

JOOLOO **TOOL** by *Anie* **3M**
ABRASIVES

USER GUIDE



☎ 1-85-JOOLOO

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THANK YOU



HI, I'M ANIE

Thank you for purchasing the award-winning JOOLTOOL™ System. I designed it with YOU in mind.

I grew up working at my father's jewelry business. After having learned to work the hard way, I felt the need to create my own tools to make the process easier, safer and more productive. This inventive spirit led me to design the JOOLTOOL™ and my patented See-Thru Technology. I developed it for people like you and me, who need one tool to do it all. The JOOLTOOL™ lets you polish quicker, grind cooler and sharpen with precision, all while leaving a top quality finish!

Creating a whole new tool category is no easy task, so I chose the 3M Company as my star partner. We both share a passion for innovation and quality. Their industrial-grade abrasives are a perfect match for our rugged JOOLTOOL™.

The JOOLTOOL™ is intuitive to learn and easy to master. Simply follow this guide to help you get started. Within these pages you will find my "**ANIE'S TIPS**"; read them for useful info.

Visit WWW.JOOLTOOL.COM for instructional videos, MSDS info and to buy supplies and accessories. Be part of the community check out our fun posts on Facebook, Youtube, Twitter, Instagram, and more!



If you have any questions, just contact us. We value our customers and our team is always here to help.

Sincerely,

Anie
PRESIDENT & CEO

JOOLTOOL by *Anie* **3M**
ABRASIVES

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ABRASIVE CHART	(BACK COVER)





WARNING: Read all safety warnings and all instructions and save them for future reference.
Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

The term "power tool" in the warnings refers to your mains-operated (corded) Jooltool or any other battery-operated (cordless) power tool.

1) WORK AREA SAFETY

- a) Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- b) Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes
- c) Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

2) ELECTRICAL SAFETY

- a) Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plug and matching outlets will reduce risk of electric shock.
- b) Avoid body contact with earthed or grounded surfaces, such as pipes, metal worktops, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- c) Do not expose the Jooltool to rain or wet conditions. Water entering a power tool increases the risk of electric shock.
- d) Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the Jooltool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- e) When operating the Jooltool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
- f) If operating the Jooltool in a damp location is unavoidable, use a residual current device (RCD) protected supply. Use of an RCD reduces the risk of electric shock. NOTE The term "residual current device (RCD)" may be replaced by the term "ground fault circuit interrupter (GFCI)" or "earth leakage circuit breaker (ELCB)".

3) PERSONAL SAFETY

- a) Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- b) Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes or hearing protection used for appropriate conditions will reduce personal injuries.
- c) Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying the power tool with your finger on the switch or energizing power tools that have the switch ON invites accidents.
- d) Remove any adjusting key or wrench before turning the power tool ON. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- e) Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- f) Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Even with built-in safety features, loose clothes, jewelry or long hair can be caught in moving parts.
- g) If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.



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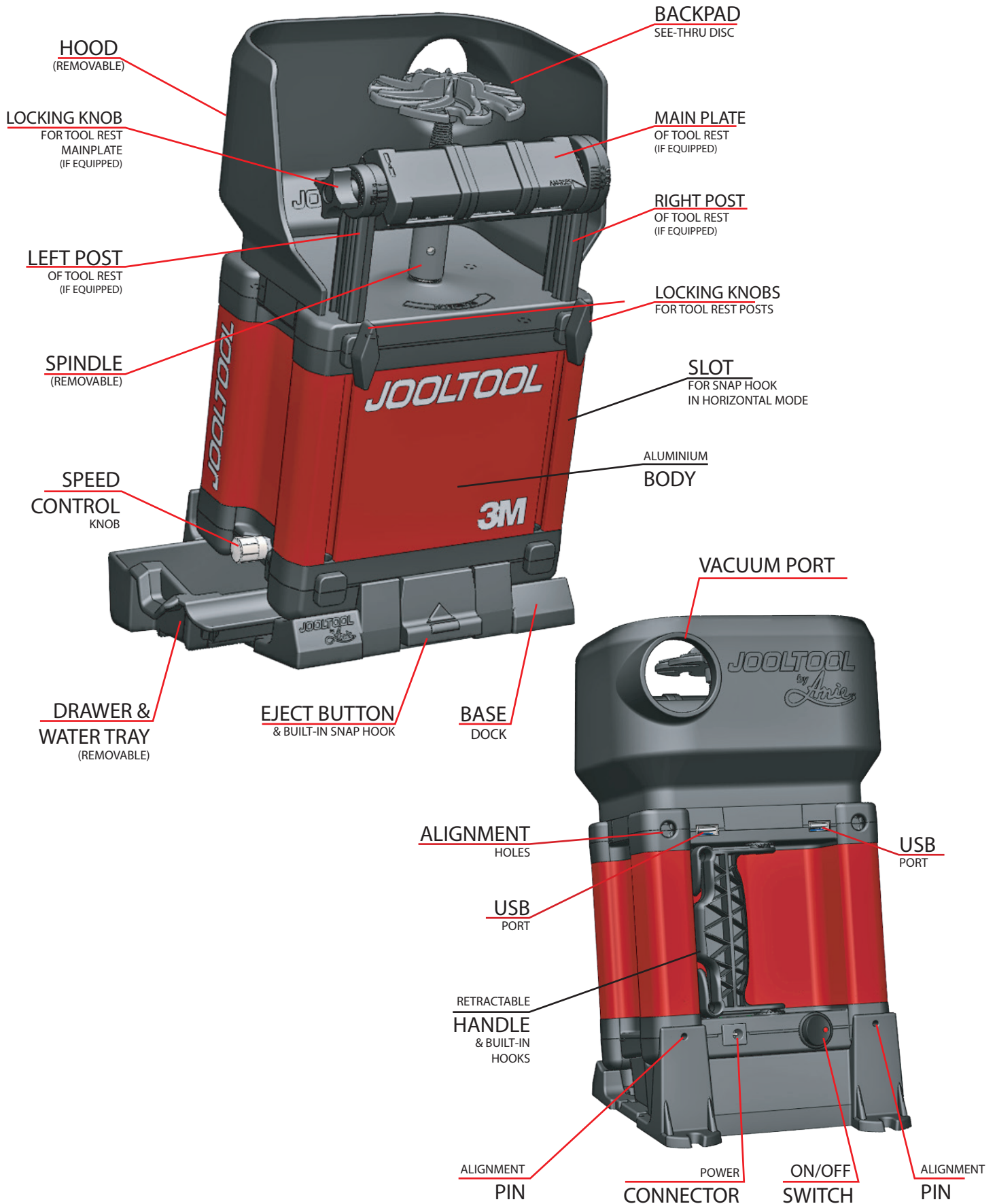
4) POWER TOOL USE AND CARE

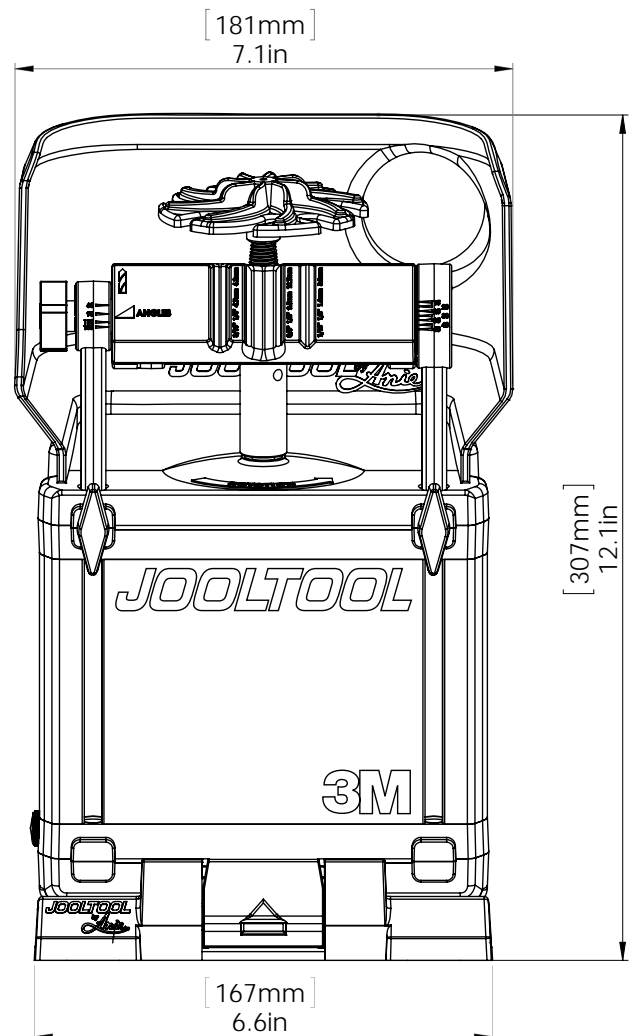
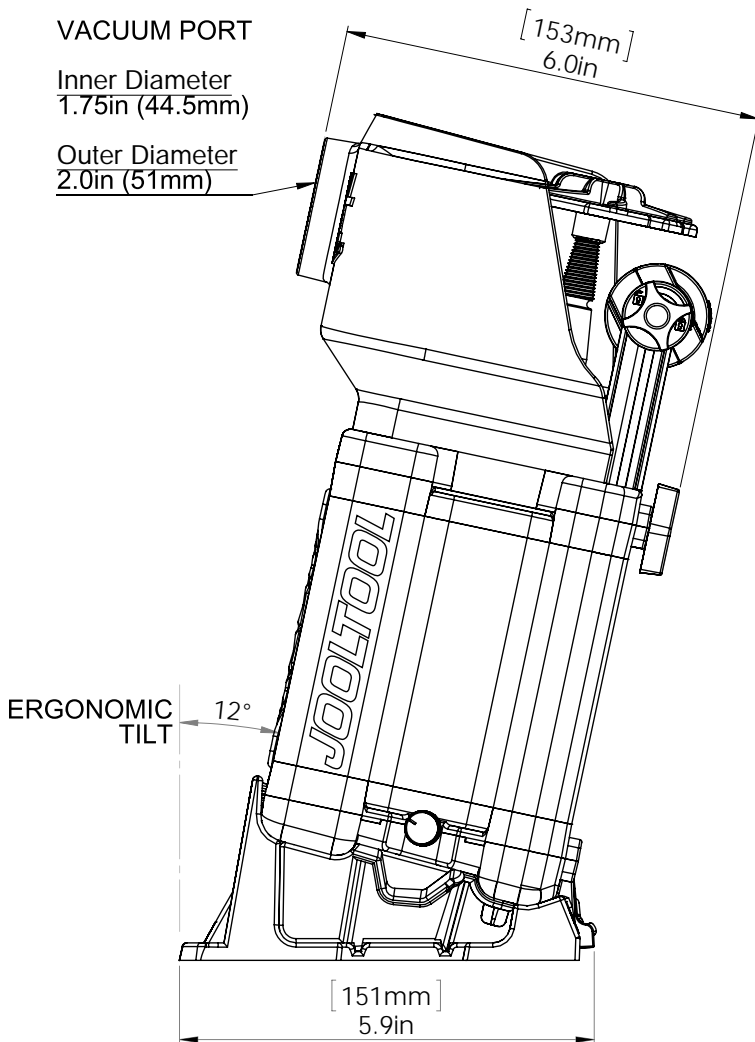
- a)** Do not force the power tool. Use the correct attachment, accessory, abrasive and speed setting for your application. The correct attachment, abrasive and speed setting will do the job better and safer at the rate for which it was designed.
- b)** Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c)** Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d)** Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- e)** Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f)** Keep parts, abrasives & accessories clean and always replace worn parts, abrasives & accessories. New parts, abrasives and accessories perform better and provide better control when working on your workpiece.
- g)** Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

5) SERVICE

- a)** Have your Jooltool serviced by a qualified repair person using only identical replacement parts. *This will ensure that the safety of the Jooltool is maintained.*
- b)** If the Jooltool power adapter is damaged, it must be replaced by an original Jooltool power supply unit.
- c)** If only the Jooltool power cord is damaged, it must be replaced by a cord of the same exact type, gauge and rating.







ELECTRICAL SPECIFICATONS

MOTOR

Constant Voltage: 12.0 V to 19.0V
 Current: 3.4A to 5.0 A (19 A max)
 Output: 45 W (110 W Max)
 Direction: CCW
 Speed: 0-5000 RPM

Note: Actual speed may depend on current and load.

POWER ADAPTOR

Input Voltage: 100Vac~240Vac (Max 264Vac)
 Input Frequency: 50Hz/60Hz

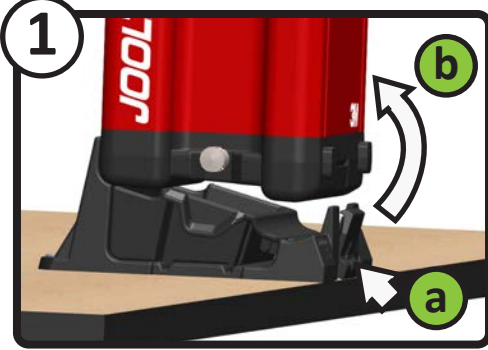
REPLACEMENT POWER ADAPTERS
 AVAILABLE @ JOOLTOOL.COM



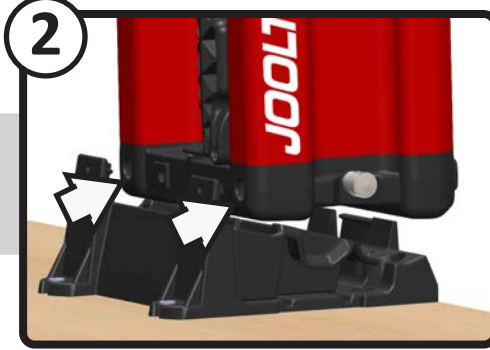
QUICK START

HOW TO QUICKLY SETUP YOUR JOOLTOOL™

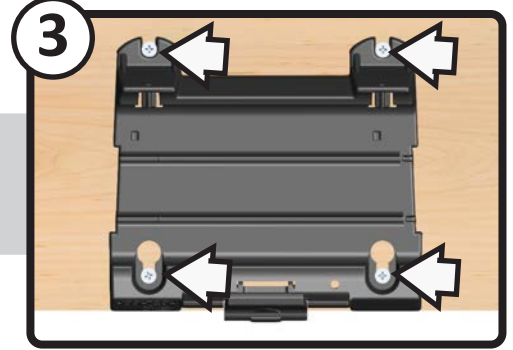
SECURE THE BASE



- a** Press EJECT BUTTON to release the tool from the BASE DOCK
- b** Lightly tilt machine upwards



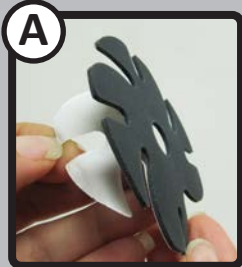
- 2.1** Slide machine away from ALIGNMENT PINS to detach from BASE DOCK
- 2.2** To re-attach after Step 3:
-Align and slide tool onto PINS.
-Push down until HOOK snaps in place.



