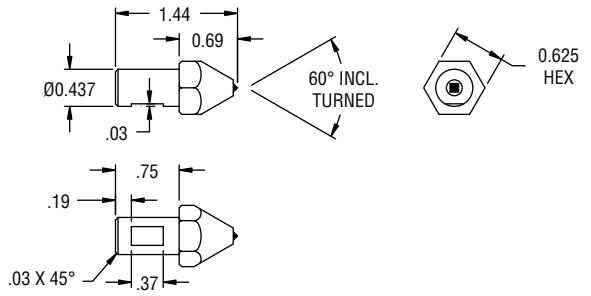
FEATURES AND BENEFITS

- Ideal for centerless grinders; using standard 5/8" wrench, the head can be turned through the hole in the side of the wheel guard without removing the guard
- The best selection when a resetting program is not feasible or low initial cost is the primary purchasing consideration

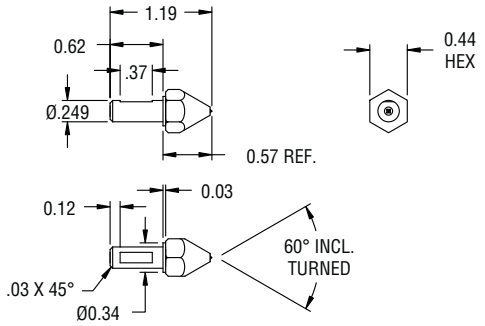
			TIER: BETTER		GOOD	
WHEEL DIAMETER	TOOL CARAT WEIGHT	TOOL SIZE	PRODUCT #	2 SETTABLE PTS (1 RESET) PART #	PRODUCT #	NON-RESETTABLE PART #
Stock Indexable Single Point Tools for Truing/Dressing Conventional Abrasives						
Up to 7"	1/4 (.25)	7/16" x 1-7/16" with 5/8" head			BCUD2	66260195023
		1/4" x 1-3/16" with 7/16" head	NSMD2	66260195171		
8" to 10"	1/3 (.33)	7/16" x 1-7/16" with 5/8" head	NSUD3	66260195162		
11" to 14"	1/2 (.50)	7/16" x 1-7/16" with 5/8" head	NSUD5	66260195163	BCUD5	66260195025
15" to 20"	3/4 (.75)	7/16" x 1-7/16" with 5/8" head	NSUD7	66260195164		

Standard Package = one tool

U-Dex-It



Mini-Dex



Internal Grinding Tools

RESETTABLE INTERNAL GRINDING TOOLS

FEATURES AND BENEFITS

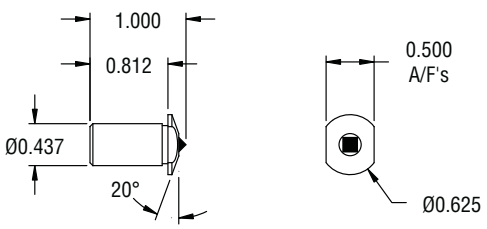
- Q style shank is used on a Heald internal grinder (resettable)

				TIER: BEST	
MACHINE TYPE	CARAT WEIGHT	SHANK DIAMETER	TOOL LENGTH	PRODUCT #	2 SETTABLE PTS (1 RESET) PART #
Stock Internal Grinding Tools					
Heald	1/5 (.20)	7/16"	1"	NI21Q7	66260195180

Standard Package = 1 Tool

Wheel Forms Dressed by These Tools

Shank Q for Heald Machine



Single Point Tools *continued*

Thread Grinding Tools

RESETTABLE SG/CERAMIC THREAD GRINDING TOOLS

FEATURES AND BENEFITS

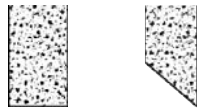
- These wheels are used on J & L and Excello thread grinding machines to accurately dress the grinding wheels that form the desired thread configuration (non-resettable)

TIER: **BEST**

MACHINE TYPE	SHANK DIAMETER	TOOL LENGTH	INCLUDED ANGLE	MAX. RADIUS ON POINT	PRODUCT #	NON-RESETTABLE PART #
Stock Thread Grinding Tools						
J & L	1/4"	1"			38RL4*	66260195100
J & L	1/4"	1"	80°	.010"	NT1L4	66260195187
EXCELLO	3/8"	1-5/8"	60°	.010"	NT106	66260195190

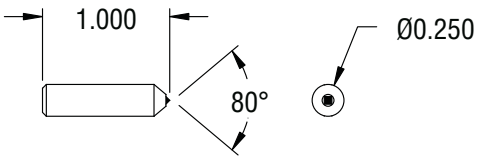
** 38RL4 is a multi-point (grit) 30 - 40 mesh tool*
Standard Package = 1 Tool

Wheel Forms Dressed by These Tools

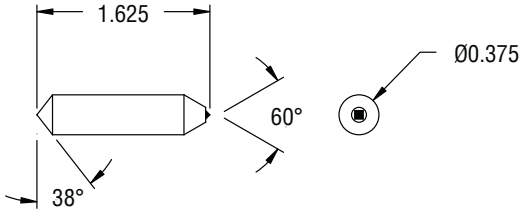


STRAIGHT TAPERED

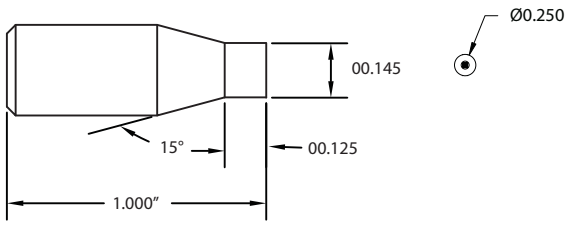
NT1L4 for Jones & Lamson Machine



NT106 for Excello Machine



38RL4 for Jones & Lamson Machine



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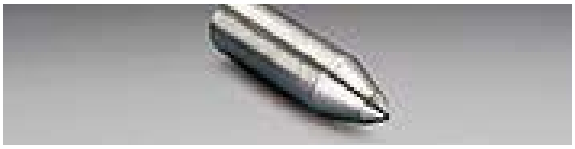
Phono-Point Tools



Toolroom Tools

Norton Toolroom Dressing Tools are primarily used on surface grinders to form the grinding wheel to an exact concave or convex radius. Although some tools are designed for use on a specific machine, many radius tools can be used on any grinder having the correct set-up.

Used generally on 8" diameter and smaller vitrified toolroom wheels, our Norton offering includes phono-point, conventional radius, and full ball radius tools.

