



Hole & Thread Cutting

Buying Guide



Drilling & Threading



Cutting



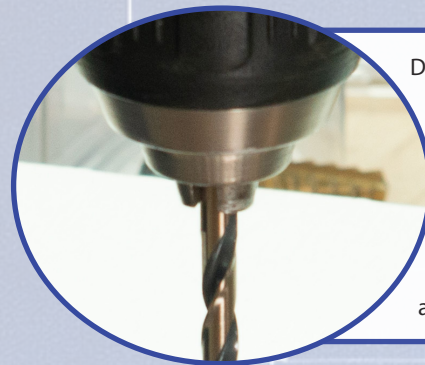
Deburring



Punching

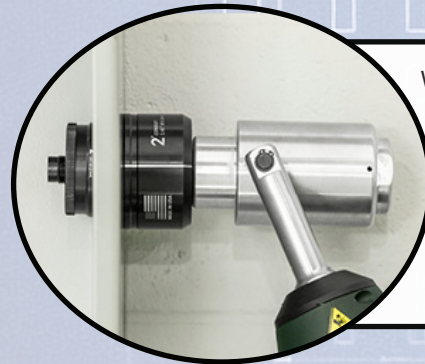
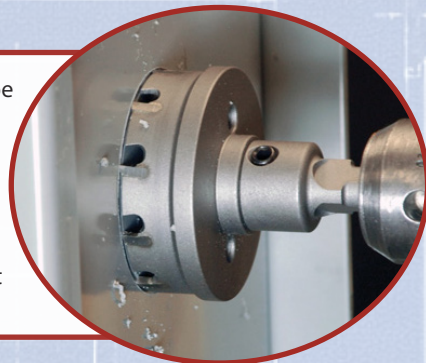


Methods and Materials



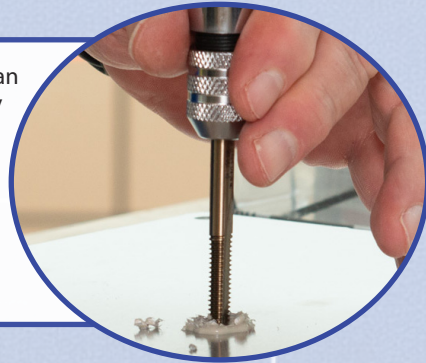
Drilling is the starting point for nearly every hole-making operation. A standard twist drill creates a precise round hole through metal, plastic, or composite — and the bit type you choose determines how clean, accurate, and efficient that hole will be. Jobber length bits are the general-purpose workhorse for most through-hole applications, while shorter screw-machine length bits offer better rigidity for thin materials and portable tools. For tight-tolerance work in hard metals, mechanic length split-point bits start without center punching and resist walking on contact. When your task is enlarging an existing hole or stepping up through multiple diameters in a single operation, step drill bits are the right call — their progressive cutting geometry reduces heat and wear, lasting up to four times longer than conventional designs in sheet metal and similar substrates.

When you need a large-diameter round opening — for conduit entry, junction boxes, pipe pass-throughs, or access panels — a hole saw removes a clean slug rather than turning the entire material to chips. Bi-metal hole saws are the do-it-all choice, handling steel, stainless, aluminum, wood, plastic, and composite with a single saw. For high-volume or demanding jobs in sheet metal and conduit, carbide-tipped hole cutters outlast bi-metal and produce cleaner edges with less heat. If you're working exclusively in sheet metal with an impact driver, impact-rated hole saws offer fast size changes via a 1/4in quick-change shank and a shoulder cap that prevents breakthrough. All hole saw methods require a pilot hole and produce a cut edge that will benefit from deburring.



When a clean, burr-free opening in sheet metal or an enclosure panel is the goal — or you don't have access to a drill press or milling machine — a knockout punch is the most efficient solution. Rather than cutting through material with rotating teeth, a punch and die set shears a clean slug in a single stroke, leaving a finished edge that rarely needs additional treatment. Knockout punches are available in round, square, and rectangular configurations, making them the only method in this guide capable of producing non-round openings. Manual wrench, manual hydraulic, and battery powered drivers are available depending on volume and material thickness. Choose knockout punching when edge quality, shape flexibility, and speed matter more than portability.