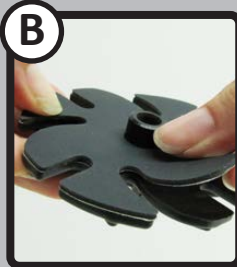
Set the BASE close to edge of bench or table and secure with screws of your choice. Refer to 4 locations marked above. Use non-slip pads at 4 corners if installing on glass or similar surface. Re-attach machine onto base, see Step **2.2**

SETUP ABRASIVES

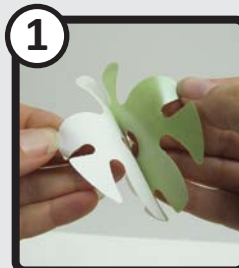
Some Abrasives may need a Cushion Pad
Fine Grades such as Trizact or Diamond



Remove protective film from Cushion.



Align See-Thru design with Backpad and press firmly to adhere.



Remove protective film from abrasive



Align See-Thru design with Backpad slots and press firmly to adhere.

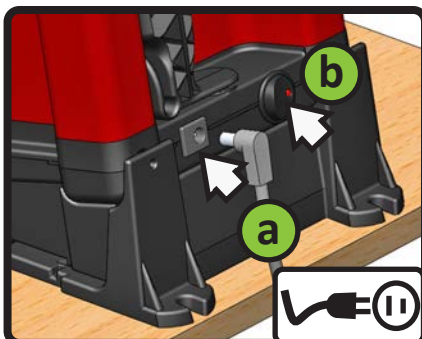


With abrasive side DOWN, place the disc onto your Jooltool Spindle.



Twist the disc assembly onto your Jooltool Spindle. Twist until locked, but do NOT overtighten.

CONNECT & POWER ON



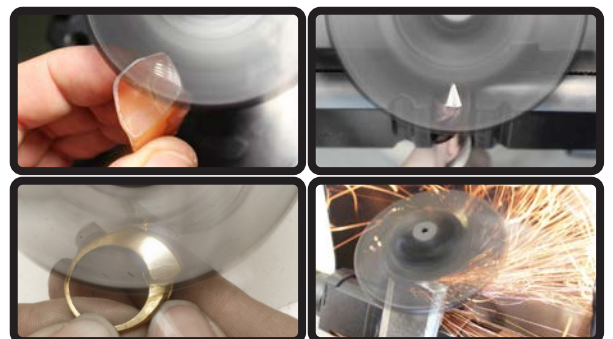
- a** Connect the power supply to the rear of your Jooltool as shown, then connect into electrical outlet.
- b** Turn power switch ON

ADJUST SPEED

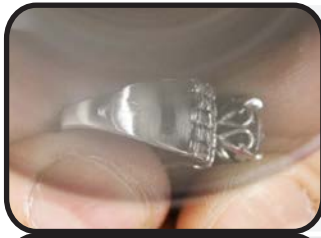


Turn switch clockwise to turn machine ON and increase speed. Turn counterclockwise to reduce speed or turn machine OFF

ENJOY YOUR CRAFT!



GRIND, SHARPEN, RESTORE, POLISH & more while SEEING it all in REAL-TIME!



GRINDING & FILING

Use **3M™ PURPLE CERAMIC** abrasives for:

- Sprue removal from castings
- Grinding & filing your piece

Use **HIGH** speed for 80 Grit, 120 Grit, 220 Grit

Use these with **CUSHIONS** to improve contouring.

- (a)
- (b)
- (c)

CERAMIC
Item# AC-13080-6
Item# AC-13120-6
Item# AC-13220-6



LAPPING & SANDING

Use **3M™ TRIZACT** abrasives for:

- Flat lapping, Knife-edge finishing, Fine Sanding on Metals
- Light beveling and scratch removal on Glass

Finish with **CERIUM OXIDE** and **FELT DISC** on Glass (p.22)

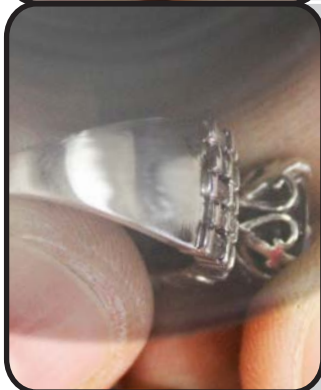
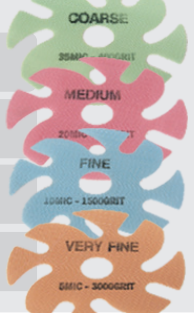
Anie recommends using CUSHIONS with these grades.

Use **HIGH** speed for metals

Use **SLOW** speed with water for Glass

- (a)
- (b)
- (c)
- (d)

COARSE
Item# AT-13035-6
MEDIUM
Item# AT-13020-6
FINE
Item# AT-13010-6
VERY FINE
Item# AT-13005-6



CASTING CLEAN-UP, DEEP SCRATCHES & WATCHES

3M™ EXL SCRATCH-ERASER discs available in 4 grades:

- (a) **COARSE** Use on VERY ROUGH surfaces for smoothing out deep scratches in metals. Can also be used to sharpen.
- (b) **MEDIUM** Use on VERY FLAT surfaces for flat "lap" finish on shanks, bezels and channel settings. Cleans Castings and Porosity.
- (c) **FINE** Use on FLAT or COUNTOUR-SHAPED shanks & surfaces. Cleans Castings and Porosity.
- (d) **VERY FINE** Use on ROUND & COUNTOUR-SHAPED shanks & surfaces. Use **HIGH** speed.

- (a)
- (b)
- (c)
- (d)

EXL COARSE
Item# S-3603
EXL MEDIUM
Item# S-3602
EXL FINE
Item# S-3601
EXL VERY FINE
Item# S-3600



POLISHING

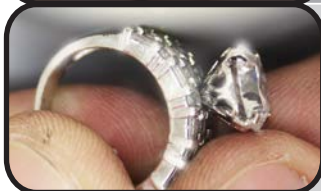
Use **SEE-THRU FELT DISC** for crisp, precise polishes. Use **WITH** compound and **HIGH** speed.

Apply **COMPOUND** on **FELT DISC & BUFFING WHEEL**



Item#: C-103

FELT DISC
Item# B-301



FOR FINAL HIGH POLISH

Use **COTTON** BUFFING WHEEL for a show-quality shine on your pieces. Use **WITH** compound and **HIGH** speed.



Twist onto the spindle to **INSTALL**

BUFFING WHEEL
Item# B-9335



THIS KIT SHAPE AND POLISHES STONES AND GLASS OF ANY HARDNESS!

This kit uses **3M DIAMOND** abrasives to take stone/glass from a **ROUGH** state to a **HIGH POLISH** or trim pieces to fit into a bezel. Perfect for agate, quartz, sapphire and more!

Also works great for removing scratches from Watch Crystal. Includes all necessary Abrasives, Backpads and Cushion Pads

(See p.18)

ADD-ON LAPIDARY HARD & SOFT STONE KIT
Item# K-1001



THIS KIT TAKES YOUR POLYMER CLAY AND RESIN PIECES TO A SHOW SHINE!

This kit is perfect for shaping and polishing your favorite polymer clay pieces, from start to finish. This Kit makes it a breeze to get your projects to showcase-quality finishes. No more hand filing or melting your pieces with old buffers... Just JOOLTOOL it!

ADD-ON POLYMER CLAY KIT
See p.22 Item# K-1005

POLYMER CLAY UPGRADE KIT
See p.23 Item# K-1005-5





Warning: motor rotation is COUNTER-CLOCKWISE

Follow all safety instructions shown below

ALWAYS turn JOOLTOOL "OFF" before installing/changing BACKPADS or ACCESSORIES.

NEVER install BACKPADS while the motor is "ON". This can cause personal injury.

ALWAYS install BACKPADS with ABRASIVE side DOWN.

ALWAYS tighten your BACKPADS snugly onto the spindle before use.

ALWAYS use GENUINE JOOLTOOL™ BACKPADS & ORIGINAL spindle.

This will guarantee that your discs will be perfectly centered and give you optimal results.

NEVER use third-party (non-JOOLTOOL™ brand) Spindles.



NEVER use damaged or cracked BACKPADS as they may break apart during use, potentially causing injury.

NEVER place workpiece on top or the side of spinning disc. The disc can eject workpiece and may cause loss of control.

ALWAYS Turn the Jooltool "OFF" if excessive vibration occurs during use. See "TROUBLESHOOTING" p.30

CUSHIONS - SETUP & SAFETY



Use for ABRASIVES that require CUSHION BACKING

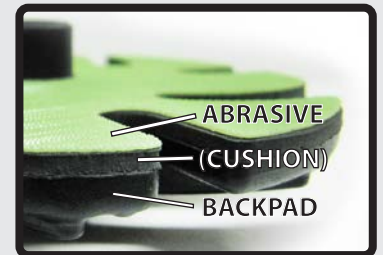
(ex: Polishing Diamond, Trizact™ and other FINE Abrasives)

ALWAYS apply CUSHIONS BEFORE applying ABRASIVES.

ALWAYS remove all protective film from CUSHIONS before applying it onto the BACKPADS.

ALWAYS apply CUSHIONS to flat surface of BACKPADS.

NOTE: DO NOT APPLY CUSHIONS UNDER FELT DISC OR SCRATCH-ERASER ABRASIVES.



ABRASIVES - RECOMMENDED SETUP & SAFETY



Remove all protective film from new ABRASIVE before applying it onto the BACKPAD.

NOTE: Adhesive cures rapidly when ABRASIVE is applied onto BACKPAD.

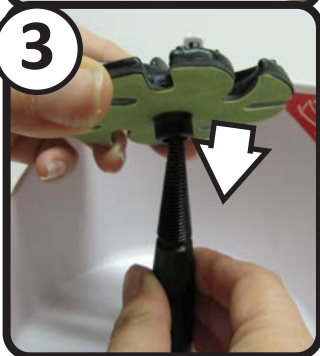
ANIE'S TIP: At first, apply the ABRASIVE very lightly onto the BACKPAD. This will give you the opportunity to make corrections and adjust the SEE-THRU™ pattern alignment if necessary before the adhesive cures. Press firmly to adhere when the SEE-THRU™ alignment is correct.



ALWAYS place abrasive on the FLAT (BOTTOM) surface of the BACKPAD.

ALWAYS install abrasives on the BACKPAD by aligning correctly with the SEE-THRU™ design.

ALWAYS press firmly to ensure full adherence between ABRASIVE and BACKPAD.



HOW TO REMOVE LEFTOVER ADHESIVE FROM BACKPADS: When changing worn abrasives, you can leave the leftover adhesive on the BACKPAD as the new abrasive will likely fuse with it upon use. If you prefer a clean surface, you can remove leftover adhesive by dabbing with the sticky side of your old abrasive or sticky tape. Do NOT use solvents!

ALWAYS change ABRASIVE if it is damaged, torn or is excessively worn.

3M recommends to **DISCARD** an abrasive once it's been removed/unstuck from the BACKPAD as the ADHESIVE on the Abrasive is designed for SINGLE APPLICATION ONLY.

Failure to follow this rule can potentially cause property damage and/or personal injury!

NEVER use an ABRASIVE if it is not adhering to the BACKPAD.

NEVER apply ABRASIVES on BACKPAD when wet.

NEVER use disc if the ABRASIVE has been improperly installed onto the BACKPAD.

Improperly installed abrasive increases risk of property damage and/or personal injury!

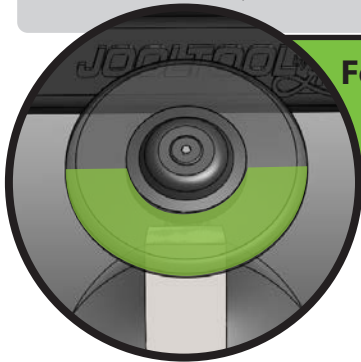
NEVER cut, change, or distort the shape of the SEE-THRU™ design on the abrasive.





PLEASE USE COMMON SENSE WHEN WORKING ON THE JOOLTOOL™ SYSTEM

If you are not sure how to accomplish a particular task, please consult us **BEFORE** starting your project. Stay within the Jooltool's designed limits to achieve great results as well as a safe & enjoyable experience.



For best visibility and control, work WITHIN the SEE-THRU™ area of your spinning Backpad.

The JOOLTOOL automatically directs dust and sparks toward the VACCUUM PORT. For a cleaner and safer work area, use a firmly-secured, strong dust collection (vacuum) system.



JOOLTOOL VACCUUM Item# V-FW11



ALWAYS use light, gentle pressure when working.

NEVER use excessive pressure on the disc, the spindle or any attached accessory while using the tool.

ALWAYS work on workpieces of a hand-manageable size or use a proper holding accessory.

NEVER work on workpieces that may get stuck between the Backpad and Hood accessory.

ALWAYS use accessories and attachments for their intended applications.

ALWAYS use only JOOLTOOL™-approved accessories with this JOOLTOOL™ unit.

NEVER use the tool with any accessories that seem damaged or excessively worn.

If in doubt, turn the tool "OFF" IMMEDIATELY and inspect thoroughly. Replace any badly worn or broken accessories.

ALWAYS pay close attention around rotating wheels or discs. Moving parts may cause injury.

NEVER try to stop the discs or wheels with your hands or with any object. Spinning disc may cause injury.

ALWAYS let the tool to come to a complete stop **BEFORE** changing attachments or accessories.