Wheel Forms Dressed by These Tools

STRAIGHT CONCAVE CONVEX MULTI-ANGLED

NON-RESETTABLE PHONO-POINT TOOLS

FEATURES AND BENEFITS

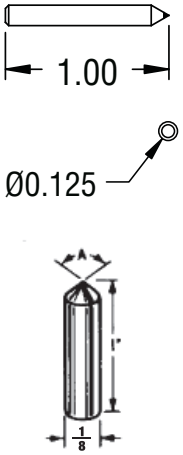
For general toolroom concave and convex dressing on small diameter grinding wheels

			TIER: BETTER		GOOD	
INCLUDED ANGLE	**SHANK DIAMETER**	**TOOL LENGTH**	**PRODUCT #**	**NON-RESETTABLE PART #**	**PRODUCT #**	**NON-RESETTABLE PART #**
Stock Phono-Point Tools						
60°	1/8"	1"	NP1M2	66260195225	BCPP-60	66260195017
	3/16"	1"	NP1M3	66260195226		
	1/4"	1"	NP1M4	66260195227		
75°	1/8"	1"	NP2M2	66260195228	BCPP-75	66260195018
	1/4"	1"	NP2M4	66260195230		
90°	1/8"	1"	NP3M2	66260195231	BCPP-90	66260195019
	3/16"	1"	NP3M3	66260195232		
	1/4"	1"	NP3M4	66260195233		

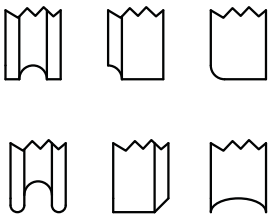
Standard Package = one tool

Wheel Forms Dressed by These Tools

CONVEX CONCAVE CONVEX



TYPICAL WHEEL FORMS



SPEC CHECK

Phono-Point Tool Marking System

Tool Type	Included Angle On Diamond	Shank Style	Shank Diameter
NP	1 = 60°	M	2 = 1/8"
BCPP	2 = 75°		3 = 3/16"
	3 = 90°		4 = 1/4"

Example: **NP 1 M 3**

TECH TIP

How to Use Toolroom Tools

- We recommend dressing with coolant. However, if dressing totally dry, allow three to five seconds between passes for diamond to cool.
- Use extremely light cuts from .0002" to .001" maximum.
- Rotate tool if the application and set-up allow.
- Full Ball Radius Tools should be returned for relap after minimum wear.

Toolroom Tools *continued*

Radius Tools

Concave Radius Tools

This line offers a specially-shaped single point diamond, designed for forming concave radii on small diameter grinding wheels. Not resettable.

Convex Radius Tools

This line offers a specially-shaped single point diamond, designed for forming convex radii on small diameter grinding wheels. Not resettable.

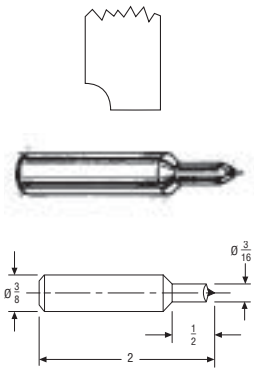
Half-Circle Concave Radius Tools (Available as Non-stock Only)

This line offers a specially-shaped diamond set in the side of the shank for forming half-circle radii on small diameter grinding wheels. The tool is rotated to form the radius. Commonly called a "rat tail dresser." Not resettable.

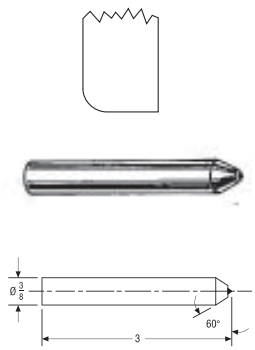
			TIER: BEST		GOOD	
RADIUS SIZE TO BE DRESSED	SHANK DIAMETER	TOOL LENGTH	PRODUCT #	NON-RESETTABLE PART #	PRODUCT #	NON-RESETTABLE PART #
Stock Concave Radius Tools						
.010" to .015"	3/8"	2"	NR1P6	66260195210		
.016" to .020"	3/8"	2"	NR2P6	66260195211		
.021" to .032"	3/8"	2"	NR3P6	66260195212		
.033" to .062"	3/8"	2"	NR4P6	66260195213	BCRD	66260195016
.063" to .125"	3/8"	2"	NR5P6	66260195214	BCRD	66260195016
.126" to .250"	3/8"	2"	NR6P6	66260195215	BCRD	66260195016
Stock Convex Radius Tools						
.020" to .125"	3/8"	2"	NR2M6	66260195216		
.126" to .250"	3/8"	2"	NR12M6	66260195217		

Standard Package = one tool

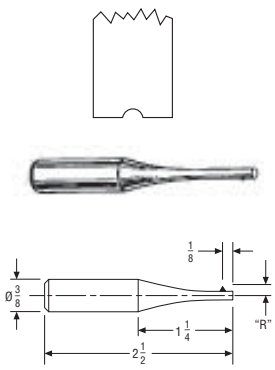
Concave Radii



Convex Radii



Half-Circle Concave Radii



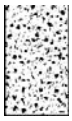
Full-Ball Radius Tools for precision plunge form dressing of concave radii in the center of a grinding wheel are available made to your custom requirements. Ask your Norton representative for details.

Refer to our Diamond and cBN Superabrasive Standard Product Catalog #8068 sections on nortonindustrial.com or your Norton representative for more in-depth information on all Norton superabrasive stock and made-to-order products.

Multi-Point (Grit) Tools

Since Norton conventional and high-performance Multi-Point tools never need turning or resetting, they are the most economical way to accomplish a variety of straight, tapered, and step dressing operations on all sizes of cylindrical, centerless, surface, and toolroom grinding wheel applications.

Wheel Forms Dressed by These Tools



STRAIGHT

TAPERED

NORTON MULTI-POINT TOOLS

FEATURES	BENEFITS
• Uniformly distributed diamonds in a tough, durable matrix	• Consistent performance throughout tool life
• Fresh, multiple diamond points exposed in truing operation; no turning or resetting required	• Faster, more consistent straight face dressing with maximum efficiency and longer tool life than single point tools
• Overall diamond weight exceeds equivalent single point tool	• The most economical way to dress straight and tapered forms

SPEC CHECK

Tech Tip Heading

- Identify the wheel abrasive type: ceramic (Norton SG, Quantum NQ, Targa TG), aluminum oxide, or silicon carbide
- Determine the wheel diameter and grit size
- Determine the tool's approach angle to the centerline of the wheel
- Identify the tool holder diameter
- Use 1E shape for angular wheel slide, cylindrical grinding and for shoulder or step truing

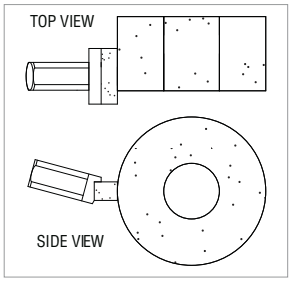
Examples of Multi-Point Tool Selection

Conventional Wheel Spec:	32A46-IVBE 7" x 1/2" x 1-1/4" Machine has a 3/8" tool holder
Tool Selection:	1R6J6
Ceramic Wheel Spec:	5SG60-JVS or 5NQ60-IVS 10" x 1" x 3" Machine has a 7/16" tool holder
Tool Selections:	SG1R6J7

TECH TIP

Multi-Point Tools – Straight Face Dressing and Truing

- Most multi-point tools are used for straight face dressing.
- Tool should have full face contact with the wheel.
- With new tool, 3–5 passes at .005" per pass should be taken to expose diamonds.
- Infeed per pass .001" - .002"
- Use coolant whenever possible.
- Use appropriate lead (and traverse rate).
- Contact your Norton representative for proper tool selection for Targa wheels.