Threading creates internal screw threads inside a drilled hole so that a bolt or machine screw can be fastened directly into the material — no nut required. The drilled hole must be sized precisely to the tap before threading begins. Machine taps with a spiral point are designed for production environments and through-hole applications, ejecting chips forward to prevent clogging. Hand taps are the choice when machine access is limited or when working with delicate materials requiring careful control. Combination drill-and-tap tools streamline the process by drilling and threading in a single operation. Taper pipe taps produce tapered threads for leak-proof pipe fittings. Threading is most commonly applied to steel, stainless steel, cast iron, and brass.

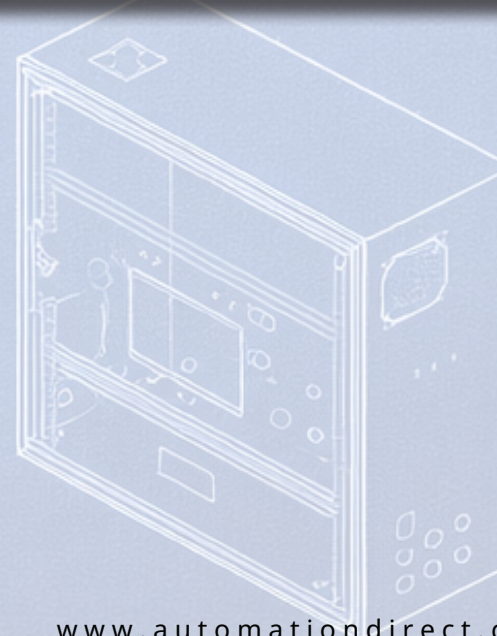


Every cutting operation leaves behind a burr — a sharp, raised edge of displaced material that can cause injury, interfere with fastener seating, or compromise a seal. Deburring removes that edge cleanly and safely. Shaviv's modular blade-and-handle system covers the full range of deburring needs: Both B and E-series blades can tackle straight edges, hole edges, and cross hole edges on most materials. E-series blades are larger and more durable for heavy duty material removal. F-series are built to handle hole deburring while also adding a finishing chamfer. The handle and holder you choose determines reach and control. The Mango IIB and IIE put the blade right up against the work, while extendable holders get into recessed areas that standard reach can't touch. If the hole was drilled or hole-sawed, plan on deburring.

Methods and Materials Table

	Drilling	Hole Saw / Cutting	Knockout Punching	Threading	Deburring
MATERIAL COMPATIBILITY					
Mild Steel	✓	✓	✓	✓	✓
Stainless Steel	✓	✓	✓	✓	✓
Aluminum / Non-Ferrous	✓	✓	✓		✓
Cast Iron / Brass	✓	✓	✓	✓	✓
Plastic / Composite / Wood	✓	✓ ¹			✓
HOLE SHAPE					
Round	✓	✓	✓	✓	✓
Square			✓ ³		✓
Rectangular			✓ ³		✓
PROCESS REQUIREMENTS					
Requires Pilot Hole		✓	✓		
Requires Deburring After	✓	✓			
BEST FOR					
Conduit / Panel Entry		✓	✓		
Structural / Through-Hole	✓	✓	✓	✓	
Thread Creation				✓	
Enlarging Existing Hole	✓				
Large Diameter Through-Holes		✓ ²	✓		

1. Bi-metal hole saws only
2. Impact hole saws are sheet metal only (1/8in max depth)
3. Square and rectangular punch shapes from Cembre only



Drilling



Threading

Viking Drill & Tool has been engineering precision cutting tools to strict industry standards for over 50 years. Every bit in this lineup is built from high-speed steel and offered in multiple configurations — so whether you're working off a drill press, a handheld driver, or an impact tool, there's a Viking bit sized and shanked for the job.

Viking Drill & Tool covers the full tapping workflow — from selecting the right tap for the application to the wrench that drives it. Every tap is precision-ground from high-speed steel with a square shank, available in UNC, UNF, and NPT thread standards. For jobs where drilling and tapping in a single pass saves time, Viking's combination drill-and-tap tools eliminate the tool change entirely.

Twist Drill Bits

Jobber Length — General-purpose standard

- HSS with 135° split point — starts clean, no center punch needed
- Available in fractional, number, letter, and metric sizes

Screw-Machine Length — Short and rigid

- Best for thin sheet metal and portable power drilling where bit flex is a problem
- Compact body reduces deflection and improves accuracy

Mechanic Length Split Point — Built for handheld drills and impact tools.

- 1/4in hex quick-release shank — drops straight into an impact driver

Mechanic Length Step Point — Use when enlarging an existing hole.