MAINTENANCE

Anie designed the JOOLTOOL™ System to bring you years of service without requiring maintenance. If your unit needs special attention, it should only be performed by an authorized service center or directly by the manufacturer, JOOLTOOL™.



NEVER attempt to repair or service any part of the tool yourself.

Doing so may result in damage to the unit and accessories, electrical shock, injury or death.

CLEANING

ANIE'S TIP: CLEAN YOUR JOOLTOOL REGULARLY TO KEEP YOUR WARRANTY VALID.

Although the JOOLTOOL is designed to work as cleanly as possible, the warranty does not cover neglect. Ex: failure to discard excess dust collected near or in the motor shaft/bearings.



ALWAYS disconnect power from the tool before cleaning the JOOLTOOL System or Accessories. Wipe clean with a cotton rag or soft brush.

The removable **HOOD** can be washed with soap & water.

ALWAYS remove the **HOOD** before washing!

ALWAYS Dry the **Hood** before re-installing onto the JOOLTOOL™.



NOTE: ALWAYS wear EYE PROTECTION when using compressed air for cleaning.

ALWAYS make sure electrical connections and switch are clean and dry **BEFORE** powering the JOOLTOOL™

Wet or Damp connections or electrical components may result in electrical shock, injury or death.

NEVER attempt to clean by inserting rigid objects through openings or electrical connections.



NEVER use cleaning agents/solvents that may damage plastic parts: gasoline, ammonia-based cleaners, chlorinated solvents, carbon tetrachloride (brake cleaner), some paint thinners and others.

STORAGE DRAWER & WATER TRAY



1 Pull the tab under the speed control switch to slide the DRAWER out from under your Jooltool. Push to slide in. Great for storing small items!



2 The drawer transforms into a handy water tray. Slide it completely off the tool, then mount it by inserting the 2 locator pins into the 2 holes at the top of the Jooltool.



3 The drawer/water tray can hold water for quick access to lubrication when performing lapidary work. (p.20-21)

WARNING! DO NOT OVERFILL!
WATER CONTACT WITH WIRES MAY CAUSE RISK OF ELECTRIC SHOCK!

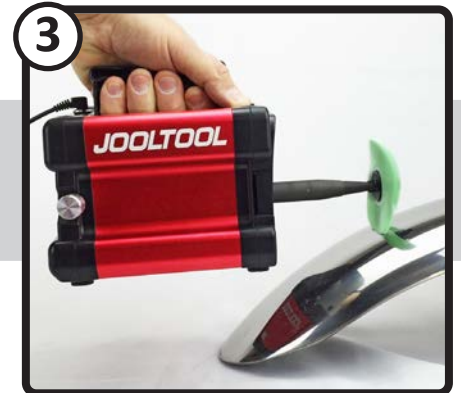
HOOD REMOVAL



1 Push OUT on both sides of the hood.

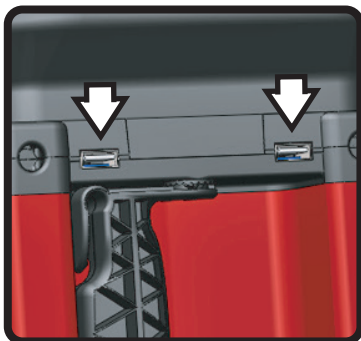


2 Slide the Hood out and away from the Jooltool. Reverse steps 1 & 2 to reinstall (Center the rear tab, pull towards you, snap tabs back into their slots)



3 With the Hood removed, you can now work on very large items and have even more freedom with the flexshaft & accessories (see below).

USB PORTS



Use the 2 USB ports located at the rear to power LED lights or conveniently charge your mobile devices while working stationary.

TOOL REST

(may be sold separately)



Use the Tool Rest to get sharp and precise angles on chisels and drill bits. (See p.14-15) Can also be used as a convenient hand-rest when handling smaller items.

Item# TR-1

FLEXSHAFT & ACCESSORIES

(may be sold separately)



The Flexshaft attaches to heavy-duty Handpieces to use Dremel-type bits, Drilling burs, power carvers, sanders and more... (see FLEXSHAFT (p. 26) in this booklet)

Item# K-FH33



WARNING:

NEVER USE THE JOOLTOOL WITH SEE-THRU BACKPADS IN HORIZONTAL OR PORTABLE MODES! THESE MODES ARE ONLY FOR USE WITH 3M RADIAL BRISTLE BRUSHES & PURPOSELY DESIGNED ACCESSORIES. ALWAYS DOCK THE TOOL VERTICALLY ON ITS BASE WHEN USING SEE-THRU BACKPADS! NEVER TRY TO SHARPEN WITH SEE-THRU DISCS WHILE IN HORIZONTAL OR PORTABLE MODES, THIS NULLIFIES THE SEE-THRU EFFECT AND CAN CAUSE YOU TO LOSE CONTROL OF THE WORKPIECE. FAILURE TO FOLLOW THESE DIRECTIONS CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE!



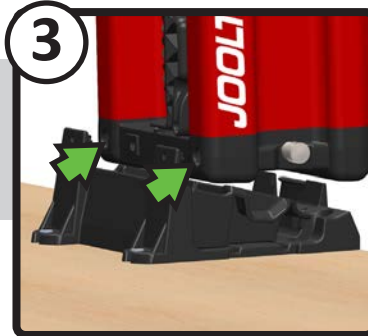
PORTABLE MODE



1 Press EJECT BUTTON to release the tool from base.



2 GENTLY tilt machine upwards



3 Slide machine away from ALIGNMENT PINS to fully detach from docking base.



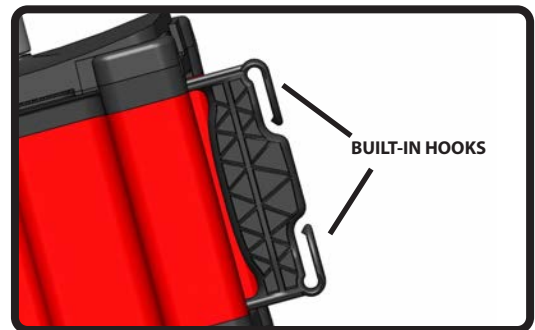
4 Use the retractable handle at the rear of your JOOLTOOL to work in PORTABLE mode.



5 Use the PORTABLE mode for sanding or polishing large items such as silver trays, furniture, hardware, and more.



6 The Jooltool is also great for removing scratches from headlight lenses and gently buffing clear-coated surfaces using slow speed settings.



The Handle has 2 convenient built-in hooks. You can hang the JOOLTOOL upright or upside-down, wherever you see fit. Perfect when using the Flexshaft accessory!

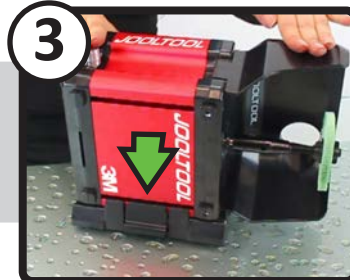
HORIZONTAL MODE



1 Undock the Jooltool from its base per steps above (1 to 4)



2 Set the Jooltool to its side and align the Holes at the rear of the Tool with the ALIGNMENT PINS on the BASE. Speed control switch will be pointing upward when properly docked.



3 Press DOWN to lock in position, front HOOK will snap into the SLOT of the JOOLTOOL body. To reset Vertical Mode, press EJECT then reverse steps 1 & 2.



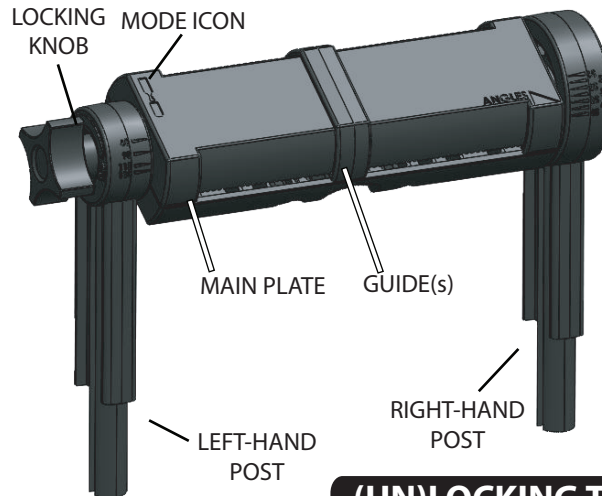
4 This is a classic, bench style of polishing and finishing. NOTE: The Vacuum Port is fully functional in both Horizontal & Vertical modes.

MULTIPLE FUNCTIONS

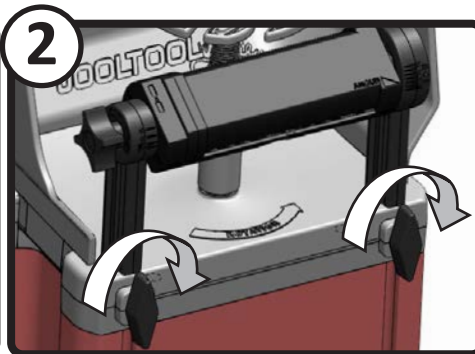
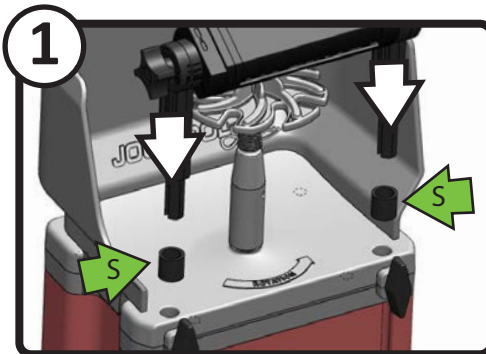
The Tool Rest has a rotating MAIN PLATE which has 2 sides/functions:

-One side helps set bevel angles on square-edged Tools such as Chisels

-The other side helps you sharpen Drill Bits to precise degrees.



INSTALL THE TOOL REST



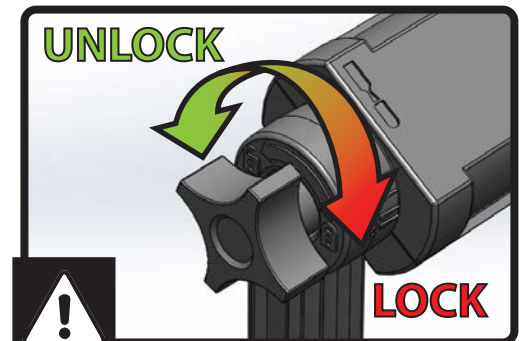
Slide the Posts into the mounting holes as shown. Spacers ("S") provide additional height if needed*

Locking knob will be on left-hand side when properly mounted.

*(Contact us for availability)

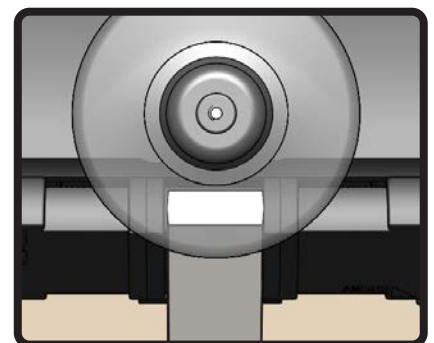
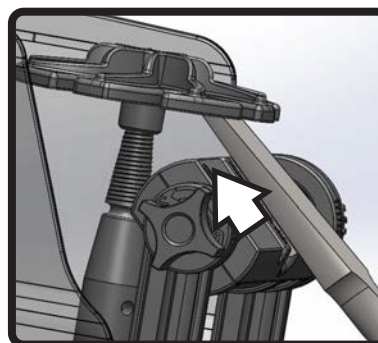
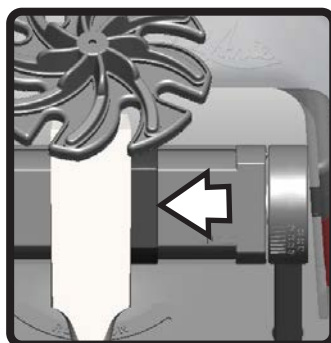
Lock the Tool Rest in place by tightening the post locking screws (Turn Clockwise to lock)

(UN)LOCKING THE PLATE



UNLOCK MAIN PLATE **BEFORE** ROTATING. Turn knob counterclockwise to loosen, but do NOT unscrew completely. Failure to unlock before rotating may result in permanent damage to the Tool Rest. LOCK MAIN PLATE **AFTER** SETTING ANGLE. Turn knob clockwise to lock the position, but do NOT overtighten.

CHISEL / FLAT-BLADE SIDE



Rotate the main PLATE to set the desired angle by aligning indicators on RIGHT-HAND post with the ANGLES indicator. Lock with LOCKING KNOB

For precise & even angles, slide the Guides to the corresponding width of your tool. Make sure the full face to be sharpened is in contact with the abrasive. Tool must slide in/out freely.

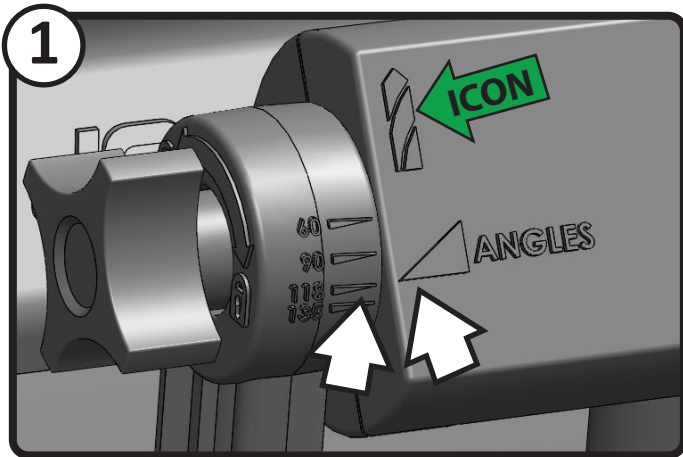
Sharpen the Chisel by sliding the cutting edge it into the spinning disc. Use coarse grades such as **3M Purple Ceramic** for regrinding a damaged edge. Use fine grades (**3M Trizact™**) for honing existing bevels.

Always make uniform contact with the spinning abrasive. Use coarse abrasives to re-grind edges and fine abrasives to polish (**see p. 17**). When done, slide the Chisel away from the disc and turn the JOOLTOOL OFF.