Multi-Point Dress Traverse Rate

Select a Lead Value based on desired Surface Finish and run the formula below.

FINISH	LEAD VALUE (PER WHEEL REVOLUTIONS)
For Coarse Finish (approx. 64 RMS)	.023" to .030" (.58mm – .76mm)
For Medium Finish (approx. 32 RMS)	.013" to .022" (.33mm – .57mm)
For Fine Finish (approx. 16 RMS)	.006" to .012" (.15mm – .33mm)

Lead Value x Wheel Speed (RPM) = Traverse Rate in Inches/Minute

- Slower traverse rates result in a closed wheel face that produces less stock removal and improved workpiece finish.
- Faster traverse rates result in an open wheel face that produces greater stock removal and a rougher workpiece finish.

⚠ It is the user's responsibility to refer to and comply with ANSI B7.1

Multi-Point (Grit) Tools *continued*

SPEC CHECK

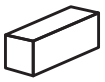
Multi-Point Tool Diamond Section Specifications

SHAPE	WIDTH	LENGTH	DEPTH	TOOL APPROACH ANGLE TO WHEEL	FOR WHEEL DIAMETER
1A	1/4"	3/4"	5/16"	0°	Over 20"
2A	1/4"	1/2"	3/8"	0°	15" – 20"
3A	5/32"	3/8"	1/4"	0°	Over 20"
1E	5/32"	3/8"	5/16"	–	
2E	1/4"	1/2"	1/2"	–	20" x 2" and up
1R	1/4" Round		1/4"	0°	Up to 10"
2R	3/8" Round		3/8"	0°	11" – 14"

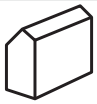
Multi-Point Tool Marking System

Diamond Shape	Tool Diamond Size		To Dress Grinding Wheels With Grit Size Of:	Shank Design	Shank Diameter
1A	4	=	46 grit	See the following pages for shank configurations	6 = 3/8"
2A	6	=	54 - 100 grit		7 = 7/16"
3A	8	=	120 - 150 grit		8 = 1/2"
1E	12	=	150+ grit		
2E	14	=	Special Applications		
1R					
2R					

Example: **1A 6 A 7**



A Shape is used primarily for straight face dressing.

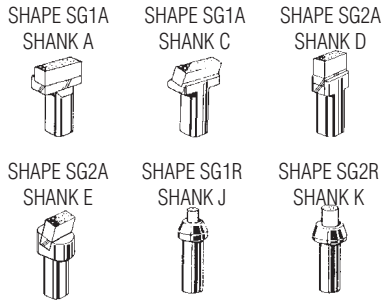


E Shape (double angle top face) |is used for standard N-Face wheels, angular wheels, face and side truing of cylindrical wheels, and in step dressing.

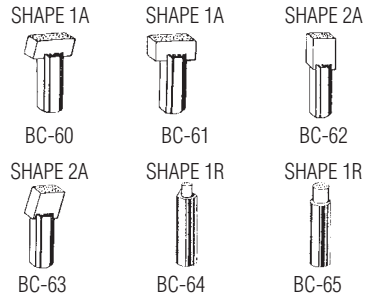
R Shape is used for straight face dressing where the tool holder is perpendicular to the wheel face (no drag angle), and on thread grinding machines.

Multi-Point Tools for Straight Dressing

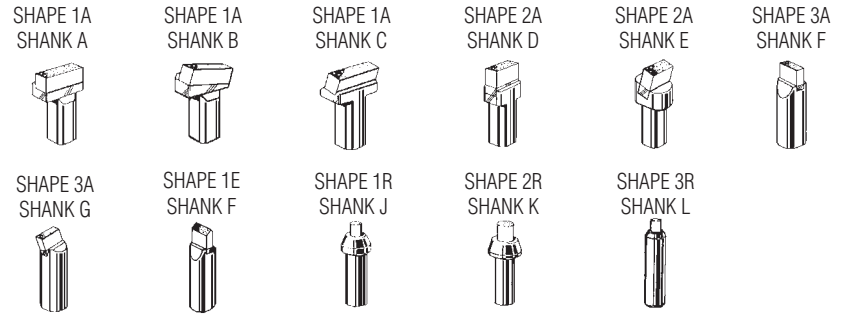
SG MULTI-POINT TOOL SHAPE AND SHANK AVAILABILITY



CONVENTIONAL TOOLROOM MULTI-POINT TOOL SHAPE AND SHANK AVAILABILITY



CONVENTIONAL ABRASIVE MULTI-POINT TOOL SHAPE AND SHANK AVAILABILITY



Shapes 3A (F and G Shanks) are used for form, shape, and step truing. Shape 1E is used for angle dressing

TECH TIP

Optimizing SG Multi-Point Tool Performance

- To optimize applications using ceramic abrasives/tools, normal dressing parameters must change. Significant reductions in the amount of infeed and frequency of dress will result in significantly lower cost per part ground.
- While all Norton SG/Ceramic tools have been designed to improve the efficiency of ceramic grinding applications, they can also offer significant benefits in many applications using conventional abrasives.
- When first using a Norton SG/Ceramic tool, make 3 to 5 passes at .005" infeed to ensure full face contact between the dressing tool and wheel face.
- Reduce normal dressing infeed by half. Do not exceed infeed of .002" per pass.
- The lead selection should be between .006"-.030" per wheel revolution. Faster traverse with a Norton SG/Ceramic tool generally provides an open wheel face that can maximize productivity of the ceramic abrasive.

Multi-Point (Grit) Tools *continued*

Multi-Point Tools for Truing and Straight Dressing

SG/CERAMIC MULTI-POINT TOOLS

FEATURES AND BENEFITS

- Designed specifically for use on ceramic (Norton SG, Quantum NQ, Targa TG, etc.) abrasives, SG tools contain a higher diamond concentration to withstand the increased grinding pressures generated by the ceramic abrasives. These tools have improved life and dress quality; they can also offer significant benefits in many applications using conventional abrasives.