- Unique tip geometry protects the hole edge and lasts up to 4x longer

Double-Ended — Production work and enclosure backplates

- Two cutting ends means you keep drilling when one tip wears down

Step Drill Bits *One bit, multiple hole sizes — ideal for thin materials*

- Self-centering split point starts without a pilot hole
- 3-flat shank for handheld drills / Quick-release shank for impact drivers
- Gold oxide — standard durability / TiN coating — up to 6x longer tool life
- For steel 1/8in or thicker, drill a pilot hole matching the smallest step

TAPS

Machine Tap — Designed for powered tapping in production environments. The spiral point ejects chips forward, keeping through-holes clear and threads clean at speed.

Hand Tap — The versatile choice for manual and CNC work. Handles both through-holes and blind holes across a wide range of materials.

Taper Pipe Tap — Cuts tapered NPT threads for leak-proof pipe and fluid fittings. The interrupted thread design reduces friction and keeps chips moving.

Combo Drill & Tap — Drills and threads in a single pass. Eliminates the tool change and speeds up production on repetitive fastening tasks.

Black Oxide, Gold Oxide, or TiN — what's the difference?

It's not just the color. Black oxide bits are standard HSS — reliable for everyday materials. Gold oxide bits are cobalt alloy steel (HSS-Co5), a fundamentally harder material built for stainless steel, hard alloys, and high chip loads. TiN (titanium nitride) coating adds a ceramic-hard surface layer, pushing heat resistance to 1,100°F and extending tool life up to 6x — available on step drills only.



Comparison Table

Tool Type	Shank Type					Finish/Material			Best For										
	1/4in Hex	Quick-Release	Round	3-Flat	Square	Black Oxide (HSS)	Gold Oxide (HSS-Co5)	TiN (HSS)	Impact Driver	Handheld / Manual	Enlarges Existing Holes	Sheet Metal	Hard Metals & Stainless	High Volume Production	Through-Hole	Blind Hole	Pipe / Fluid Fittings	Machine / CNC	Single-Pass Drill & Tap
Drill Bits																			
Jobber Length			✓			✓	✓			✓	✓	✓							
Screw-Machine Length			✓			✓				✓	✓								
Mechanic Length — Split Point	✓					✓	✓		✓	✓		✓							
Mechanic Length — Step Point			✓	✓		✓	✓			✓	✓								
Double-Ended			✓			✓				✓	✓			✓					
Step Drills		✓		✓			✓	✓	✓	✓	✓	✓							
Taps																			
Machine Tap					✓								✓	✓	✓			✓	
Hand Tap					✓					✓			✓		✓	✓			
Taper Pipe Tap					✓					✓			✓				✓		
Combo Drill & Tap	✓			✓			✓			✓				✓	✓				✓

Hole Saws & Cutters

MK Morse has been making cutting tools for over 170 years. Every hole saw in this lineup is built around one goal: more holes, faster and with less effort. Whether you're pulling wire through steel studs or cutting conduit entries in a panel, there's a Morse saw perfect for the job.

Hole Saws & Cutters Match the tool to the material and volume.

Bi-Metal Hole Saw — The do-it-all choice. Bi-metal cobalt construction handles steel, stainless, aluminum, wood, plastic, composite, and even nail-embedded wood. Patented tooth set cuts faster and the enhanced side slot pops slugs out without a fight.

- Solid cap minimizes runout and vibration for a cleaner cut
- Available individually or in electrical and industrial sets

Impact-Rated Hole Saw — Sheet metal only, but purpose-built for it. The 1/4in quick-change impact shank swaps sizes in seconds on any impact driver. A shoulder cap prevents breakthrough on thin material and a spring ejects the slug automatically.

- Cutting depth: 1/8in — designed exclusively for sheet metal

Carbide-Tipped Hole Cutter — When you're cutting the same size hole repeatedly in hard materials, carbide earns its cost. Outlasts bi-metal by up to 10x in demanding applications. Triple-chip tooth geometry produces cleaner edges at higher speeds with less heat.