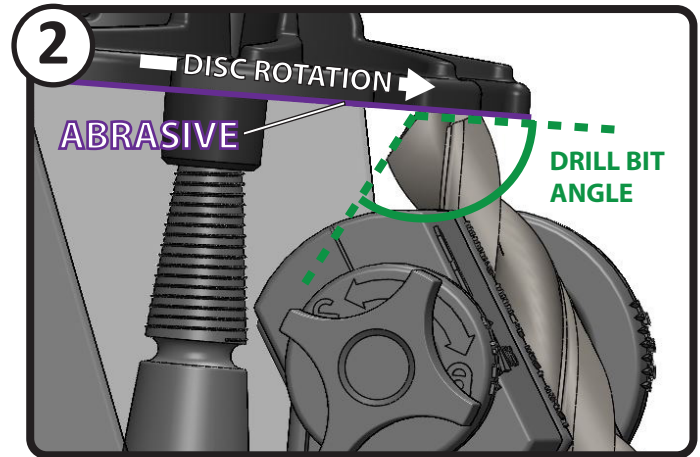
SEE DEBURRING INFO ON NEXT PAGE

TOOL REST - DRILL BIT SIDE

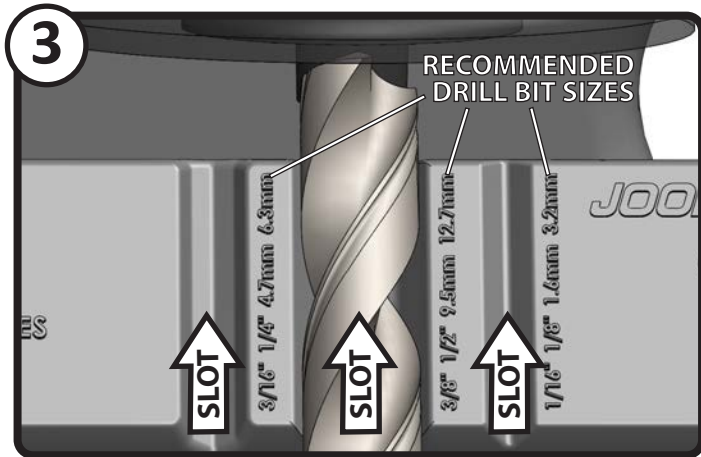
HOW TO SHARPEN COMMON DRILL BITS



Rotate the main PLATE to the DRILL BIT side (ICON). Set the desired angle by aligning indicators on LEFT-HAND post with the ANGLES indicator. The most common setting is 118 degrees. Lock with LOCKING KNOB.

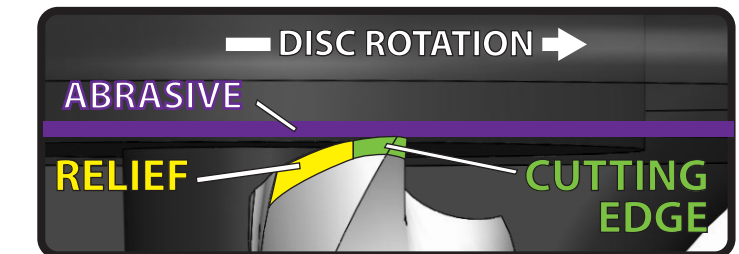
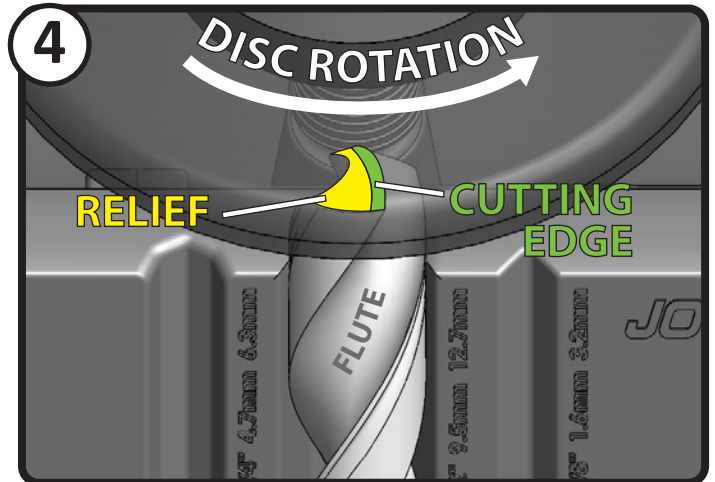


The resulting **drill bit angle** will be as set in STEP 1. Use coarse grade abrasives such as **3M Purple Ceramic** to regrind damaged bits. Use **3M Trizact™** for honing edges. **Tip: Use 3M Diamond Abrasives for Carbide Bits.**



Select the guide slot of corresponding Bit diameter. Sizes shown next to SLOTS are recommendations. Slide the drill bit into the spinning disc. Ensure a secure, flat contact with the full length of the slot.

NOTE: Do not sharpen the FLUTES, see "DEBURRING" below.



Rotate the drill bit on its main axis to sharpen all **CUTTING EDGES**. Make sure each cutting edge is higher than its **RELIEF** (back of the flank). This will ensure the bit cuts well and extracts drilled material properly. Slide the bit along the slot, away from the disc and turn the JOOLTOOL OFF when done.

DEBURRING DRILL BITS & OTHER TOOLS



(OPTIONAL) Use **3M Radial Brushes** (6 & 1 Micron) to sweep the burr away from the cutting edge or flute.

6 Micron
Item# R-362-6

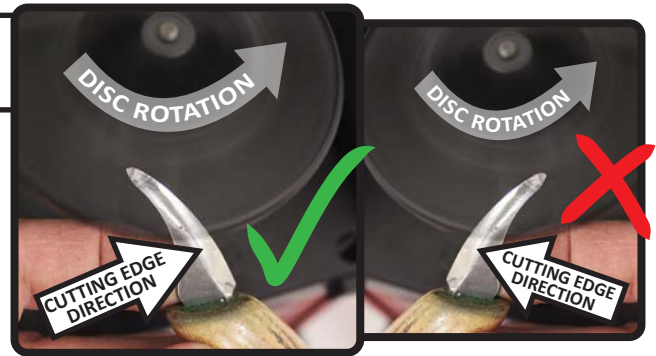
1 Micron
Item# R-361-1





The motor rotation is **COUNTER CLOCKWISE**.

ALWAYS KEEP SHARP EDGES OR TIPS IN THE SAME DIRECTION AS THE ROTATION!



HOLDING THE WORKPIECE

- With **BOTH** hands, Hold the workpiece directly **UNDER** the disc.
- Make **GENTLE**, uniform contact between the **SPINNING** disc and the **EDGE** to be sharpened.
- **ALWAYS WORK WITHIN THE SEE-THRU AREA OF THE DISC!**

ANIE'S TIP: Know what you want to accomplish and use the correct abrasive for the task.

Using the right abrasives increases productivity, the quality of your work and the longevity of your abrasives.

Always start off with a finer abrasive, you can use a coarser grade if you need more abrasive power.

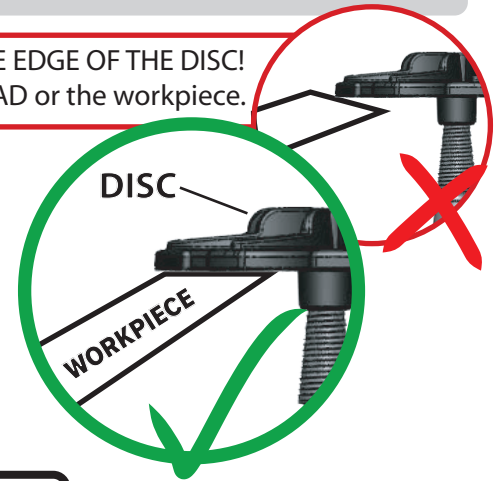


AVOID WORKING OR SLIDING OFF THE EDGE OF THE DISC!

This will prevent damage to the **BACKPAD** or the workpiece.

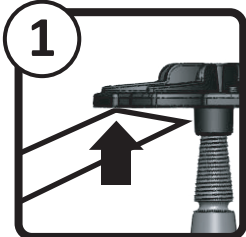


ANIE'S TIP: To improve visibility of the surface or edge you are working on, darken it with a black marker (Sharpie™) or use a marker color that contrasts with the surface to be worked. The marker gets erased on contact with abrasive.

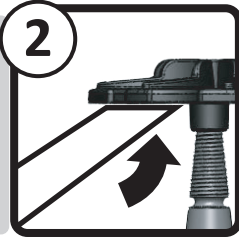


MAINTAINING THE CORRECT ANGLE

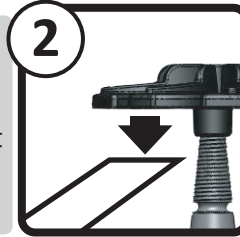
To maintain the angle of your flat workpieces. Follow these steps.



STEP 1: Lightly make contact with the "back" of the edge to the disc.



STEP 2: Touch the entire width of the edge flat against the disc. Hold in place.



STEP 3: When desired result is achieved, disconnect the tool from the abrasive by lowering it. **DO NOT SLIDE OFF THE DISC! THIS CAN RUIN THE ANGLE OF THE EDGE**

TIPS FOR SHARPENING LONG FLAT TOOLS (Knives, Planer Blades & Similar)



FIND THE EDGE ANGLE (as shown in STEPS 1-2 above), then **GRADUALLY FEED** the workpiece's edge under the disc while keeping a **FULL** and **FLAT** contact. Work from the inner to the outer edge.

- **ALWAYS KEEP SHARP EDGES OR TIPS IN THE SAME DIRECTION AS THE ROTATION!**
- **AVOID "SEE-SAWING" THE PIECE ON THE DISC!** (NOTE: This can cause unnecessary roundness)
- **LOWER THE WORKPIECE WHEN DONE, DO NOT SLIDE OFF THE EDGE OF THE DISC!**

TIPS FOR SHARPENING BEVELED TOOLS (Gouges, Auger Bits & Similar)



For workpieces with rounded edges, keep in mind that they generally have a **FLAT** EDGE which simply contours the rounded surface of the workpiece.

A- Make contact with the **FLAT** EDGE to be worked on. (See STEP 2 above)

B- Then, in a **GRADUAL MOTION**, move the workpiece so as to follow its **ROUNDED SHAPE** while maintaining full contact with the **FLAT** EDGE. Stop when the desired result is achieved.

For lathe gouges with a fingernail shape:

Move the handle of the tool with pendulum-like motion while performing steps **A & B** here.

SHARPENING STEPS

SHARPENING, HONING AND POLISHING STEPS FOR METAL* CUTTING TOOLS

SETUP



Apply CUSHIONS to BACKPADS. FELT does not need a cushion.



Apply abrasives onto BACKPADS (with the CUSHIONS applied).

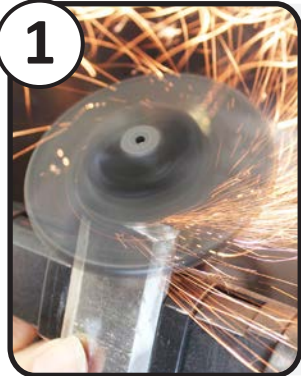


Prepare FELT DISC as shown in your USER'S GUIDE and VIDEO



SAFETY FIRST!
Always wear eye and respiratory protection.

IMPORTANT: Stay within your see-thru area of the disc. Avoid pointing the cutting edge towards rotating disc **NOTE:** You can use the TOOL REST accessory to sharpen your edges to precise angles. (p.14-15)



STEP 1 GRIND, SHAPE and BEVEL EDGES
Follow these steps for grinding and shaping. Use **3M Purple Ceramic** abrasives.

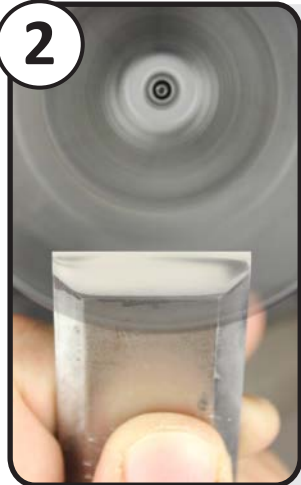
Speed: Maximum

Follow this order:
80 Grit, 120 Grit, then 220 Grit.

1a **80 Grit**
Item# AC-13080-6

1b **120 Grit**
Item# AC-13120-6

1c **220 Grit**
Item# AC-13220-6



STEP 2 SHARPEN, HONE and MAINTAIN EDGES
Follow these steps for re-sharpening and honing. Use **3M Trizact** abrasives, the colorful discs.

Speed: Maximum

Follow this order:
Coarse Green
Medium Pink
Fine Blue
Very Fine Orange

2a **Coarse**
Item# AT-13035-6

2b **Medium**
Item# AT-13020-6

2c **Fine**
Item# AT-13010-6

2d **Very Fine**
Item# AT-13005-6



STEP 3 POLISH METALS
Use the **FELT DISC** to get a final polish on your metal. SEE "POLISHING BASICS" (p. 18)

Speed: Maximum

Apply **COMPOUND** on FELT DISC

Item#: C-103

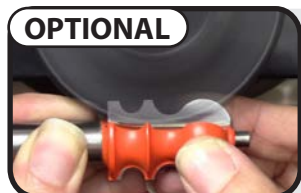


DEBURRING (OPTIONAL)
Use **3M Radial Brushes** (6 & 1 Micron) to sweep the burr away from the cutting edge or flute.
Speed: Maximum

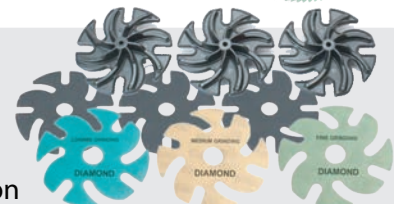
Xa **6 Micron**
Item# R-362-6

Xb **1 Micron**
Item# R-361-1

* Use the steps above for metals up to 63-65 Rockwell "C" hardness such as High Speed Steels.



