



CATALOG NO. 101

Severance®

High Speed Steel and Carbide CUTTING TOOLS

Precision Finishing

Chatterless Design



Severance® Tool Industries Inc. Saginaw, Michigan 989-777-5500

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Severance[®] Regrind Services

Severance Tool Industries, Inc. was founded in 1931, as a tool sharpening service for the automotive plants in the Saginaw area. Grinding techniques developed by Mr. Severance proved so successful that his reconditioned tools significantly outperformed the original cutters. After nearly eight decades, Severance has become a leading manufacturer of rotary cutting tools, but is still the nation's largest regrinding service.

Experience Pays

The Severance Regrind Department is staffed by the company's most experienced personnel because restoration is a more exacting task than original manufacture. The first challenge is to correctly identify incoming tools as to their brand, size, shape and catalog number (or drawing number in the case of specials). Then, the degree of damage is evaluated for each tool to determine the processing steps needed to restore it to original specifications.

Attention to Detail

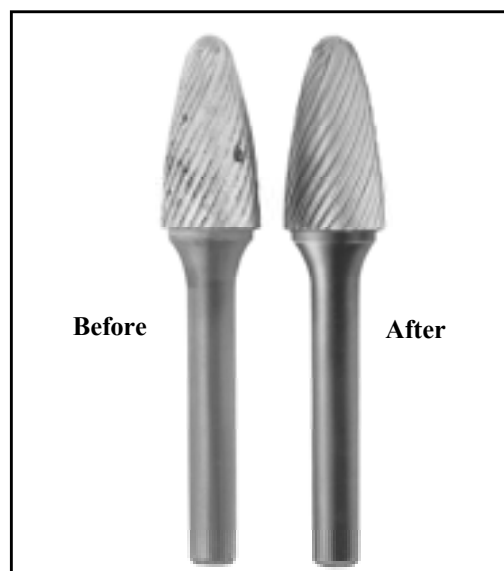
Severance receives many tools for regrinding that are neither cataloged items (ours or other brands) nor Severance-manufactured specials. If these tools are not accompanied by a description or drawing, they go to our inspection department. Engineering prepares a drawing, based on identifiable dimensions and features of the tool. The customer may be called to resolve any remaining questions. A print is then retained in the incoming inspection file against future appearances of the tool.

Establishing Shape

Tools that need anything more than a light sharpening cut goes to the machine grinding department. Here, the basic shape of the tool is reestablished by removing enough material to get rid of dull edges and chips. After repeated regrindings, or when major damage is involved, the tool may need refluting. This operation is also done in the machine regrinding department.

The Cutting Edge

The final step in the reconditioning of a cutting tool is "backing off" the cutting edge. This hand grinding operation removes material behind the edge at a specified angle, leaving a thin land to support the cutting edge. Final cutting tooth geometry determines the performance and durability of the tool, so our craftsmen adhere very closely to established specifications.



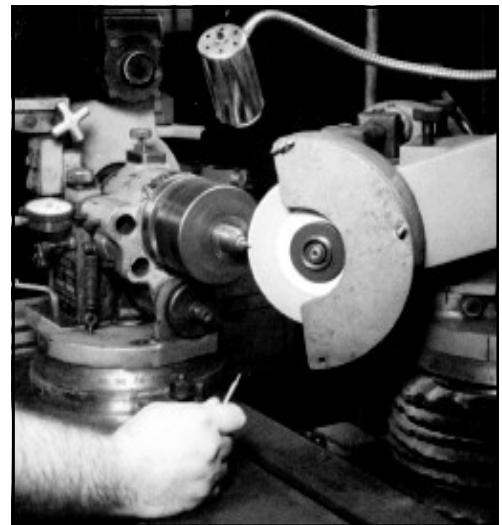
Regrinding

The photo at the right shows a six-flute Chatterless-Countersink™ which has become dull in service and was returned to Severance for restoration. It will receive our basic regrind service to the price listed in the current Price Supplement. After grinding, the tool will be slightly shorter than its original length, but will be functionally the same as new. When side cutting tools, such as Midget Mills®, router bits, milling cutters and saws, are reground, their working diameters are necessarily reduced.