STANDARD MULTI-POINT TOOLS

FEATURES AND BENEFITS

- The ideal selection for use on conventional abrasives in high-production applications

BC MULTI-POINT TOOLS

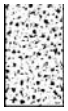
FEATURES AND BENEFITS

- These general-purpose tools are the ideal selection for conventional toolroom applications
- BC multi-point tools contain a specially selected diamond size for a broad range of dressing applications

				TIER: BEST		BETTER		GOOD	
				TO DRESS: Ceramic Abrasives		Conventional Abrasives		Conventional Toolroom	
WHEEL DIAMETER	WHEEL GRIT SIZE	TOOL APPROACH ANGLE	TOOL DIAMETER	PRODUCT #	PART #	PRODUCT #	PART #	PRODUCT #	PART #
Multi-Point Tools for Straight Dressing									
Up to 10"	54 to 100	0°	7/16"			1R6J7	66260195088	BC64	66260195014
		0°	3/8"			1R6J6	66260195085		
11" to 14"	54 to 100	0°	7/16"	SG2R6K7	66260195378	2R6K7	66260195096	BC65	66260195015
15" to 20"	46	15°	7/16"			2A4E7	66260195048		
	54 to 100	0°	7/16"	SG2A6D7	66260195375	2A6D7	66260195046	BC62	66260195012
		15°	7/16"	SG2A6E7	66260195376	2A6E7	66260195049	BC63	66260195013
	120 to 150	0°	7/16"			2A8D7	66260195047		
		15°	7/16"			2A8E7	66260195050		
21" +	46	15°	7/16"			1A4C7	66260195038		
	54 to 100	0°	7/16"	SG1A6A7	66260195373	1A6A7	66260195031	BC61	66260195011
		15°	7/16"			1A6B7	66260195035		
		15°	7/16"	SG1A6C7	66260195374	1A6C7	66260195039	BC60	66260195010
	120 to 150	15°	7/16"			1A8C7	66260195040		

Standard Package = one tool

Wheel Forms Dressed by These Tools



STRAIGHT

Multi-Point Tools for Form, Shape, or Step Dressing Conventional Abrasives

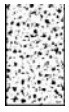
			TIER: BETTER		
WHEEL DIAMETER	WHEEL GRIT SIZE	TOOL APPROACH ANGLE	TOOL DIAMETER	PRODUCT #	PART #
Stock Multi-Point Tools for Form, Shape, and Step Dressing					
All	54 to 100	0°	7/16"	3A6F7	66260195055
		15°	7/16"	3A6G7	66260195975

Standard Package = one tool

			TIER: BETTER		
WHEEL DIAMETER	WHEEL GRIT SIZE	TOOL APPROACH ANGLE	TOOL DIAMETER	PRODUCT #	PART #
Stock Multi-Point Tools for Angular Dressing Conventional Abrasives					
All	54 to 100	0°	7/16"	1E6F7	66260195080

Standard Package = one tool

Wheel Forms Dressed by These Tools



STRAIGHT

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Wheel Forms Dressed by These Tools

TAPERED

ANGLED

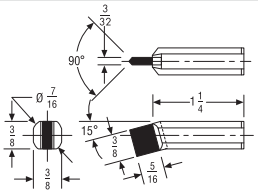
High Performance Grit Tools

Norton High Performance grit tools are used in the same manner as multi-point tools, but are designed to produce a superior finish. They are used on 120 - 150 grit wheels. The traverse rates are equal to or faster than ordinary tools. Mounted on standard shanks, standard High Performance grit tools have a 3/8" wide by .100" thick diamond impregnated blade with a greater number of sharp points than in ordinary multi-point tools.

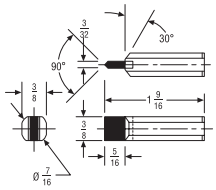
Since High Performance grit tools contain a higher concentration of diamond than found in standard multi-point tools, they are well suited for ceramic abrasive applications.

Typical Machines and Applications

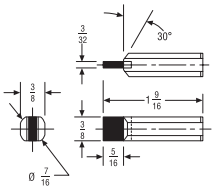
- HP4439: cylindrical machines, grinding thrust walls, bearing diameters and multi-diameter shafts with radii
- HP4511: angular machines plunge grinding multi-diameter shafts and plunge grinding on dual-wheel forms
- HP4595: cylindrical machines grinding main bearing and lobes on camshafts
- HP4596: centerless machines step grinding and machines dual-wheel grinding transmission shafts



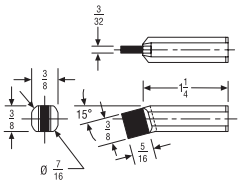
HP4439



HP4511



HP4595



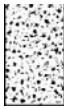
HP4596

TIER: **BEST**

WHEEL DIAMETER	WHEEL GRIT SIZE	SHANK DIAMETER	TOOL LENGTH	PRODUCT #	PART #
Stock High Performance Grit Tools					
Up to 20"	120 to 150	7/16"	1-9/16"	HP4439	66260195270
Up to 20"	120 to 150	7/16"	1-9/16"	HP4511	66260195271
Up to 20"	120 to 150	7/16"	1-9/16"	HP4595	66260195272
Up to 20"	120 to 150	7/16"	1-9/16"	HP4596	66260195273

Standard Package = one tool

Wheel Forms Dressed by These Tools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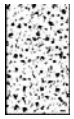
Refer to our Diamond and cBN Superabrasive Standard Product Catalog #8068 sections on www.nortonabrasives.com or your Norton representative for more in-depth information on all Norton superabrasive stock and made-to-order products.

Blade Tools

With the choice of natural and synthetic diamond in three performance/price tiers, Norton blade tools can meet all your angle, step, and radius dressing requirements for cylindrical, surface, and centerless grinding.