FOR CARBIDES AND EXOTIC METALS (82+ HRC scale)
Use **3M Microfinishing Diamond Abrasives** to sharpen high-carbon steels, cobalt, titanium and others. Included in **CARBIDE SHARPENING ADD-ON KIT**
Replacement abrasive grades available: 74, 45, 30, 20 Micron



Y **CARBIDE SHARPENING ADD-ON KIT**
Item# K-3633-3

FOLLOW FROM TOP TO BOTTOM



! **NEVER** use felt with WATER. It can absorb it and **disintegrate!**
NEVER force a sharp tip into the spinning FELT DISC. It will **DAMAGE** it.
NEVER use outer perimeter of FELT DISC to polish, it may cause loss of control of workpiece.
ALWAYS apply compound from **UNDERNEATH** of wheel, **NOT** from the **EDGE** or the **TOP**.
ALWAYS store FELT and compound in a **DRY** location. It can absorb moisture and disintegrate.

! **SAFETY FIRST!**
Always wear eye and respiratory protection.

MOUNT THE FELT DISC ONTO A BACKPAD



- 1-Remove protective film from adhesive side.
- 2-Align SEE-THRU pattern to BACKPAD
- 3-Adhere fully to flat surface of BACKPAD.

ANIE'S TIP: For a showcase shine, use **3M™ EXL SCRATCH-ERASER** (item # S-3601) to prepare piece **BEFORE** polishing. **JEWELRY POLISHING (p.19 Step 2)**

PREPARE THE FELT DISC BEFORE FIRST USE



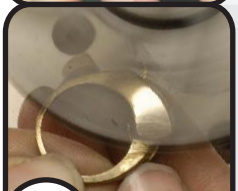
FELT is naturally uneven and may need truing.
 Run the disc at full speed, sand it flat until it feels smooth and even to the touch. You can use a **COARSE CERAMIC** abrasive applied to a BACKPAD. This technique can also be used to **RE-DRESS** the disc if it develops grooves.
NOTE: Loose particles of felt may be released into the air during this process, wear eye and respiratory protection and use strong vacuum attached to the port on the HOOD. **!**

USE THE FELT DISC



1 **APPLY COMPOUND:**
 With your **JOOLTOOL** running at **FULL SPEED**, Apply Compound generously

Compound: Item# C-103 (large bar)
 Item# C-104-V (small bar)



2 **POLISH:**
 Polish freely as needed to achieve a high luster. Harder materials may require more compound.
DO NOT USE WITH WATER!
ALWAYS STORE IN DRY LOCATION!

AVOID CROSS-CONTAMINATING THE FELT
 Have a FELT DISC for polishing metals and another FELT DISC for polishing stones. Mount them onto separate BACKPADS. This will prevent metal particles built-up on the FELT from scratching your finished lapidary pieces.



ANIE'S TIP:
 You can also use the FELT and COMPOUND to polish soft stones such as opals, turquoise.

SEE-THRU Felt: Item# B-301

ANIE'S EXTRA TIP: IF YOUR FELT STARTS TO LEAVE BLACK SMEARS ON YOUR WORKPIECE, YOU MAY BE USING TOO MUCH COMPOUND. TO REMOVE THE SMEARS, SIMPLY "PREPARE THE FELT DISC" (AS SHOWN ABOVE) AND POLISH OVER THE AFFECTED AREAS.

! **DO NOT FORCE THE TIP OF SHARP TOOLS OR OBJECTS DIRECTLY INTO THE SPINNING FELT DISC!**
 This can create a groove and you will need to redress the disc to a flat surface. See **PREPARE THE FELT WHEEL**

ALTERNATE METHOD



Although not SEE-THRU, the **BUFFING WHEEL** is great as a final step to remove fingerprints from polished metal. Can also be used on plastics at slow speeds.
Item# B-9335

ALTERNATE METHOD (PORTABLE MODE)



Use **JOOLTOOL'S** portable mode with the **BUFFING WHEEL** for removing scratches from headlight lenses or other sensitive buffing jobs. **(p.13)**

METAL POLISHING STEPS

SHAPING & POLISHING STEPS FOR JEWELRY & METAL ITEMS



SAFETY FIRST! Always wear eye and respiratory protection.

NOTE: A JEWELRY PROJECT IS PICTURED BELOW. SAME STEPS CAN ALSO BE APPLIED TO OTHER INDUSTRIES

FULL METALWORKING AND POLISHING KIT Item# K-1003

ANIE'S TIPS:

- Use these steps for jewelry, car parts, custom metal work, etc..
- Always let your abrasives do the work, use a gentle touch, do NOT use force!
- Gently apply your piece to the spinning abrasive disc, making full contact.
- Keep moving your piece to achieve a much-desired uniform shape (or polish)
- You can also use a certain step individually if that is your desired final finish.

FOLLOW FROM TOP TO BOTTOM



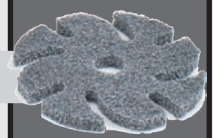
1 GRIND and SHAPE the piece
Use **3M™ PURPLE CERAMIC** abrasive to remove sprues from castings, grind or shape your piece.

1 PURPLE CERAMIC
Item# AC-13120-6



2 REMOVE SCRATCHES & PRE-POLISH
Use **3M™ EXL SCRATCH-ERASER** abrasive to rub off scratches, scuff marks and porosity, all without removing material!

2 SCOTCHBRITE EXL
Item# S-3601



3 POLISH
Use **SEE-THRU FELT DISC** for crisp, precise polishes. Use **WITH** compound.

3 FELT DISC
Item# B-301



Apply COMPOUND on FELT DISC & BUFFING WHEEL

Item#: C-103



4a BUFF TO A HIGH-POLISH
Use **COTTON BUFFING WHEEL** for a show-quality shine on your pieces. Use **WITH** compound.

4a BUFFING WHEEL
Item# B-9335



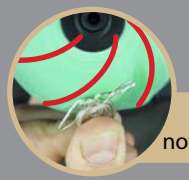
Twist onto the spindle to **INSTALL**



BONUS STEP

4b POLISH DETAILS AND PLATING
Use **3M™ RADIAL BRUSH** to polish hard-to reach details and reliefs. Safe for rhodium plating. Does NOT damage stones. Use **WITHOUT** compound.

4b RADIAL BRUSH
Item# R-341-1



Bristles must **sweep**, not grab, when spinning.



ANIE'S TIP: KEEP YOUR FINGERS CLEAN AND PROTECTED
Use **3M™ SELF-ADHERING VETRAP™** to keep fingers and nails clean! Simply cut to size, wrap over and around. Don't overtighten so you can re-use your "finger caps"! Replacement item#: T-10G



* Except Carbides

HARD LAPIDARY

SHAPING & POLISHING STEPS FOR ALL STONES, MINERAL CRYSTAL, HARD GLASS



SETUP

Apply CUSHIONS to BACKPADS.
FLEX DIAMOND & FELT don't need cushions



Apply abrasives onto BACKPADS
(with the CUSHIONS applied).



Use Water Tray to apply water to the
workpiece during every step.

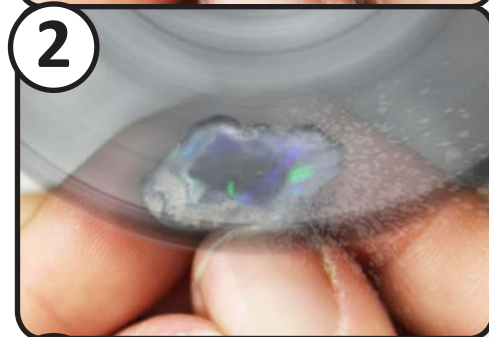


HARD-STONE LAPIDARY ADD-ON KIT: Item# K-1001 (For Hard and Soft Stones up to 9.5 on the Mohs scale)

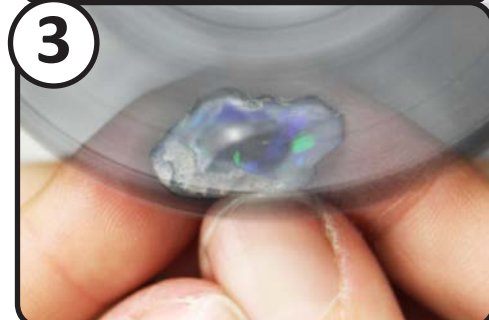
FOR CABOCHONS AND FLAT PIECES



STEP 1
GRIND and SHAPE your piece
Use **3M Flex-Diamond** (COARSE) abrasive
Speed: High speed with water
FLEX DIAMOND DOES NOT NEED A CUSHION



STEP 2
REFINE the shape and remove scratches:
Use **3M Microfinishing Diamond** abrasives to finalize the shape and remove any leftover scratches.
Speed: Medium-High speed with water



STEP 3
PREPARE your piece for POLISHING
Prepare your piece for final polish using **3M Premium Diamond** abrasives, the brown discs.
Speed: Slow Speed (with lots of water)
Pressure: Use gentle, consistent pressure.



FINAL STEP HIGH-POLISH your piece.
Use **3M Cerium Oxide** to get a final polish
WARNING: Do NOT use on porous surfaces
Speed: Slow (with lots of water)
Pressure: Use Use gentle, consistent pressure.



ALTERNATE STEP

ALTERNATE FINAL STEP: POLISHING
Some stones polish easily with our **FELT DISC**
Try this after step (2d) for Turquoise, Opal, etc.
Speed: High Speed. DO NOT USE WATER

This 4-Grade Kit Item# K-3600-4

This 4-Grade Kit Item# K-3650-5

FOLLOW FROM TOP TO BOTTOM

1 X Coarse
Item# D-36250-1

2a Coarse
Item# D-3074-2

2b Medium
Item# D-3045-2

2c Fine
Item# D-3030-2

2d Very Fine
Item# D-3020-2

3a 3000 Grit
Item# D-33000

3b 8000 Grit
Item# D-38000

3c 50 000 Grit
Item# D-50000

4 **FINAL STEP:**
Cerium Oxide
Item# AT-13000-2

MAY BE SOLD SEPARATELY

FELT DISC
Item# B-301

Apply COMPOUND on FELT DISC

Item#: C-103

TO REMOVE SCRATCHES OR CHIPS

Repairing scratched or chipped pieces is similar to working on raw (rough) material.

For DEEP Scratches: Start at Step 2c, then continue up to **FINAL STEP**.

For LIGHT scratches: Start at Step 3a, then continue up to **FINAL STEP**. Also try **ALTERNATE FINAL STEP**.

ANIE'S TIP: To avoid scratches on finished piece, follow ALL steps THOROUGHLY & inspect your piece after each step.

CLEANING: Clean abrasives with damp cloth for longer life & performance.

1

SETUP

Apply CUSHIONS to BACKPADS.
FLEX DIAMOND & FELT don't need cushions

2

Apply abrasives onto BACKPADS (with the CUSHIONS applied).

3

Use Water Tray to apply water to the workpiece during every step.


SOFT-STONE LAPIDARY ADD-ON KIT: K-1002 (Soft Stones: Mohs 7.5 and under)



SAFETY FIRST!
Always wear eye and respiratory protection.

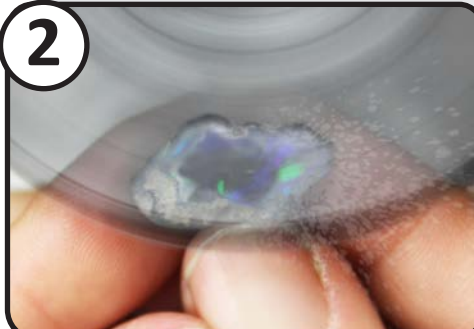
FOR CABOCHONS AND FLAT PIECES

1




STEP 1
GRIND and SHAPE your stone
Use **3M Flex-Diamond** (COARSE) abrasive
Speed: Medium/-High speed with water

2




STEP 2
REFINE the shape and remove scratches:
Use **3M Microfinishing Diamond** abrasives to finalize the shape and remove any leftover scratches.
Speed: Medium-High speed with water

3



FINAL STEP HIGH-POLISH your stone.
Use **3M Cerium Oxide** to get a final polish
WARNING: Do NOT use on porous surfaces
Speed: Very Low (with a lot of water)
Pressure: Use gentle but consistent pressure.

ALTERNATE STEP




ALTERNATE FINAL STEP: POLISHING
Some stones polish easily with our **FELT DISC**
Try this after step (2d) for Turquoise, Opal and other soft stones.
Speed: High Speed. DO NOT USE WATER

FOLLOW FROM TOP TO BOTTOM


1

X Coarse
Item# D-36250-1




2a

Coarse
Item# D-3074-2




2b

Medium
Item# D-3045-2




2c

Fine
Item# D-3030-2




2d

Very Fine
Item# D-3020-2




3


FINAL STEP:
Cerium Oxide
Item# AT-13000-2



FELT DISC
Item# B-301



USE WITH COMPOUND Item#: C-103



This 4-Grade Kit Item# K-3600-4

TO REMOVE SCRATCHES OR CHIPS

Repairing scratched or chipped stones is similar to working on rough stones.

For DEEP Scratches: Start at Step 2c, then continue up to FINAL STEP.

For LIGHT scratches: Often, the FINAL STEP is enough to get rid of light scratches. Also try ALTERNATE FINAL STEP.

ANIE'S TIP: To avoid scratches on finished piece, follow ALL steps THOROUGHLY & inspect your piece after each step.

CLEANING: Clean abrasives with damp cloth for longer life & performance.

"FLAT" POLYMER CLAY & RESIN

SHAPING & POLISHING STEPS FOR FLAT OR DETAILED PIECES



SETUP

Apply CUSHIONS to BACKPADS.
FELT & BUFF don't need cushions.



Apply abrasives onto BACKPADS (with the CUSHIONS applied).



Prepare FELT DISC as shown in your USER'S GUIDE and VIDEO



SAFETY FIRST!
Always wear eye and respiratory protection.

FLAT PIECES

POLYMER CLAY ADD-ON KIT: Item# K-1005

IMPORTANT: Stay within your see-thru area of the disc. Avoid using the edge to prevent cutting grooves in the clay.



1

STEP 1 SHAPE your clay
Use **3M Microfinishing Film 15 Mic.** (Orange/Translucent)
Hold the piece FLAT against the spinning abrasive.
Speed: Medium / Low Speed

1 FINE 15 Mic
Item# AM-13015-6



2

STEP 2 REMOVE Scratches
Use **3M Microfinishing Film 9 Mic.** (Translucent abrasive)
Hold the piece FLAT against the spinning abrasive.
Speed: Low Speed

2 VERY FINE 9 Mic
Item# AM-13009-3



3

STEP 3 Refine the surface to produce a smooth satin finish
Use the **FELT DISC WITH COMPOUND.**
Make FLAT contact, then move piece to polish desired areas.
SPEED: Very Low Speed **TIP:** Higher speeds remove material!