Recutting

This Chatterless-Countersink™, identical when new to the one above, has been chipped rather badly. It is salvageable by grinding the teeth down to a point below the chips, then backing off the edges. As the amount of material that must be removed becomes larger, each tooth becomes thicker and the central diameter becomes larger. At some point, the flutes will have to be recut to preserve the working range of the tool. Recutting the flutes adds to the cost of reconditioning the tool. This expense can't be standardized, but it will be quoted on request.



Reconditioning

The Chatterless-Countersink™ pictured here has experienced a real disaster. The damage extends so deeply into the carbide that there's not enough material left to re flute and regrind. This tool will require extra work and will be priced accordingly. We will provide a quotation before any work is done if requested to do so by the customer. Tools that are beyond repair will be returned at no charge, with no work done.

Some regrind customers request that a quotation be provided before work is begun on their orders. This can be done by telephone, fax, or correspondence, per your request. Most customers who have worked with Severance on a regular basis simply leave the regrind / recut / recondition decisions to us, knowing that they will get the best possible service at the most reasonable price.



Special Tools And Modified Standards

Tooling

These special tools are designed to produce a complex hole shape in a single pass. They can incorporate as many steps, tapers, radii or contours as necessary. They are manufactured in sizes ranging from less than 1/8 inch in diameter to over four inches. They can usually be produced in either steel or carbide, and may be reground many times for extended service.

Modified Standard

Standard rotary tools can be customized in a variety of ways to better solve specific cutting applications. Special material removal requirements, nonstandard tooth pitches or cuts; meeting special material requirements or machine speeds . . . special shanks; extra long, threaded, flatted, over or under sized can be supplied. Even flexible shafts for deburring impossible-to-reach surfaces, have been created. Tools that are cataloged only in high speed steel can usually be supplied in carbide or titanium nitride coated, to extend tool life.

Severance has the advanced technology to solve most tooling requirements.

If It Can Be Machined With A Rotary Tool.

Severance Can Provide The Tool To Do It.

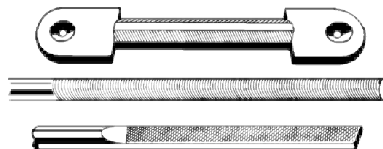
Just send us your customer's special tool problem for prompt engineering analysis, recommendation and quotation via FAX (989)-777-0602. We'll respond with a solution that will be cost effective for your customer and profitable for you.

Some examples of specials and their uses



REF. # 53999

A Special Severance Flex-Shank Midget Mill®. Flexible shanks are used for those hard to reach inside deburring applications. Flex-Shanks are available in several dia



REF. # 55375

Special Severance Hand and Die Files. Special files for different customer applications. Available in carbide, high speed steel, diamond (DCF), or borazon (CBN).



REF. # 51916

Special Severance Deburring Tools. Special deburring tool with special cuts to meet customer needs.



REF. # 50766

A Special Severance Radius Countersink. Radius Countersinks are used to round off the edge of holes.



REF. # 53260

A Special Severance Taper Reamer. Taper reamers for reaming pipe.



REF. # 55376

Special Severance Stop Countersinks. Special designs such as special number of flutes, special angles, special pilots, and special diameters.



REF. # 55374

Special Severance Chamfering Tools. Special inside and outside chamfering tool that is spring loaded to meet customer requirements.



REF. # 51564

Here is a special threaded milling cutter.



REF. # 55377

A Special Severance Milling Cutter. Used to mill watchcases and backs without chatter and without collapsing the case is the feat performed by this tool.

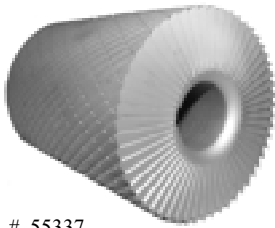


REF. # 55378

Severance can do either small or large runs on special tools. Such as these Midget Mills® with a special cut.

These are considered special items and are not returnable for credit

Some examples of specials and their uses



REF. # 55337

This extra large Midget Mill® has a 4" diameter and was 8" long.



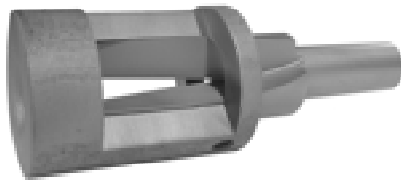
REF. # 55338

This special Severance tool was put on the end of a handle and used to change light bulbs in high hard to reach places. Bulb Snatcher.