- Integrated ejector spring and grooved gullet keep chips clear
- Fits any 3/8in or larger drill chuck — no special arbor required

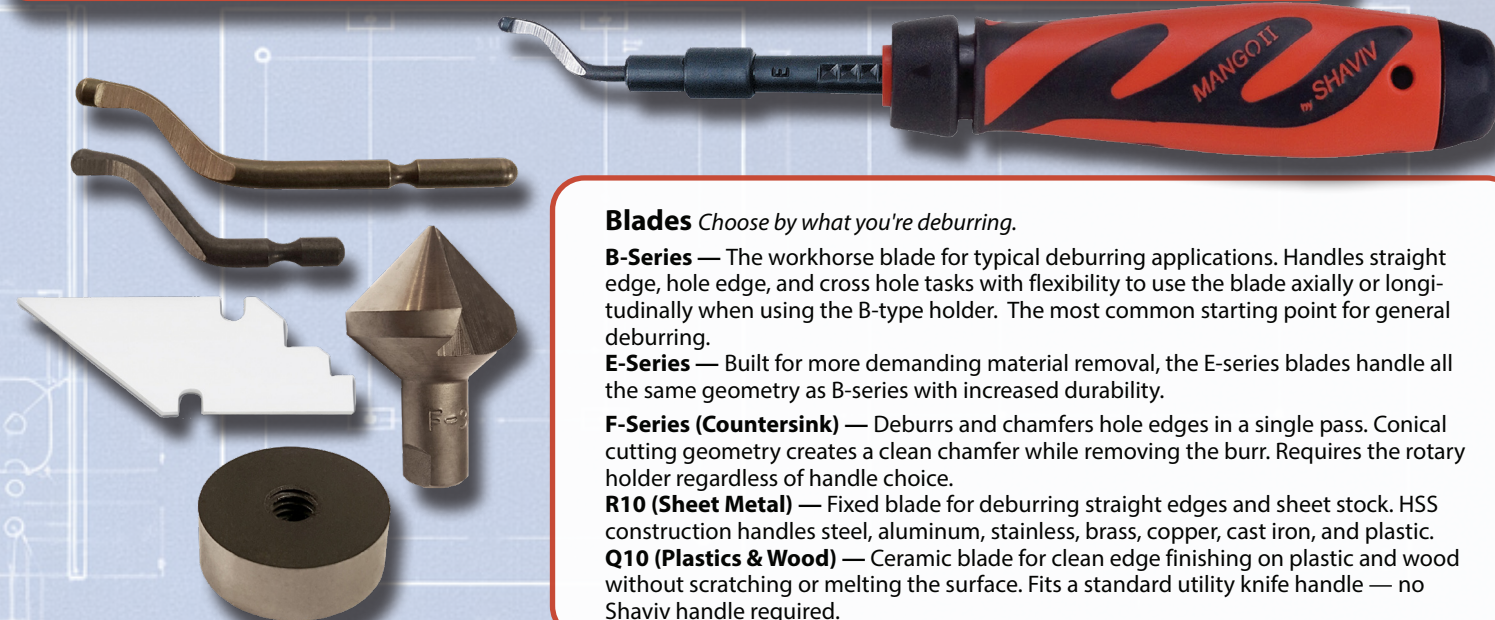


Deburring

Shaviv has been engineering precision deburring tools for over 60 years. Every tool in the lineup is built around a modular system — the right blade for the application, paired with the right handle for the job environment.

How the System Works

Every Shaviv deburring tool is built from three components: a handle, a holder, and a blade. The handle provides grip and control. The holder connects the blade to the handle and allows extended reach. The blade does the cutting. The exception: Mango IIB and IIE handles accept B and E blades directly — no separate holder required.



Blades Choose by what you're deburring.

B-Series — The workhorse blade for typical deburring applications. Handles straight edge, hole edge, and cross hole tasks with flexibility to use the blade axially or longitudinally when using the B-type holder. The most common starting point for general deburring.

E-Series — Built for more demanding material removal, the E-series blades handle all the same geometry as B-series with increased durability.

F-Series (Countersink) — Deburs and chamfers hole edges in a single pass. Conical cutting geometry creates a clean chamfer while removing the burr. Requires the rotary holder regardless of handle choice.

R10 (Sheet Metal) — Fixed blade for deburring straight edges and sheet stock. HSS construction handles steel, aluminum, stainless, brass, copper, cast iron, and plastic.

Q10 (Plastics & Wood) — Ceramic blade for clean edge finishing on plastic and wood without scratching or melting the surface. Fits a standard utility knife handle — no Shaviv handle required.

Handles Choose by workspace and application demands.

Mango II — The recommended handle for most applications. Universal fit accepts any Shaviv blade holder. Ergonomic grip with spare blade storage in the end cap. Use with an extendable holder for reaching recessed areas. Holder required.

Mango IIB / IIE — Extra-close handles for tight spaces where tool length matters. B and E blades lock in directly with the included permanent adapter — no separate holder needed. Shorter overall length puts the blade right where you need it.

Heavy-Duty Aluminum — Built for industrial environments where durability matters more than comfort over long sessions. Universal fit accepts all blade holders. The choice for demanding production work.



HSS or TiN?

HSS handles most materials. TiN coating reduces friction and extends blade life significantly — worth the cost in high-volume applications where blade changes add up. Available in B and E series.

Comparison Table

Tool Type	Shank Type			Material						Cutting Depth (in)	Best For		
	Standard Arbor	1/4 in Impact Shank	3-Flat	Steel	Stainless Steel	Aluminum	Wood	Plastic & Composite	Sheet Metal		General Purpose	High-Volume	Sheet Metal
Bi-Metal Hole Saw	✓			✓	✓	✓	✓	✓	✓	1-15/16	✓		
Impact-Rated Hole Saw		✓								1/8			✓
Carbide-Tipped Hole Cutter			✓	✓	✓	✓		✓	✓	3/16		✓	✓

Knockouts



Why Greenlee?

Greenlee has been the standard for knockout punching in electrical work for decades. The lineup covers every drive method and conduit size a panel builder or electrician is likely to encounter.

- Slug-Buster punch geometry — reduces the effort needed to remove the slug after punching, keeping production moving
- Widest conduit coverage in the lineup — 1/2in through 4in trade size, plus select metric and PG sizes
- Three drive options — manual wrench for simple jobs, Quick Draw hand-pump driver for volume work, Gator battery-hydraulic for cordless production
- Quick Draw available in straight and 90° head — gets into corners and tight enclosure interiors
- Gator battery driver features a 360° rotating head — position the tool however the job demands
- Knockout sets bundle punches, draw studs, and driver in one case — no assembly required



How Knockout Punching Works

Knockout punching is the preferred method for cutting clean, precise holes in electrical enclosures, panel boxes, and conduit bodies. Unlike hole saws or step drills, a knockout punch removes material in a single hydraulic stroke — no heat, no chips, no ragged edges. The result is a hole sized exactly to fit conduit fittings, cable glands, and DIN-standard components right out of the punch.

The process is straightforward: drill a pilot hole, thread the draw stud through, seat the punch and die on either side of the material, and apply force. Manual setups use a wrench or hand pump. Hydraulic and battery-powered drivers do the same job faster and with far less effort on thick material or high-volume runs.

Both Greenlee and Cembre use this same fundamental process. Where they differ is in scope — Greenlee covers the widest range of conduit sizes and drive configurations, while Cembre specializes in precision panel work with DIN and ISO punch sizes that standard conduit sets don't cover.

Comparison Table

Attributes	Greenlee	Cembre
Cost	\$\$	\$\$\$
Battery Platform	Makita	Metabo/Milwaukee
Max. Punching Diameter	4in	5.5in
ADC Product Offering		
Round Punches	✓	✓
Square Punches		✓
Rectangular Punches		
Trade Sizes	✓	✓
Metric PG Sizes	✓	✓
Metric ISO Sizes		✓
DIN Sizes		✓
Manual Wrench Drive	✓	
Hand Pump Drive	78 kN	75 kN
Battery-Hydraulic Drive	69 kN	80 kN
Manual Hydraulic Ram	108 kN	
360° Rotating Head	✓	✓
Knockout Sets	✓	



Why Cembre?

Cembre is purpose-built for precision panel and enclosure work. Where Greenlee covers the job site, Cembre covers the control cabinet — with punch shapes and sizing standards that standard conduit sets simply don't offer.

- Square and rectangular punch options — cuts DIN-standard openings for instrumentation, displays, and component mounting that round punches can't do
- Metric sizing across PG, ISO, and DIN standards — purpose-built for European-spec panels and enclosures
- Battery-hydraulic driver delivers 80 kN of pulling force — highest in the lineup, handles thicker panel steel with less effort
- 360° rotating head on both manual and battery drivers — punch from any angle without repositioning the workpiece
- Punches and drivers sold separately — build exactly the kit you need without paying for sizes you won't use
- Compact driver footprint at 5.5in max punch diameter — works inside populated enclosures where larger tools won't fit