3 FELT DISC
Item# B-301

Use with **COMPOUND** Item#: C-103



4

STEP 4 BUFF your clay
Use **Buffing Wheel with LIGHT PRESSURE!**
DO NOT PUSH hard against the edge of the spinning Buff.
Speed: High Speed, Finish with Slow Speed.
DO NOT USE COMPOUND!

4 BUFFING WHEEL
Item# B-9335

FOLLOW FROM TOP TO BOTTOM



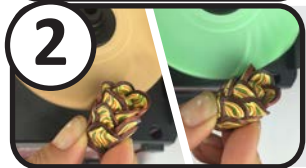
FOR DETAILED PIECES



1

STEP 1 SAND your clay
Use **3M Radial Brushes** (Pumice -Pink)
Gently hold the piece against the outer EDGE of the brush.
Speed: High Speed

1 Pumice (pink)
Item# R-343-PUM



2

STEP 2 PRE-POLISH (OPTIONAL)
Use **3M Radial Brushes** (6 & 1 Micron - Peach and Green)
Hold the piece against the edge of the spinning brush.
Speed: High Speed

2a 6 Micron
Item# R-342-6

2b 1 Micron
Item# R-341-1

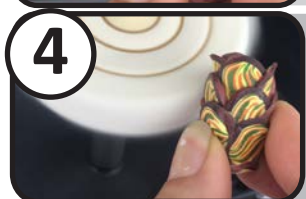


3

STEP 3 POLISH your clay
Use the **Buffing Wheel WITH COMPOUND**
Use **LIGHT PRESSURE! DO NOT PUSH HARD** on buff.
Speed: High Speed
TIP: The speed affects the amount of material that is polished off.

3 BUFFING WHEEL
Item# B-9335

Use with **COMPOUND** Item#: C-103



4

STEP 4 BUFF your clay
Use the **CLEAN Buffing Wheel WITHOUT COMPOUND**
Use **LIGHT PRESSURE! DO NOT PUSH HARD** on buff.
Speed: High Speed
REMINDER: DO NOT USE COMPOUND FOR THIS STEP (4)!

4 BUFFING WHEEL
Item# B-9335

FOLLOW FROM TOP TO BOTTOM



"ROUND" POLYMER CLAY & RESIN

SHAPING & POLISHING STEPS FOR DOMED OR ROUNDED PIECES

NOTE: Abrasives shown are included in POLYMER CLAY UPGRADE KIT (Item# K-1005-5) and can be purchased at JOOLTOOL.COM

SETUP



Apply FOAM CUSHIONS to BACKPADS. Apply ABRASIVES over FOAM CUSHIONS applied to BACKPADS.
BUFF does not require a cushion!

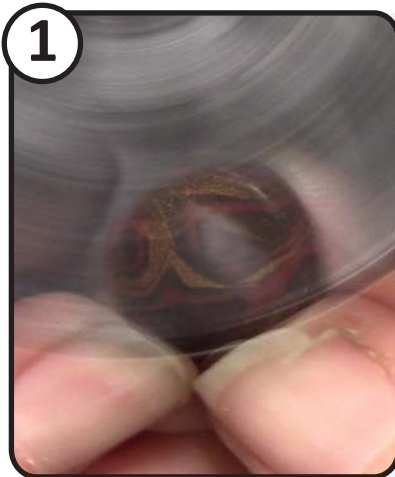


SAFETY FIRST!
 Always wear eye and respiratory protection.

FOR DOMED OR ROUNDED PIECES ONLY!

IMPORTANT: Do NOT use on pieces with sharp edges. This can increase risk of catching and tearing the abrasive

NOTE: For best results, make sure to work over the entire surface (or desired areas) for each step.



1

STEP 1

REFINE the surface of your clay
 Use **3M Microfinishing Film** abrasives at **VERY LOW SPEED**.

Hold the piece against the spinning abrasive with smooth, consistent pressure in a **CONTINUOUS CIRCULAR MOTION**.

- Steps (a) & (b) grind faster, use them to quickly smooth out bumpier surfaces.
- Steps (c) & (d) are finer, use them for prepping the surface for a high polish.



FOLLOW FROM TOP TO BOTTOM

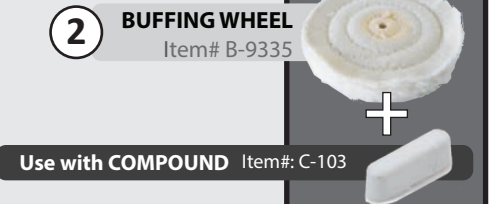


2

STEP 2 POLISH your clay

Use the **Buffing Wheel WITH COMPOUND**
 Use **LIGHT PRESSURE! DO NOT PUSH HARD**.

Speed: High Speed
TIP: The speed affects the amount of material that is polished off.



Use with **COMPOUND** Item#: C-103



3

STEP 3 BUFF your clay

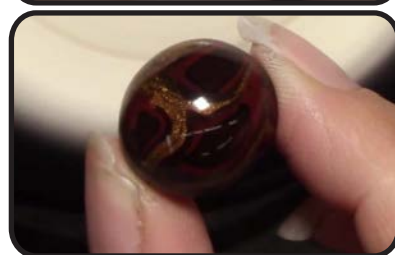
Use the **CLEAN Buffing Wheel WITHOUT COMPOUND**
 Use **LIGHT PRESSURE! DO NOT PUSH HARD** on buff.

Speed: High Speed

REMINDER: DO NOT USE COMPOUND FOR THIS STEP (3)!



3 **BUFFING WHEEL**
 Item# B-9335



DONE!

Enjoy your polished Polymer Clay creation!

GLASS WATCH CRYSTAL

SCRATCH REMOVAL & POLISHING STEPS FOR GLASS*

SETUP



Apply CUSHIONS to BACKPADS.
If purchased for Step 3, the FELT disc does not need a cushion backing.



Apply abrasives onto BACKPADS (with the CUSHIONS applied).



Use Water Tray to apply water to the workpiece during every step.



SAFETY FIRST!
Always wear eye and respiratory protection.

FOR DOMED OR FLAT GLASS

WATCH CRYSTAL POLISHING ADD-ON KIT: Item# K-1004

IMPORTANT: Stay within your see-thru area of the disc. Avoid using the edge to prevent cutting grooves in the glass.



1

STEP 1 LIGHT BEVELING, SMALL CHIP REMOVAL

Follow these steps for scratch removal & pre-polishing
Use **3M** Trizact abrasives, the colorful discs.

Speed: Medium with a lot of WATER

Follow this order:
Trizact Green Coarse
Trizact Pink Medium
Trizact Blue Fine
Trizact Orange Very Fine

This 4-Grade Kit Item# K-3200-12

1a

Coarse

Item# AT-13035-6

FOLLOW FROM TOP TO BOTTOM

COARSE

35MIC - 6000Grit

1b

Medium

Item# AT-13020-6

MEDIUM

20MIC - 3000Grit

1c

Fine

Item# AT-13010-6

FINE

10MIC - 1500Grit

1d

Very Fine

Item# AT-13005-6

VERY FINE

5MIC - 3000Grit



2

STEP 2 POLISH your glass

Use **3M** Cerium Oxide to get a final polish
WARNING: Do NOT use on porous surfaces
Speed: SLOW with a lot of WATER

2

FINAL STEP:

Cerium Oxide
Item# AT-13000-2

CERIUM - FINAL



3

ALTERNATE POLISHING STEP

ALTERNATE POLISHING STEP

Some glass polishes easily with our **FELT DISC** and our compound. Try this after step 1b

Speed: High Speed. DO NOT USE WATER

SOLD SEPARATELY

FELT DISC

Item# B-301

Apply **COMPOUND** on **FELT DISC & BUFFING WHEEL**

Item#: C-103

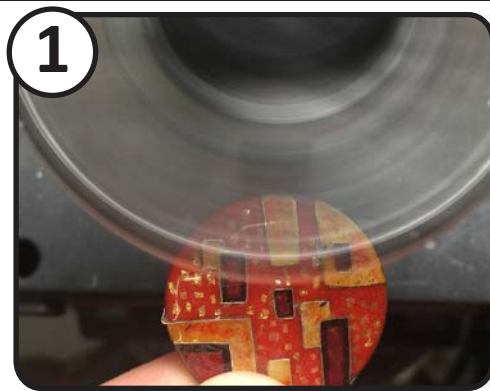
ANIE'S TIP:

To avoid scratches on the finished piece, follow ALL steps THOROUGHLY and inspect your piece after each step.



SAFETY FIRST!
Always wear eye and respiratory protection.

FOLLOW THESE STEPS TO TAKE ENAMEL FROM ROUGH TO A HIGH POLISH

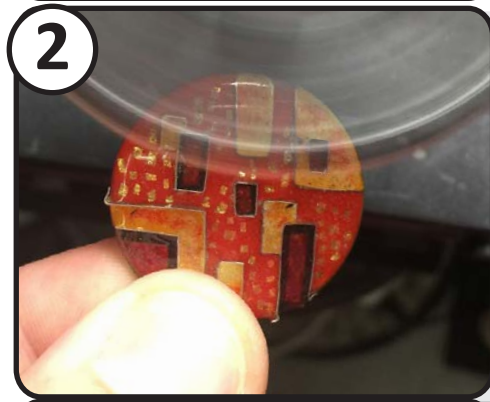


STEP 1 VERY FAST GRINDING & SHAPING of your piece
Use **3M Flex-Diamond (X COARSE)** abrasive for VERY AGGRESSIVE material removal.
Speed: High speed with water

1 X COARSE
Item # D-36074-1

STEP 1b (ALTERNATIVE)
Use **3M Microfinishing Diamond (COARSE)** abrasive for more gradual material removal.
Speed: High speed with water

ALT 1b COARSE
Item# D-3074-2

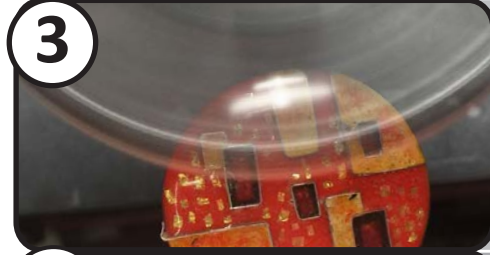


STEP 2 REFINE the shape and remove scratches:
Use **3M Microfinishing Diamond** abrasives to finalize the shape and remove any leftover scratches.

2a MEDIUM
Item # D-3045-2

STEP 2b (ALTERNATIVE)
Use for more gradual scratch removal.
Speed: Medium speed with water

ALT 2b FINE
Item# D-3030-2



FINAL STEP HIGH-POLISH your piece:
Glass can be polished easily with the **FELT DISC**.
Speed: High Speed. DO NOT USE WATER

3 FELT DISC
Item # B-301

Use with **COMPOUND** Item#: C-103

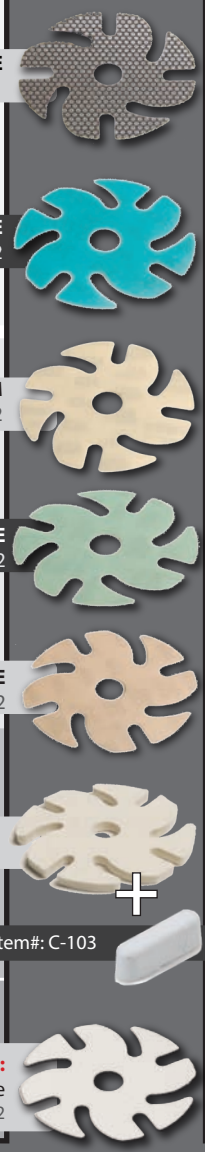


ALTERNATE FINAL STEP: POLISHING
You can also use **3M Cerium Oxide** to get a final polish. Try this after step **2c**.

ALT 3 FINAL STEP:
Cerium Oxide
Item # AT-13000-2

WARNING: Do NOT use on porous surfaces
Speed: Very Slow (with a lot of water)

FOLLOW FROM TOP TO BOTTOM



ANIE'S TIP: For a super polish on Hard Glass, use PREMIUM DIAMOND (See p. 18. LAPIDARY HARD-STONE/GLASS, Steps 3-4)

TO REMOVE SCRATCHES OR CHIPS

Repairing scratched or chipped pieces is similar to working on rough glass.
For DEEP Scratches: Start at Step **2b** then continue up to FINAL STEP **3** or **ALT 3**
For LIGHT scratches, try the polishing steps directly: FINAL STEP **3** or **ALT 3**

ANIE'S TIP: To avoid scratches on finished piece, follow ALL steps THOROUGHLY & inspect your piece after each step.

CLEANING: Clean abrasives with damp cloth for longer life & performance.

QUICK-MOUNT FLEXSHAFT

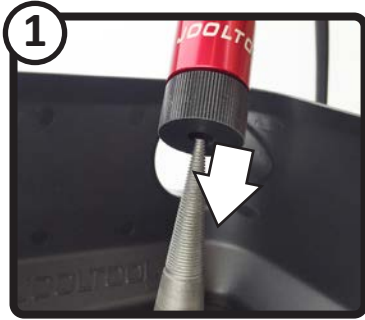
(some items below may be sold separately)

HOW TO SETUP AND USE

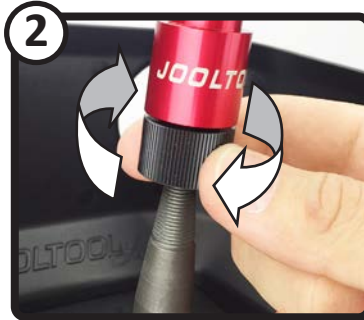


FOR SAFETY: POWER "OFF" BEFORE INSTALLING FLEXSHAFT AND/OR ACCESSORIES

INSTALL THE FLEXSHAFT



Slide the Flexshaft Connector Hub onto the Jooltool spindle. This is similar to installing Backpads onto the Spindle.



Tighten the connector Hub firmly onto the JOOLTOOL spindle.