REF. # 55339

This special Severance Midget Mill® was designed with a guard on each end.



REF. # 55340

This special outside chamfer mill with a guide on it was designed to put a sharp angle on a customers part. Such as grounding rods.



REF. # 55341

These Special Pencil Mills are used for milling teeth on oil and water rotary drilling bits (rock bits).



REF. # 55342

Here is a special piloted counterbore.



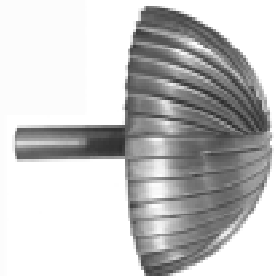
REF. # 55343

Here is a special designed piloted milling cutter made for a customers special needs.



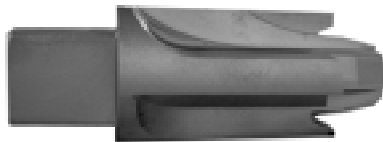
REF. # 50766

These Tools are used to deburr holes in automotive crank shafts. These tools can also be made to deburr a variety of hole applications.



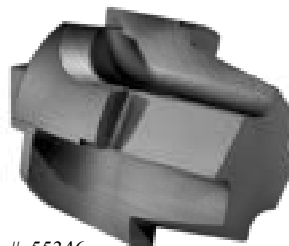
REF. # 55344

This tool was used to polish the inside of the old flash bulb shields on older cameras.



REF. # 55345

This special pipe forming tool was use on the end of a pipe threader to form the end of a certain size pipe.



REF. # 55346

Here is an example of a larger pipe forming cutter like the one seen to the left.



REF. # 55347

This tool was used to radius the corner of a special part, This tool has a ring around the outside so that the cutter will only go so deep and is used as a stop.

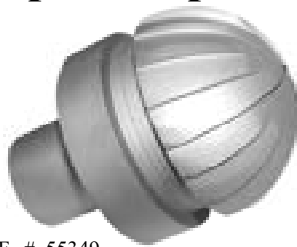
These are considered special items and are not returnable for credit

Some examples of specials and their uses



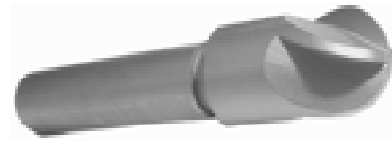
REF. # 55348

A Special Severance Tough-Sink™. This countersink has 3 flats on the shank to prevent spinning in a drill chuck.



REF. # 55349

Special Severance ball shaped deburring tool.



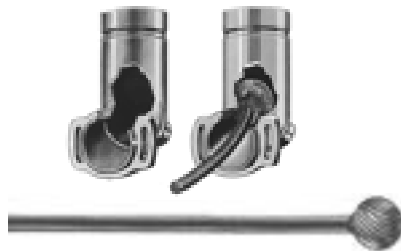
REF. # 55350

Special Severance chatterless™ ball seat reamers. These tools are used on steering gears, ball pin sockets, fuel injector plungers, valve push rod caps, gear shift lever seats, molds, and many other applications.



REF. # 70502

Special Severance carbide metric chatterless-Countersink™ with a Morse taper shank.



REF. # 56455

Many cases of puzzling, inside, blind, interrupted, winding, and around the corner; cleaning and deburring problems have been solved with Severance FLEX-SHANK Midget Mills®.



REF. # 55351

A Special Fish Tail Severance Carbo-Routs™. For drilling and Contouring in fiberglass composite.



REF. # 51396

Severance Wheel Dresser. Used for dressing wheels



REF. # 51213

These special Severance crowning tools are used by the military for guns.



REF. # 55353

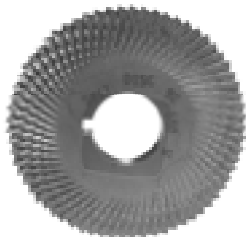


REF. # 51342

Special Severance Valve Seat Tools. These tools are used to form angles on pressure seating valves. Available in both inside and outside styles.



REF. # 51965



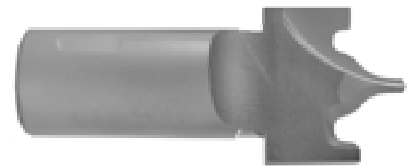
REF. # 55355

Special Severance carbide and H.S.S. disc and milling cutters can be provided for many applications.