Wheel Forms Dressed by These Tools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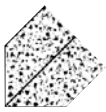
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MULTI-ANGLED

SYNTHETIC BLADE TOOLS – USB AND NORTON QUANTUM

FEATURES	BENEFITS
• USB (made-to-order)	• For dressing aluminum oxide wheels
• NEW! Norton Quantum NQ (made-to-order)	• For dressing ceramics and silicon carbide wheels
• Synthetic diamond with a controlled diamond shape provides a constant cross section of diamond to the wheel throughout the life of the tool	• Provides consistent wheel conditioning from the first dress to last • Ideal for close tolerance wheel dressing on manual and CNC grinders, long production runs, and critical form and finish applications (e.g. automotive cam, crank, and valve grinding) • Economical, long-lasting alternative to chisel-type tools for centerless form grinding

MULTI-CUT BLADE TOOLS (AVAILABLE IN STOCK AND MADE-TO-ORDER)

FEATURES	BENEFITS
• Manufactured with top quality elongated-shaped natural diamond	• The choice when natural diamond is preferred on surface, cylindrical, and centerless grinders • Durable performing tools in a medium price range

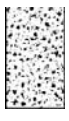
LONG LIFE BLADE TOOLS (ALL ARE MADE-TO-ORDER)

FEATURES	BENEFITS
• Manufactured with processed elongated-shaped natural diamond	• Developed as the first generation of the blade tool line for surface, cylindrical, and centerless grinders • The choice when initial price is the primary purchasing consideration

			TIER: BEST		BETTER	
			TRADENAME: NORTON QUANTUM TOOLS		MULTI-CUT TOOLS	
WHEEL DIAMETER (WIDTH < = 9")	TOOL APPROACH ANGLE	SHANK DIAMETER	PRODUCT #	PART #	PRODUCT #	PART #
Stock Blade Tools						
12" to 17"	0°	7/16"	NQ20A7	07958747944*		
	15°	7/16"	NQ215A7	07958747945*	MC355	66260195266
18" to 29"	0°	7/16"	NQ30A7	07958747946*		
	15°	7/16"	NQ315A7	07958747947*		
30" - 36"	0°	7/16"	NQ50A7	07958747948*		
	15°	7/16"	NQ515A7	07958747950*		

These stock tools are composed of 1 layer with 3 diamonds. These tools are not resettable or relappable.
**Non-Stock: Please contact your Norton representative for current lead-times.*
Standard Package = one tool

Wheel Forms Dressed by These Tools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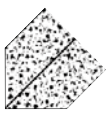
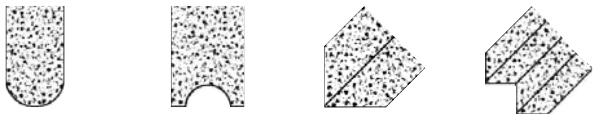

ANGLED


MULTI-ANGLED

Form Tools

Norton Form Tools have diamond lapped to specific angles and radii required for a particular application, machine, contour dressing system, or CNC operation. Due to the high degree of accuracy necessary, the diamond is of special shape and quality.

Wheel Forms Dressed by These Tools



CONE POINT TOOLS

FEATURES AND BENEFITS

- The Norton vacuum braze technology used in the manufacturing surpasses all traditional diamond retention methods.
- Benefits of this technology include absolute diamond retention, diamond pullout prevention during the dressing cycle, and longer tool life through multiple relaps
- Because the diamond is accurately coned to the specific included angle and radius, these tools are ideal when the most intricate, precise forms and radii are required
- Can be relapped

U-Dex-It Cone Point Tool

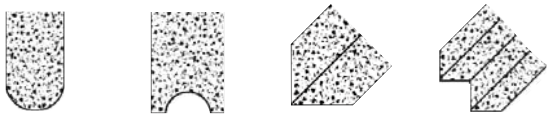
Used for precision dressing of intricate forms and radii. Specially designed with 5/8" indexable head for easy turning during use. These tools can be relapped.

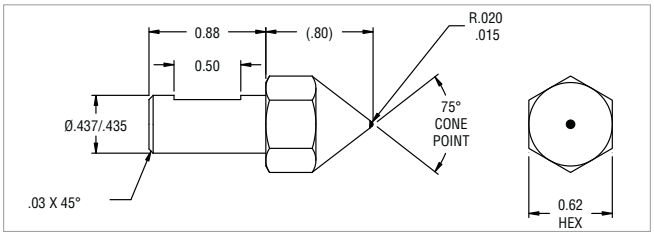
TIER: **BEST**

INCLUDED ANGLE ON DIAMOND	RADIUS ON DIAMOND	TOOL CARAT WEIGHT	SHANK DIAM.	TOOL LENGTH	PRODUCT #	RELAPPABLE PART #
Stock U-Dex-It Cone Point Tool						
75°	.020"	.50	7/16"	1.678"	CPUD720-7	66260158981

Standard Package = one tool

WHEEL FORMS DRESSED BY THESE TOOLS





SPEC CHECK

Cone Point Tool Marking System

Tool Type	Included Angle On Diamond	Radius On Diamond	Carat Weight	Shank Diameter
CP	6 = 60°	05 = .005"	L = .10 - .15	6 = 3/8"
	7 = 75°	10 = .010"	M = .20 - .25	7 = 7/16"
	9 = 90°	15 = .015"	H = .33	
		20 = .020"	X = .50	
		25 = .025"		
		30 = .030"		

Example: **CP 6 10 M-6**

Refer to our Diamond and cBN Superabrasive Standard Product Catalog #8068 sections on www.nortonabrasives.com or ask your Norton representative for information on our made-to-order form tools for the following machines:

- Jones & Lamson
- Moore Pantograph
- Hoglund
- Dia-Form

TECH TIP

How to Use Form Dressing Tools

- Proper centerline and light infeeds are essential to minimize side pressure. Excessive pressure will cause the diamond to fracture.
- Cone point tools should be rotated approximatley 1/4 turn daily.

Form Tools *continued*

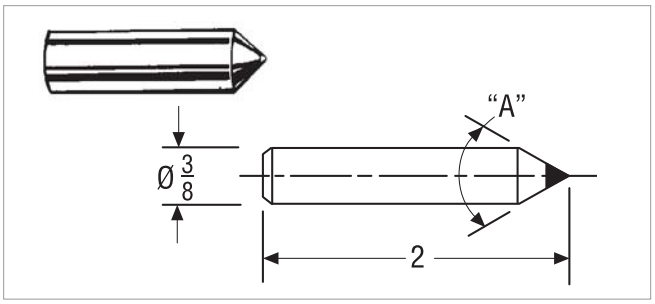
Standard Cone Point Tool

These tools are used for precision dressing when the most intricate forms and radii are required. Can be relapped.

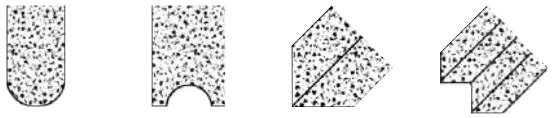
TIER: **BEST**

INCLUDED ANGLE ON DIAMOND	RADIUS ON DIAMOND	TOOL CARAT WEIGHT	SHANK DIAM.	TOOL LENGTH	PRODUCT #	RELAPPABLE PART #
Stock Standard Cone Point Tools						
60°	.010"	.20 – .25	3/8"	2"	CP610M-6	66260195240

Standard Package = one tool



Wheel Forms Dressed by These Tools



Refer to our Diamond and cBN Superabrasive Standard Product Catalog #8068 sections on www.nortonabrasives.com or your Norton representative for more in-depth information on all Norton superabrasive stock and made-to-order products.