INSTALL/CHANGE A HANDPIECE

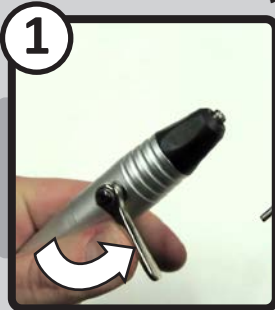


a: Insert the Flexshaft's Paddle (Key) Tip into Handpiece until it snaps & locks in place.
b: To remove: Pull apart

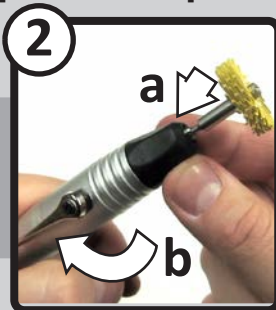


Once installed, test run the JOOLTOOL at various speeds. Rotation should be smooth. If vibration occurs, turn JOOLTOOL off and re-install.

INSTALL BITS (Type 20 Handpiece)



Position the locking lever perpendicular to Handpiece. This opens the chuck.



a) Insert the desired bit
b) reset the lever in-line with Handpiece to close & lock.

Item# J-20

INSTALL BITS (Type 30 Handpiece)



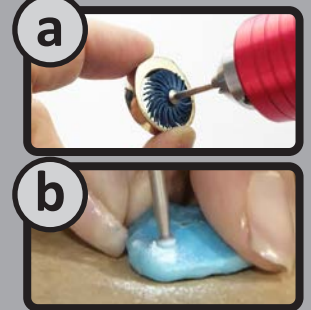
Insert the desired bit into the handpiece chuck/jaw. **Note:** Jaw must be opened wide enough to fit your bit.



Using the chuck key, tighten the jaw. **Note:** Check if the bit is centered by rotating the chuck by hand.

Item# J-30 or J-30H

USE

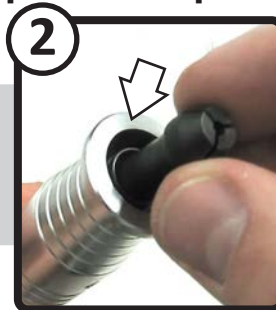


a) Use small brushes for intricate sanding and polishing in hard-to-reach areas. b) Use Diamond & Drilling bits on a variety of materials, even stones!

INSTALL BITS (Type 44 Handpiece)



Insert pin into the Handpiece. Unscrew & remove the collet nut. Use wrench if needed.

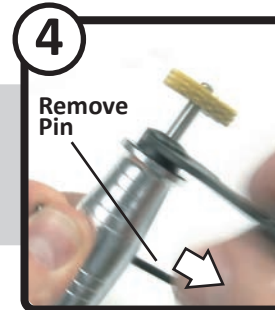


Insert the desired collet into mandrel. **Note:** Collet size must match shaft size of bit.

Item# J-44



Insert & screw on the collet nut but do NOT tighten yet.

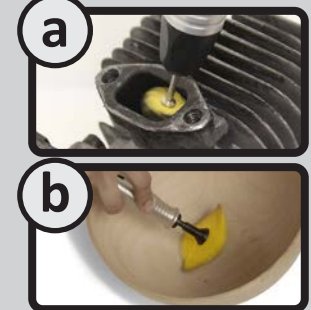


Insert desired Bit into Collet. Tighten Collet with the Wrench.



REMOVE PIN BEFORE USE!

USE



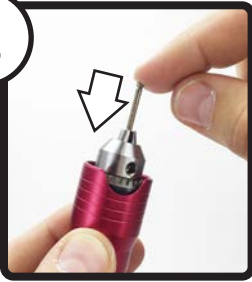
a) Use small brushes for intricate sanding and polishing in hard-to-reach areas. b) Use 2" or 3" brushes for finishing work on larger projects.

(some items below are sold separately)

⚠ FOR SAFETY: POWER "OFF" BEFORE INSTALLING FLEXSHAFT & ACCESSORIES

INSTALL THE DIAMOND BURRS/DRILLING BITS (EXAMPLE SHOWS #30 HANDPIECE)

1



Insert the desired bit into the handpiece chuck/jaw.
Note: Make sure the jaw is opened wide enough to fit the bit.

2



Using the chuck key, tighten the jaw.
Note: Check if the bit is centered by rotating the chuck by hand.

**⚠ ALWAYS WEAR EYE AND RESPIRATORY PROTECTION
PROTECT HANDS! Drill bits can be sharp or pointy.
AVOID ELECTRIC SHOCK! Keep water away from any electrical parts**

HOW TO DRILL METAL, PLASTICS & OTHER MATERIALS

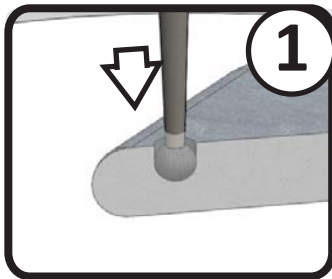
Handpieces can be used with conventional drill bits if they are securely installed and centered in the chuck/jaw. Due to the various designs available, FOLLOW SPECIFIC INSTRUCTIONS AS SUPPLIED WITH YOUR DRILLING BITS.

HOW TO DRILL STONES WITH BALL-END DIAMOND DRILLING BURRS

ANIE'S TIPS

- Hold the stone or workpiece with one hand and the handpiece with the other.
- You can drill glass or stone under water. Place the stone into a shallow container (such as a jar lid) and fill with water until stone is fully submerged.

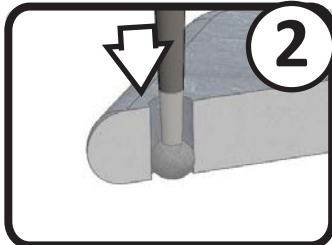
NOTE: Stones higher than 7 on Mohs hardness scale (Agate, Jasper, ...) can take longer to drill through. Hard stones may reduce bit life. If it starts to take longer to drill, replace your worn bit with a new one!



1

STEP 1 - SET THE SEAT AND DRILL HALF-WAY THROUGH

- Place an expendable piece of wood or plastic under your stone to avoid drilling through your water container!
- Using full speed, insert the drill bit tip into the water and gently contact the stone.
- To set the desired hole location, slowly press and allow the bit to form a "seat."
- Continue drilling, as hole gets deeper you can gently increase pressure.
- Stop when you are approximately halfway through the stone.



2

STEP 2 - CHECK AND CONTINUE DRILLING

- When done with first half of the hole, check your progress.
 - Make sure the stone has no cracks or weak points close to the hole.
 - Continue drilling to the the bottom of the stone.
- This makes a clean hole and prevents shattering of the stone.



ENJOY YOUR CREATION!

Now you can string your favorite stones or beads.



ANIE'S TIP:

Use the PEARL VISE to help hold your stones, beads and pearls in place while you drill.

Item #V-100P

INSIDE-RING MANDREL & PEARL VISE

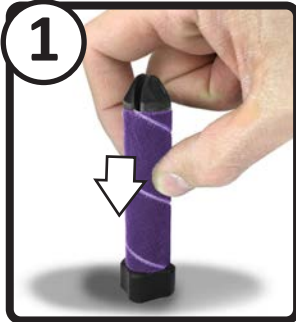
HOW TO USE THESE ACCESSORIES

(Items shown may be sold separately, may appear different than pictured below and may be discontinued without notice. Visit www.jooltool.com to check availability.)

! FOR SAFETY: POWER "OFF" BEFORE INSTALLING ACCESSORIES Please use caution, common sense and keep safety a **PRIORITY!**

INSIDE-RING MANDREL INSTRUCTIONS

Mount the abrasive



Slide the abrasive tube of your choice onto the mandrel, starting from the tip.

Note: The FELT comes permanently mounted* on a separate mandrel. (*certain markets)

Mount on Spindle



2.1 Twist clockwise onto the Spindle of the JOOLTOOL using grip areas at the bottom of the mandrel.

DO NOT OVERTIGHTEN

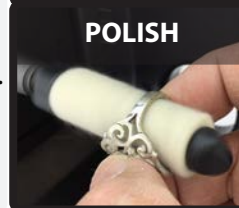
2.2 Twist counter-clockwise to remove.

Turn JOOLTOOL ON

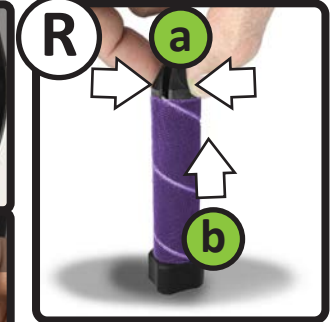


Turn the JOOLTOOL ON and enjoy quick and easy grinding, sanding and polishing inside rings and tubular items.

Note: Mandrel can also be used while in Horizontal Mode. (p.13)



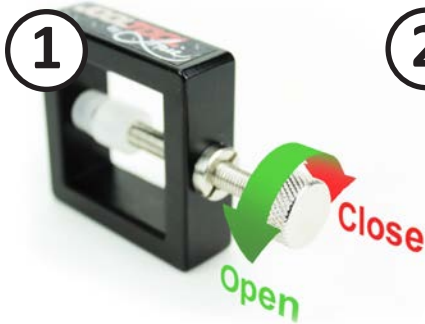
Remove or Change



Use Step **2.2** to remove mandrel from Spindle

a Pinch the tip of the mandrel then, using your other hand, slide the abrasive OFF **b** Restart at Step **1** to re-install another.

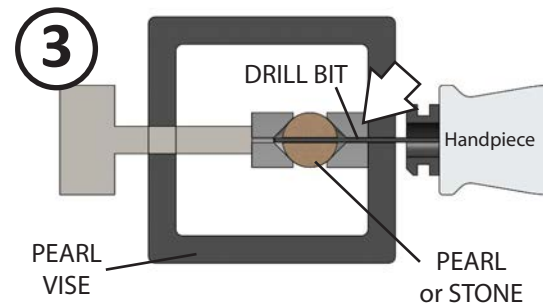
PEARL VISE INSTRUCTIONS (Pearl Vise May be sold separately)



TURN KNOB TO ADJUST THE JAW
Clockwise to **close**
Counter-clockwise to **open**



Locate the guide hole at opposite side of the knob.
Hole diameter is approx.
1mm (0.039in)



Drill pearls using a 1mm bit through the guide hole. Stones can be drilled using Diamond Burrs through the open sides of the Pearl Vise. (See below)

! FOR SAFETY: ALWAYS KEEP FINGERS AND BODY PARTS AWAY FROM DRILLING DIRECTION!



ANIE'S TIP:
After making a Pilot Hole (initial small hole), you can rotate your piece, then drill larger holes using the open sides of the Pearl Vise.



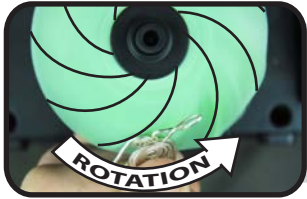
DESCRIPTION

Made from patented abrasive technology, these are the safest alternative to wire brushes and buffing wheels. They are flexible and conform to irregular surfaces and tight, complex areas. They work great on metal, wood and even some coatings for sanding, cleaning, brushing, finishing and polishing. Each grade has a specific color so you always know which one to use for your project. They last long and provide a consistent and uniform finish throughout their life. Use for finishing Gold, Silver, Brass, Stainless Steel, Aluminum, Cooper, and more! Also great for sanding wood.

ANIE'S TIPS:

3M BRUSHES are great for polishing jewelry, satin finishing watch bands, bracelets, removing rust from car parts, deburring turning tools and serrated knives, cleaning wood carvings or golf clubs and countless other projects. They can be used on the JOOLTOOL Spindle or the Flexshaft's Handpiece when mounted on the BRUSH ADAPTOR (#Z-31).

INSTALLING THE BRUSHES

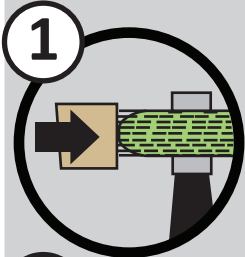


Tighten 2" & 3" Brushes on the JOOLTOOL spindle or the QUICK-SCREW BRUSH ADAPTOR (Item # Z-31).
NOTE: Bristles must "sweep" not "grab" when spinning.
DO NOT USE WITH COMPOUND/ROUGE

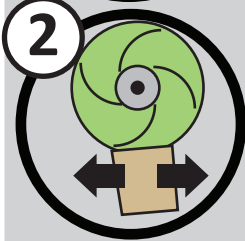


SAFETY FIRST! Always wear eye and respiratory protection.

USING THE BRUSHES



STEP 1
Using FULL speed. Apply workpiece with light pressure to the OUTER edge of the brush.

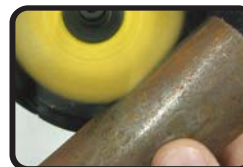


STEP 2
Apply even strokes or hold workpiece in-place until desired result is achieved.