REF. # 55356

Special drill point countersinks can be provided in a variety of angles and sizes.



REF. # 55357

Here is an example of a special Severance forming tools. Used to form the mouth-piece on a coronet musical instrument.

These are considered special items and are not returnable for credit

Some examples of specials and their uses



REF. # 51813

This is a midget mill made with straight teeth and chipbreakers to meet a customers needs. This design was used for surgical.



REF. # 50935

This special surgical burrs were made out of stainless steel for the medical industry.



REF. # 55359

Severance can grind the teeth on customer hip rasps for surgical applications.



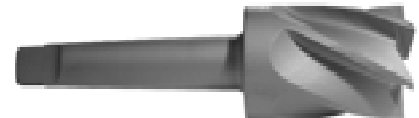
REF. # 50656

Special Severance finning cutters are used for deburring in confined areas that are hard to reach.



REF. # 50600

Special grooving tools are available for a variety of grooving applications.



REF. # 55358

Special Severance end mills and counterbores can be supplied. Can be supplied with pilots on the end also.



REF. # 55360

Special hole saws can be provided for an array of applications



REF. # 55361

Severance can make special hollow mills to fit customer applications.



REF. # 51916

Special flute geometry. This cutter has a herringbone cut. Used to deburr automotive universal joints.



REF. # 54443

This special Severance inside chamfer mill was used for deburring holes on a fiberglass boat.



REF. # 55363

This special cutter was used to cut Jean material for a fabric producer.

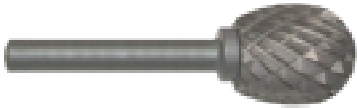


REF. # 52210

This tool was made to mill a groove in blocks of brick for kilns. The groove is used for heat coils.

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Some examples of specials and their uses



REF. # 55365

This is a Wood Burr with a coarse cut, double cut, and a large radius in the bottom of the flutes for removing chips when working on wood.



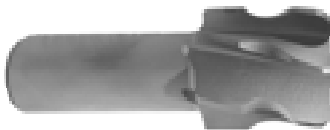
REF. # 55365

Solid finish ground rod can be ordered special with square unfinished ends with tolerances $+.0000/-0.0005$. Used for locating pins and special tools.



REF. # 55366

Solid finish ground rod can be ordered special with split both ends with tolerances $+.0000/-0.0005$ diameters and split of $.001/.000$ above centerline. Used for quick custom lathe tools, burring tools, and other types of special tools.



REF. # 55367

This special radius formed milling cutter was used to radius the edge of a customers part.



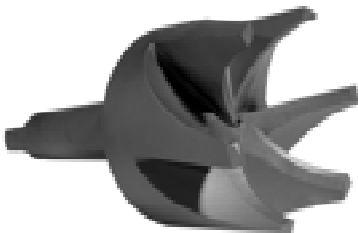
REF. # 55368

Here is another example of a special radius cutter to form a customers part.



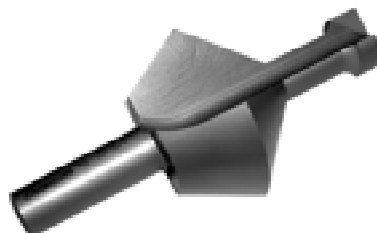
REF. # 50530

Here is a special rivet shaver use in the aircraft industry for removing old rivets off aircrafts.



REF. # 53690

This large special end hollow mill was use to form a part for a plastic injection mold machine.



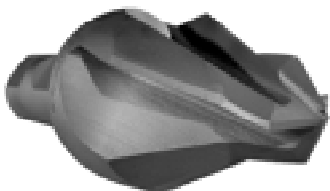
REF. # 50148

This special router-bit was made to put a special form on the edge of a customers part.



REF. # 51585

Slotting cutters can be made in a variety of diameters and widths to fit special needs.



REF. # 55369

Specialty countersinks can be made to do an array of countersinking needs. Can be made for sizing and chamfering special wheel bolt holes and lug nuts.



REF. # 54479

This specialty cutter was used by the military for a special gun lug applications and gun sights. A larger tool was used for cruise control arm lever hole.