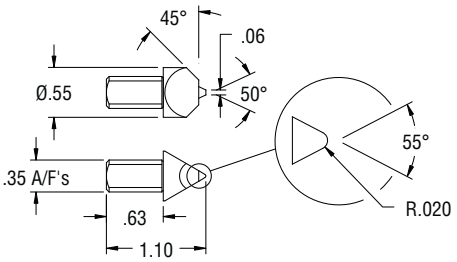
Chisel Point Tool for Toyoda Grinders

High-precision chisel point tool designed for forming intricate shapes and radii. Specifically engineered to fit Toyoda machine series GL32 and GL4, it can also be used on various straight and angle-head grinders – for dressing conventional and ceramic abrasive wheels, sizes 12" to 24". This tool can be reset/relapped.

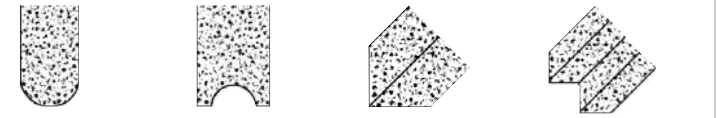
TIER: **BEST**

INCLUDED ANGLE ON DIAMOND	RADIUS ON DIAMOND	TOOL CARAT WEIGHT	SHANK DIAM.	TOOL LENGTH	PRODUCT #	RELAPPABLE PART #
Stock Chisel Point Tool						
55°	.020"	.75	7/16"	1.10"	CHT520-7	66260103741

Standard Package = one tool



Wheel Forms Dressed by These Tools



TECH TIP

Chisel Point Tool Marking System

Tool Type	Included Angle On Diamond	Radius On Diamond	Carat Weight	Shank Diameter
CH = Natural Diamond	6 = 60°	05 = .005"	L = .10 - .15	6 = 3/8"
	7 = 75°	10 = .010"	M = .20 - .25	7 = 7/16"
	9 = 90°	15 = .015"	H = .33	
		20 = .020"	X = .50	
		25 = .025"		
		30 = .030"		

Example: **CH 9 5 M-6**

TECH TIP

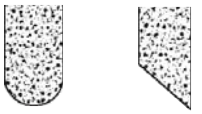
CHISEL POINT TOOLS

Chisel Point Tools should be rotated 180° when dulling or contour problems occur.

Cluster Tools

Norton Cluster tools are designed specifically for straight face dressing of large diameter, coarse grit grinding wheels on single or double disc, centerless, or surface grinders.

Wheel Forms Dressed by These Tools



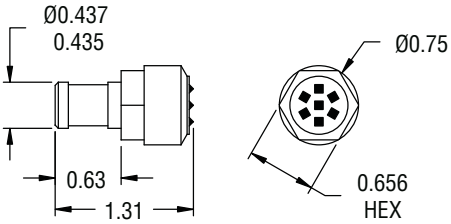
CONVEX TAPERED

Multi-Point Cluster Tools

Multi-Point Cluster tools are typically used for straight face dressing on disc and centerless operations. For greatest efficiency, these tools should be mounted at a 15° angle so that three diamonds are in contact with the wheel face at all times. The tool should be rotated at frequent intervals. Not resettable.

			TIER: BETTER	
DIAMONDS ON FACE	**SHANK DIAMETER**	**TOOL LENGTH**	**PRODUCT #**	**NON-RESETTABLE PART #**
Stock Multi-Point Cluster Tools				
7	7/16"	1-5/16"	NC7K7	66260195206

Standard Package = 1 Tool



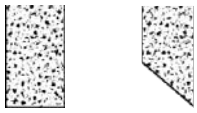
Dia-Pak Tools

Dia-Pak tools are primarily used in straight face disc grinding, but are extremely versatile and may also be used in centerless and surface operations. Designed for maximum economy, three layers of diamond are carefully arranged so that a new layer is exposed before the previous layer is completely worn away. Not resettable.

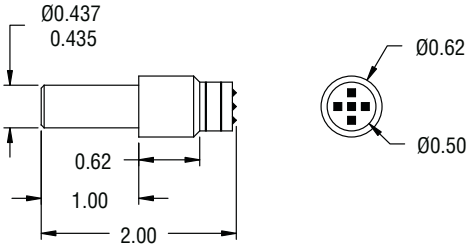
				TIER: BETTER	
FOR WHEEL DIAMETERS	**DIAMONDS PER LAYER**	**SHANK DIAMETER**	**TOOL LENGTH**	**PRODUCT #**	**NON-RESETTABLE PART #**
Stock Dia-Pak Tools					
Up to 14"	5-4-5	7/16"	2"	DP20	66260195200
Up to 20"	7-6-7	7/16"	2"	DP30	66260195201
Any	7-6-7	7/16"	2"	DP35	66260195202

Standard Package = 1 Tool

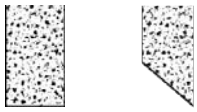
Wheel Forms Dressed by These Tools



STRAIGHT TAPERED



Wheel Forms Dressed by These Tools



STRAIGHT TAPERED

TECH TIP

Cluster and Dia-Pak Tools – Straight face dressing of hard / coarse wheels:

Tool should approach the wheel at a 15° angle and be rotated periodically to keep three diamonds in contact with the wheel at all times.

Tools can also be used at a 90° to the wheel face.

Multi-Point Cluster tools should be rotated at frequent intervals.

Infeed per pass should not exceed .0015" (.001" with ceramic – Norton SG, Quantum, Targa TG, etc. – wheels).

Use coolant whenever possible.

These tools permit a faster traverse rate providing a freer cutting wheel than when dressed by a conventional single-point tool.

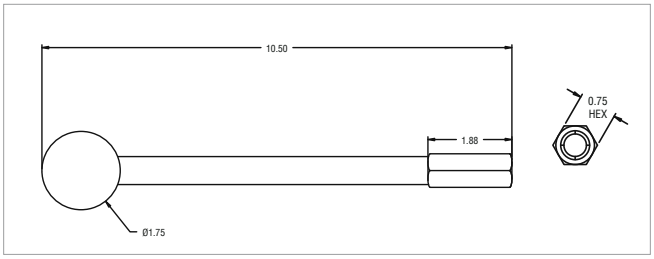
Accessories

Tool holders typically used in toolroom applications.

Tool Holder/Hand Dresser

Designed for use when offhand truing and dressing on tool and cutter, or benchstand grinders. This stock hand dresser will not rust, and is 10-1/2" long, with a hollow shaft that accepts any tool shank length from 3/4" to 9". The 1-3/4" diameter plastic knob ensures a firm grip. The collet accepts a 7/16" diameter tool shank.

DESCRIPTION	PART NUMBER
Hand Dresser	66260195020



DIAMOND STATIONARY FLIESEN TOOLS

Open or Closed Dressing... You Can Count on Fliesen Tools

Whether dressing a wheel OPEN or CLOSED you can count on Fliesen tools. Open wheels (sharp, free-cutting abrasive grains are exposed) are created by increasing the speed a Fliesen tool moves across the wheel when dressing. Generally considered the most favorable wheel conditioning, open wheels avoid workpiece burn while maximizing a wheel's ability to remove metal quickly when grinding.

Slowing a Fliesen tool as it moves across the wheel creates a closed wheel condition (abrasive grains are smoother, less sharp), a very helpful condition when trying to lower part surface finish readings.

- Harder, H-bond metal formulation tools have been specifically engineered to efficiently dress durable silicon carbide and ceramic wheels
- Furioso Fliesen tools have a unique bond system developed for optimal performance when dressing Norton Quantum (NQ) ceramic wheels
- W-bond Fliesen tools are designed for conventional aluminum oxide wheels

The Benefits of Fliesen Tools

Spend More Time Grinding

Single point, chisel, and cone point tools require operator attention to ensure proper tool rotation at regular intervals. Fliesen tools require no adjustments. Simply install the tool, dress the wheel to break it in, and the tool will do the rest. Operators spend more time grinding – rather than making non-productive dressing adjustments.

Longer Tool Life

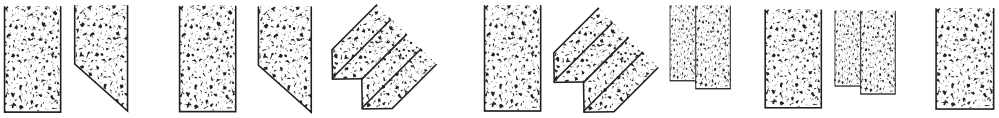
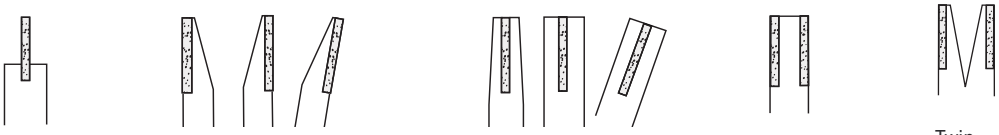
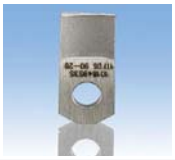
Expect long life when using a Fliesen tool. Other stationary tools, made with a single diamond stone, develop flat spots ("wear flats") over time – which create chatter and burn. Fliesen tools use hand-set, fine diamond grit, eliminating the creation of wear flats.

Fliesen Tool Configurations: Plate and Shank

Fliesen tools are available in two basic tool configurations. The most common is a plate configuration, which is somewhat rectangular-shaped with a mounting hole. Fliesen shank tool configurations are plates mounted in shanks of varying sizes and shapes. Most grinding machines accommodate one or the other tool configuration. To find the correct tool configuration for your machine, check the existing dressing tool, or consult your grinding machine manual.

Choosing The Correct Fliesen Tool

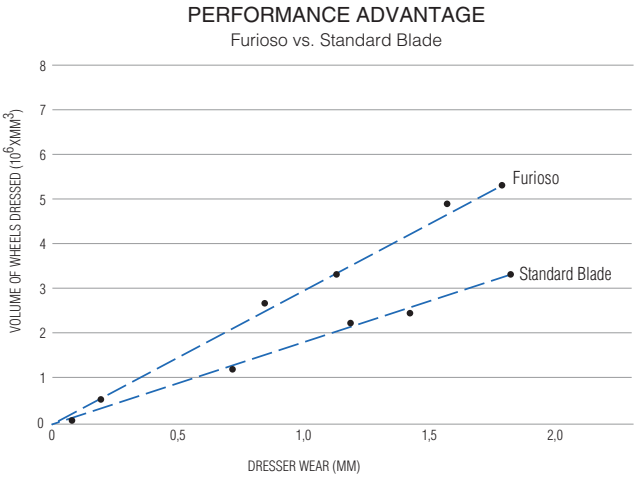
Using the chart below, find your desired wheel form – then locate the preferred diamond position. Next, find the correct tool configuration for your machine: plate or shank tool. Follow down that column to find the Fliesen page for your plate or standard shank tool configuration. Go to the appropriate page. Locate the corresponding zone for your wheel diameter and width on the graph. Find that zone number in the part number chart. Next, moving to the right, find your wheel abrasive type and grit size. Locate the part number for your Fliesen tool.

Desired Wheel Form					
Diamond Positions					
	Blade Only FR	Side-Mounted FRS, FAS, FBS, FCS & FDS	Center-Mounted FAS, FBS, FCS & FDS	Double-Sided FCSD & FDSD	Twin FDST, FSST & 1TFAS
TOOL CONFIGURATION					
Plates 	Consult Customer Service	Page 287 – 288	Consult Customer Service	Consult Customer Service	Page 287 – 288
Shank Tools 	Consult Customer Service	Consult Customer Service	Consult Customer Service	Consult Customer Service	Consult Customer Service

DIAMOND STATIONARY FLIESEN TOOLS

Furioso Tools

The new generation of highly wear-resistant stationary diamond dressing tools for dressing modern ceramic abrasives



FURIOSO TOOLS

BEST CHOICE FOR OPTIMUM PERFORMANCE OF NORTON QUANTUM CERAMIC WHEELS

FEATURES	BENEFIT
• The optimized combination of diamond quality, bond and setting pattern when dressing Norton Quantum (NQ) ceramic grinding wheels	• Improved wear-resistance • Excellent dressing behavior • Constant surface roughness

Standard Furioso Plate Drawings

Plate or Special Mounts
FAS – Furioso

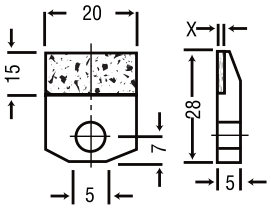


Plate Only, With Adapter
Twin 1TFAS – Furioso

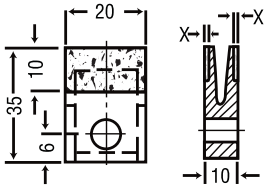
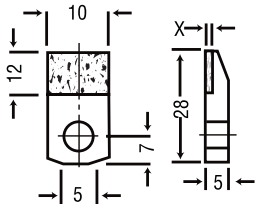
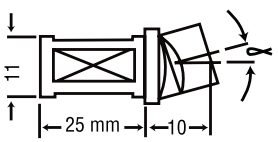


Plate or Special Mounts
FBS – Furioso



Typical Shank-Mounted
Design



See the complete line of Norton Fliesen Tools

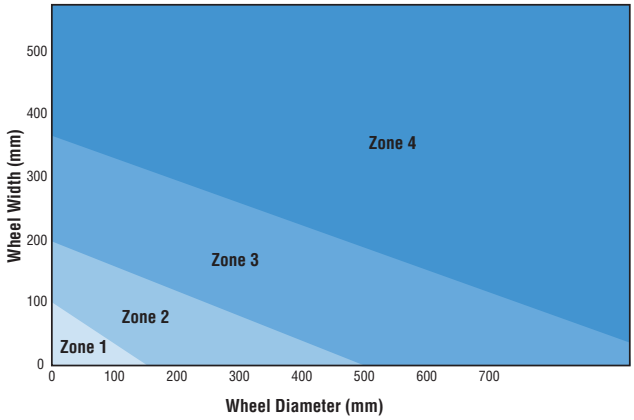
These three pages highlight a small sample of our Fliesen tool offering. Refer to our Diamond and cBN Superabrasive Standard Product Catalog #8068 sections or see the “Fliesen Tool” section on nortonindustrial.com or ask your Norton representative for complete product listing and information on these tools.

Furioso Plates; Side-Mounted and Twin

Use the Wheel/Tool Graph to identify your grinding wheel's Zone number, and the chart below to find the Furioso tool for your application.

Wheel / Furioso Tool Graph

Select Zone based on wheel diameter and width



TIER: **BEST**

TO DRESS: Norton Quantum NQ Ceramic Wheels

	ZONE NO. / SERIES	WHEEL GRIT SIZE	TOOL #	PART #	DESCRIPTION
Side-Mounted					
	**Zone 2** FBS Series	36 - 54	DT1463	69014122948•	FBS 140 Furioso
		54 - 80	DT1462	69014122947•	FBS 115 Furioso
		80 - 120	DT1461	69014122946•	FBS 90 Furioso
		120 - 180	DT1460	69014122944•	FBS 75 Furioso
	**Zone 3** FAS Series	36 - 54	DT1467	69014122952•	FAS 140 Furioso
		54 - 80	DT1466	60157690579•	FAS 115 Furioso
		80 - 120	DT1465	60157693885•	FAS 90 Furioso
		120 - 180	DT1464	69014122950•	FAS 75 Furioso
Twin					
	**Zone 4** 1TFAS Series	36 - 54	DT1471	69014122956•	1TFAS 140 Furioso
		54 - 80	DT1470	69014122955•	1TFAS 115 Furioso
		80 - 120	DT1469	69014122954•	1TFAS 90 Furioso
		120 - 180	DT1468	69014122953•	1TFAS 75 Furioso

• ALL FURIOSO PLATES shown ship in 10 business days from receipt of order.

SPEC CHECK

Blade Size

DESCRIPTION		DIMENSION
1	FBS	10 mm thick, 15 mm usable length
2	FAS	20 mm thick, 15 mm usable length
3	TFAS	Twin blade with cooling duct

Diamond Grit Size

DESCRIPTION	FEPA
140	D1181
115	D1001
90	D711
75	D501

Furioso Shank Tools

Made-to-order Furioso shank tools are also available. Ask your Norton representative for ordering assistance.

Side-Mounted Diamond Sections

Tools are available in different offset positions and angles.

Offset Left, Specify angle amount

Zero Offset

Offset Right, Specify angle amount

Tipping the Diamond Plates on Shank Tools

Diamond sections can be tipped right or left.

Diamond Tipped Left, Specify angle

Diamond Tipped Right, Specify angle

There are many different diamonds making up a single plate as this cut-away view shows.

ROTARY DRESSING TOOLS

Norton diamond rotary truing and dressing tools provide a very efficient way to modify the shape and topography of your grinding wheels.

Products:

Form Rolls: plunge dressing
- Infiltrated diamond form rolls
- Reverse plated diamond form rolls

Dressing Discs: uni-axial traverse dressing
- Infiltrated dressing discs
- BPR dressing discs
- IDW dressing discs

Truing and Dressing Spindles and Devices

Form Roll: Plunge Dressing

- Diamond roll geometry matches geometry of part to be ground
- Roll is fed into grinding wheel to generate the desired form and wheel surface condition
- Used where lowest cycle time and highest accuracy is required

Dressing Disc: Uni-Axial Traverse Dressing

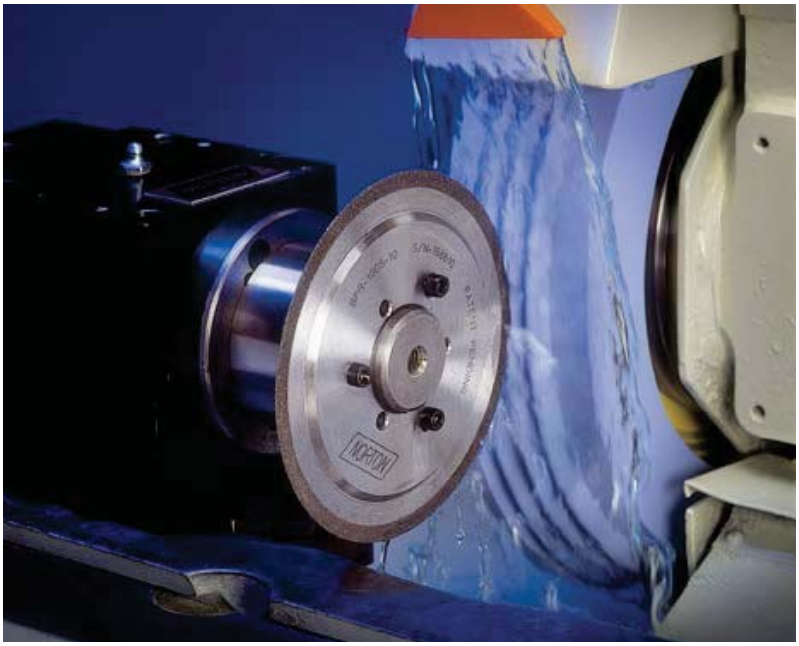
- Diamond dressing disc has a thin diamond section that is traversed across the face of the grinding wheel
- Profile is generated with a CNC program or template
- Used for simple profiles or where flexibility is necessary

How to Order Rotary Dressing Tools

Provide the following information to your local sales representative or customer service representative

Legible blueprint of roll, wheel, or part with the following geometry:

- Overall diameter
- Overall length
- Bore size and tolerances required
- Mounting pattern
- Any feature with tolerances less than 0.0002" (5 um) must be clearly defined for engineering review.
- If designing from a part, a fully dimensioned part drawing is required
- Abrasive type (natural diamond, synthetic diamond, CVD stones, etc.)
- Specification of wheel to be dressed (need at least the grit type and size)
- Dressing type (Plunge or CNC Profiling)



Request the “Norton Rotary Truing and Dressing” brochure, form # 8535, and contact your Norton representative for more information and expert assistance with your dressing operation.