Brushes are available in the following sizes: 9/16", 3/4", 1", 2" and 3" diameter. Also available as Roloc™ CUPS

BRUSH GRADES



Jewelry: Clean castings
Automotive: Remove rust/paint
Woodworking: Sand & clean up



Jewelry: Clean castings
Automotive: Remove fine rust/thin paint
Woodworking: Sand & clean up



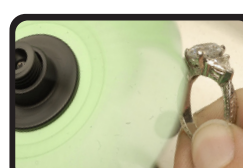
Jewelry: Med Satin finish
Automotive: Brushed Finish on parts
Woodworking: Fine Sanding



Jewelry: Fine Satin Finish
Automotive: Fine Brushed Finish on parts
Woodworking: Very Fine Sanding



Jewelry: Pre-Polish/Burnish
Automotive: Pre-Polish
Woodworking: Deburring



Jewelry: Final Polish (**SAFE ON STONES**)
Automotive: Final High-Polish
Woodworking: Light Deburring

Check out the full assortment @ Jooltool.com

SAFETY FIRST! Make sure JOOLTOOL power is "OFF" when performing inspection and adjustments.
If you are unable to perform any of the solutions described below, contact an authorized JOOLTOOL service center

SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Jooltool will not start	<ol style="list-style-type: none"> 1. JOOLTOOL not plugged in power outlet. 2. Fuse blown or circuit breaker tripped 3. Cord damaged 	<ol style="list-style-type: none"> 1. Plug JOOLTOOL in power outlet. 2. Replace fuse or reset circuit breaker 3. Replace cord with original JOOLTOOL cord.
Disc comes off the spindle when turned "ON".	<ol style="list-style-type: none"> 1. Disc not locked on spindle (May happen during first use of disc) 2. Spindle thread worn out 	<ol style="list-style-type: none"> 1. Press down on disc and firmly tighten it onto the spindle (turn clockwise). Disc will self-thread. 2. Replace spindle or use a thin hand file to lightly sharpen thread at the top half-inch of spindle. <i>(To be performed only by JOOLTOOL professionals)</i>
Spindle or Flexshaft Hub does not stay in position	<ol style="list-style-type: none"> 1. Spindle or Flexshaft Hub not locked on motor shaft 2. Incompatible Spindle or Hub 	<ol style="list-style-type: none"> 1. Firmly tighten the set screw securing the Spindle or Flexshaft Hub onto the motor shaft. 2. Replace Spindle or Hub for original Jooltool part
Vibration during use	<ol style="list-style-type: none"> 1. Improperly applied or damaged Abrasive or Cushion on Backpad Disc 2. Incompatible accessory/wheel/disc 3. Damaged or incompatible spindle 4. Damaged motor shaft 	<ol style="list-style-type: none"> 1. Remove misaligned or damaged Abrasive or Cushion from Backpad disc and re-apply with proper alignment of SEE-THRU pattern. 2. Use only original JOOLTOOL accessories 3. Replace spindle with original JOOLTOOL spindle 4. Send unit to JOOLTOOL-authorized service center for repair or replacement.
JOOLTOOL moves during use	<ol style="list-style-type: none"> 1. JOOLTOOL not locked onto base/dock 2. Base not fixed onto workbench/table. 	<ol style="list-style-type: none"> 1. Ensure rear alignment pins are correctly inserted into respective holes and the HOOK on "EJECT" tab is fully locked onto JOOLTOOL body 2. Secure the Base/Dock onto a workbench or table using screws or clamps.
Abrasives wear too quickly	<ol style="list-style-type: none"> 1. Excessive pressure on disc during use 2. Incorrect abrasive grade or type. 3. Incorrect working speed. 4. Insufficient lubrication (water) 	<ol style="list-style-type: none"> 1. Use light/reduced pressure when working 2. Use correct abrasive grade or type: use coarse abrasives for shaping and grinding, use fine abrasives for sanding/prepping, use only polishing abrasives for polishing. Use Diamond abrasives for high-carbon metals or stones of 7+ Mohs scale. 3. Adjust speed for abrasive type & workpiece. <i>Ex: Use low speeds for hard stones and glass.</i> 4. Lubricate abrasives or workpiece during process. <i>Ex: Diamond abrasives require lots of water when working on hard stones. Trizact abrasives require lots of water when working on glass.</i>
Non-uniform surface finish on workpiece	<ol style="list-style-type: none"> 1. Workpiece held immobile too long 2. Abrasive did not fully contact the desired area. 3. Incorrect working speed. 	<ol style="list-style-type: none"> 1. Move piece continuously under the abrasive to change direction of grinding or polishing strokes. 2. Make sure abrasive contacts workpiece fully. To locate the area, mark it with a permanent marker (<i>Sharpie</i>) of contrasting color and work the surface thoroughly. Marker will be erased where the abrasive contacts the surface. This is desired. 3. Adjust speed based on abrasive & workpiece.

Anie sets the highest design and quality standards on the products that bear her name. They go through a rigorous inspection to ensure that our tools give you years of reliable service.

JOOLTOOL by Anie™ makes the following limited warranty to original consumers in the United States:

Limited One (1) Year Warranty on Parts and Labor

This limited warranty extends to the original purchaser or any person receiving this power tool as a gift from the original consumer purchaser (with proof) and to no other purchaser or transferee.

JOOLTOOL by Anie™ warrants this power tool and its parts against any defects in materials and workmanship for a period of one (1) year after the date of original retail purchase. DURING THIS PERIOD, JOOLTOOL by Anie™ will, at its option, repair or replace a defective part or unit without charge to you for parts or labor. All we ask is that you return your JOOLTOOL to our facility. If it is determined that the problem is covered by our warranty, we'll take care of it. All freight to and from our facility is to be paid by the customer. If a replacement is necessary and your product is no longer available, a comparable product will be substituted.

The JOOLTOOL system is tested to withstand normal wear and tear, but is not indestructible and can be damaged by misuse. Our warranty, just like other warranties worldwide, will not cover wear and tear, misuse and/or abusive treatment. Misuse may include, but is not limited to, damage by vehicles, tools, people, animals, falling objects, acts of God, and using the JOOLTOOL system in any manner contrary to the warning/instruction labels and user's guide.

This shall be in lieu of any other warranty, expressed or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. The liability of JOOLTOOL under this warranty shall be limited solely to repair or replacement of the tool within the warranty period; and JOOLTOOL by Anie™ shall not be liable, under any circumstances, for consequential or incidental damages, including but not limited to, personal injury or labor costs. This warranty is effective as of January 1st, 2019. Manufacturing specifications are subject to change without notice.

This warranty applies to the JOOLTOOL machine unit. Abrasives and Accessories may have their own respective warranties. To ensure your complete satisfaction as a JOOLTOOL customer, certain issues can be addressed on a case-by-case basis. We guarantee a timely resolution at a fair price.

Details of your responsibility

The above warranty is subject to the following conditions:

- (1) You must retain your original bill of sale or provide proof of purchase.
- (2) This warranty DOES NOT extend to any JOOLTOOL™ parts that have been lost or discarded by you or to damage to the main JOOLTOOL™ unit or parts caused by fires, misuse, accident, Acts of God (such as lightning, earthquakes, floods, etc,) fluctuations in electric mains power, improper installation, improper maintenance, or use in violation of instructions furnished by the JOOLTOOL™ company; use or malfunction through simultaneous use of this power tool unit and connected equipment; or to units that have been modified or had the serial number removed, altered, defaced, or rendered illegible.
- (3) Units used and/or sold outside the U.S.A. and returned to the manufacturer for repair or replacement are subject to the current restocking fee as well as any applicable shipping fees. Packages must also be insured for their full value.

Thank you for being part of our growing JOOLTOOL community



! The tips below are provided as suggestions. Always use common sense when transporting equipment. Transportation rules, laws and regulations are different in each country and can change at any time.

Always check with your transportation safety authority for travel compliance of certain items. JOOLTOOL by Anie™ does not guarantee that any or all products meet specific travel/safety requirements. JOOLTOOL, JOOLTOOL by Anie™ and parent/affiliate companies shall not be liable, under any circumstances, for consequential or incidental damages or losses, including but not limited to, property, personal injury, travel and/or labor costs or other losses incurred by use or misuse of the information contained herein.

Anie designed the JOOLTOOL™ X to be as compact and light as possible; which makes it a perfect companion at your favorite club meeting, trade show or wherever your projects take you. It's even compatible with 110V to 240V power.



CAR, BUS OR MOTORCYCLE

- Clean your JOOLTOOL™ & accessories before packing.
- Roll up and contain your power adapter/cords.
- The Flexshaft attachment can be coiled in a smooth knot, but avoid tight bends!
- Pack your Backpad discs, Abrasives, Handpieces, Tool Rest & other accessories in puncture-resistant textile bags. These are ideal to save space and prevent scratching your JOOLTOOL.
- Put everything in a weather-resistant Backpack or Duffle bag. A strong closure & a firm base are recommended. For heavier kits, use a rigid box with carrying handles. Ask a friend for help if necessary.

For the best fit, protection and versatility, original JOOLTOOL by Anie™ bags and cases work best*.



ALWAYS MAKE SURE YOUR CARGO IS SECURELY FASTENED TO OR WITHIN THE VEHICLE. CHECK ALL TIE-DOWNS, CLAMPS, LOCKS AND CLOSURES BEFORE DEPARTURE.

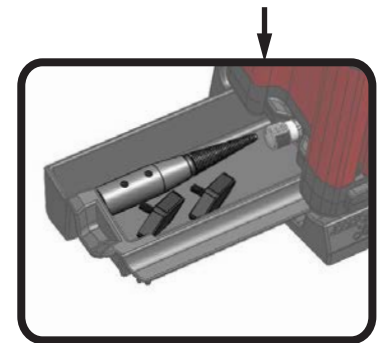


AIRPLANE, BOAT OR OTHER MODES OF TRANSPORT

Some modes of transport require security screening before boarding. To ensure a smoother procedure:

- **Remove the SPINDLE and all attachments such as the Flexshaft, Tool Rest and Knobs from the JOOLTOOL**
- **Roll the SPINDLE, wrenches and knobs in a cloth and conveniently store in the machine's DRAWER.**

- Clean your JOOLTOOL™ and accessories before packing.
- Roll up and contain your power adapter/cords.
- The Flexshaft attachment can be coiled in a smooth knot - avoid tight bends!
- Pack your Backpad discs, Abrasives, Handpieces, Tool Rest and other accessories in puncture-resistant textile bags. These are ideal to save space and prevent scratching your JOOLTOOL.
- Put everything JOOLTOOL-related in a closeable bag for easier removal from the larger travel bag, if necessary.



ANIE'S TIP:

To save even more space, remove the SPINDLE, then remove the HOOD from the tool. Flip the HOOD over and position it to "hug" the BODY of the JOOLTOOL. To prevent scratches, wrap the JOOLTOOL in fabric or plastic.

* Subject to availability

PROJECT PLANNER

THESE ARE EXAMPLES OF MATERIALS YOU CAN WORK ON

Your SEE-THRU Abrasives allow you to grind, sand, texturize and polish any of these materials... and more!



GOLD



SILVER



PLATINUM



STAINLESS STEEL



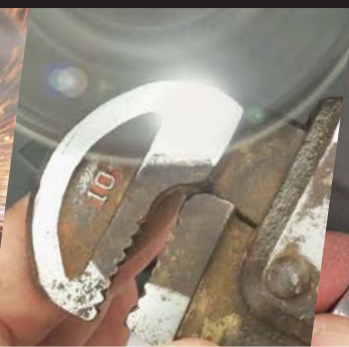
COPPER



CARBIDE



HS STEEL



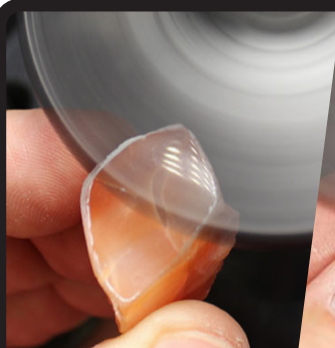
CAST IRON



ALUMINIUM



BRASS



GEMSTONES



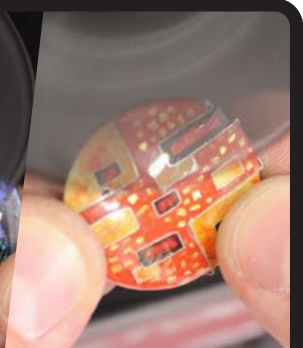
CERAMICS



POLYMER CLAY



GLASS



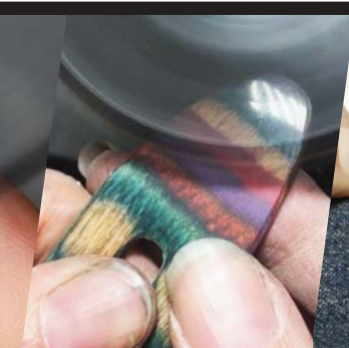
ENAMEL



PEARLS, BEADS



SEA SHELLS



WOOD



FABRIC



3D PRINTS

SKETCH AREA



ABRASIVE SHOPPING LIST:

ACCESSORY SHOPPING LIST:



ABRASIVE CHART

YOUR ABRASIVE GRADES, ORGANIZED

Use this chart to visualize the finish you can expect from an abrasive. Abrasives at left of table can grind & shape; Abrasives at right of table give you high polishes. Use the DIAMOND ABRASIVE FAMILY (below) to shape or polish stones (7.5+ Mohs scale) and high-carbon metals (carbides). Use Cerium Oxide for final polishes.

ANIE'S TIPS: Some abrasives can have the same attributed grit, but achieve different finishes. This is due to the material and abrasive technology used.

For example, TRIZACT™ delivers a higher polish than is to be expected from a certain grade thanks to the micropyramidal structure of the cutting grain.

MICROFINISHING DIAMOND™ achieves a higher polish due to the uniformity of its cut, especially when used on harder metals such as Tungsten or Silicon Carbide. 3M™ RADIAL BRUSHES have a lot of flexibility that makes them very gentle. Even an 80 grit (Yellow) brush does not grind but creates a textured/satin finish.

NOTE: An abrasive can give a finer finish when combined with CUSHION PADS (Item# N-3103) due to the extra "cushioning" effect they provide.

FINISH ABRASIVE	GRINDING	SANDING	FINE-SANDING	PRE-POLISHING	POLISHING	HIGH-POLISHING
3M RADIAL BRUSHES	36 Grit 60 Grit 80 Grit 120 Grit 220 Grit		400 Grit	6 Mic	1 Mic	
3M SCOTCHBRITE™ WHEELS	SCOTCHBRITE CLUSTER	SCRATCHERASER COARSE	SCRATCHERASER MEDIUM	SCRATCHERASER 35 FINE	SCRATCHERASER 25 VERY FINE	
FELT and BUFF Finish level shown with JOOLTOOL Compound					FELT Disc	BUFFING WHEEL
3M MICROFINISHING FILM Use with CUSHIONS		60 Mic	30 Mic	15 Mic	9 Mic	
3M TRIZACT™ Use with CUSHIONS			35 Mic	20 Mic	10 Mic	5 Mic
3M CERAMIC PURPLE	80 Grit	120 Grit	220 Grit			
3M CERMIUM OXIDE Use with CUSHIONS						Cerium Oxide
3M PREMIUM DIAMOND Use with CUSHIONS					3 000 Grit	8 000 Grit
3M MICROFINISHING DIAMOND Use with CUSHIONS						
3M FLEXIBLE DIAMOND (COARSE)	250 Mic	125 Mic	74 Mic	74 Mic	45 Mic	30 Mic
					20 Mic	

Grit level will be finer if used with CUSHION PADS

DIAMOND ABRASIVE FAMILY