REF. # 50661

This is a special spiraled end mill made for the oil drilling industry.

These are considered special items and are not returnable for credit

Some examples of specials and their uses



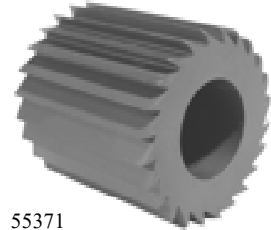
REF. # 55370

Special stop-countersinks can be ordered in a variety of diameters, angles, pilot sizes, and thread sizes.



REF. # 52012

Here is a shell mill made by Severance to a customers print.



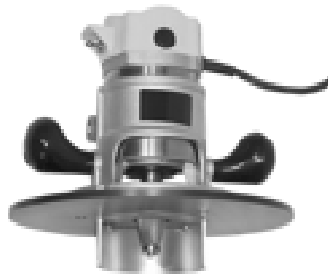
REF. # 55371

Milling cutters can be made with both special sizes and special flute configurations to meet customers needs,



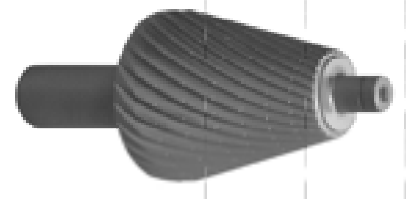
REF. # 53260

Here is an example of a special taper reamers to taper the inside of a hole. Used on spindles and torches.



REF. # 50916

Here is an example of a special router bit with a bearing on the end in a router made for deburring the inside of plastic pipe.



REF. # 50916

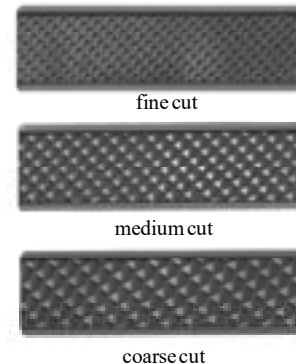
Here is the cutter used in the router to the left. A bearing is put on the end of this cutter to use as a guide. The tool levels the inside of PVC tubing.

WB-Wood Burrs™



REF. # 54884

Severance Tool developed **WB-Wood Burrs™** that are Midget Mills® made with a special cut for the carving of wood. Different shapes and sizes can be made with this style of cut.



REF. # 53260

Severance has even made float files for equestrian use on horse teeth. The blades go into a float handle to be used to file down uneven horse teeth.



These are considered special items and are not returnable for credit

Phone: 989-777-5500 Fax: 989-777-0602

E-Mail: severancetool@sbcglobal.net

Severance®

Severance Tool Industries Inc. • POB 1866 • Saginaw, MI 48605

Severance® Tool Industries, Inc.

Special Product Quotation Request

New Quote # _____

Old Quote # _____

Distributor Data:

Company: _____

Address: _____

City/State/Zipcode: _____

Contact: _____

Phone: _____

Cell Phone: _____

Fax: _____

Salesperson: _____

Computer #: _____

Date of Inquiry: _____

Complete Engineering: _____

Sales Response Date: _____

Follow-Up: _____

End-User Data:

Company: _____

Address: _____

City/State/Zipcode: _____

Contact: _____

Phone: _____

Cell Phone: _____

Fax: _____

Application:

Machine Held: _____

Coolant: _____

Hand Held: _____

Dry: _____

Unit: _____

Currently Used: _____

Material to be Machined:

Stainless Steel: _____

Specific Type: _____

Wood: _____

Plastic: _____

Aluminum: _____

Other: _____

Work Hardening: _____

Quantity & Discription:

Quantity: 1 2 5 10 25 50 100 250 _____

Type of Tool: _____

Second Tool: _____

Third Tool: _____

Over All Length: _____

Length of Cut: _____

Number of Flutes: _____

Angle: _____ C/L or Included

Shank: _____

Straight: _____

Diameter: _____

Threaded: _____

Threads: _____

Tapered: _____

Taper: _____

Additional Information: _____

Material of Item:

4140: _____

M-2: _____

M-42: (cobalt): _____

C-2(Tungesten Carbide): _____

Other: _____

Rockwell Desired: _____

Coatings:

Black Oxide: _____

TIN Coating: _____

TIALN Coating: _____

Diamind Grit: _____

Other: _____

Drawing or Sketch: