GRS® Quick Change Sharpening Fixture INSTRUCTIONS

PART #003-580 • HEAD ONLY PART #003-581

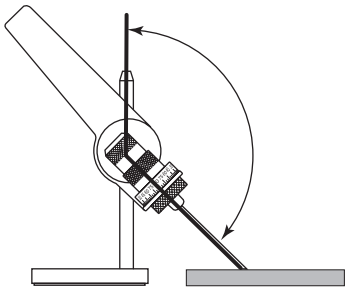
The GRS Quick Change (QC) Sharpening Fixture provides fast, accurate and consistent graver sharpening for gravers installed in a Quick Change Holder.

This fixture is most effective when used with the GRS Power Hone, but may also be used with a stationary bench stone using a sweeping action.

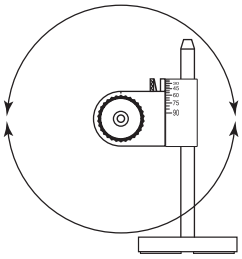
The following instructions may seem long and in-depth but after you've sharpened a few tools it becomes second nature.

The first two things to learn about this fixture:

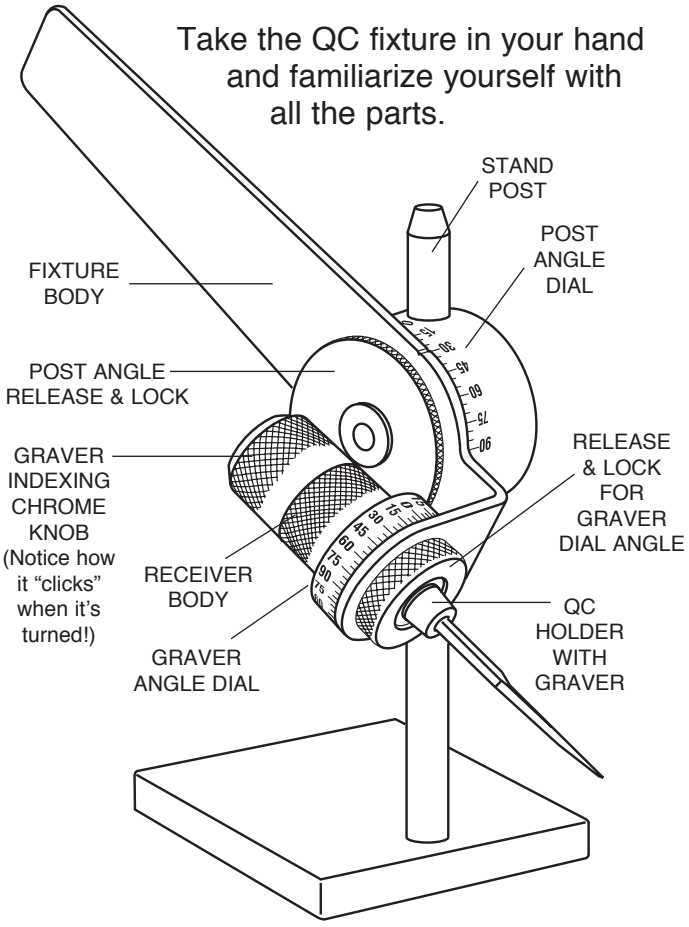
POST ANGLE



GRAVER ANGLE

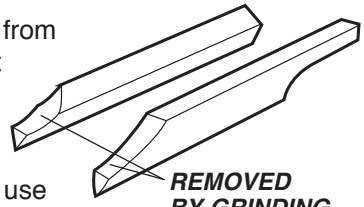


Take the QC fixture in your hand and familiarize yourself with all the parts.



GETTING THE GRAVER READY TO SHARPEN

Most tools need some type of preparation before sharpening. Shank modification to fit a QC Holder or just shortened to fit your personal needs. GRS Tools offer gravers that are already modified and ready to be sharpened, but you should learn this anyway.

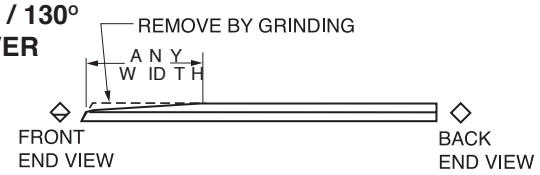


Removal of excess metal from the top / front tool tip makes it quicker and easier to be resharpened, plus allows a better view of the tip when in use. For this you will need to use a bench grinder. A Power Hone with a 260 grit wheel will work, but a bench grinder is quicker. Rough grind with a bench grinder first, then true the surface with the Power Hone if you desire. Care and caution must be used when using a bench grinder. Eye protection MUST BE WORN and a face mask to prevent breathing wheel dust.

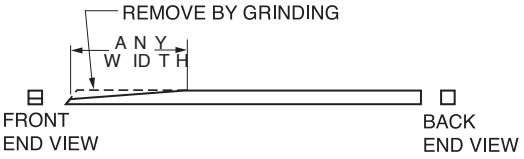
Tools can easily be damaged while grinding. Do not let the tool tip get hot and burn. Burning means the tool metal will turn blue, which takes the temper or hardness out of the tool and it will not hold a cutting edge. To avoid burning the tool take your time and do not press too hard against the wheel. Have a container of water by your grinder and frequently dip the tool BEFORE it gets warm in your hand.

Some suggestions on how to pre-shape the graver.

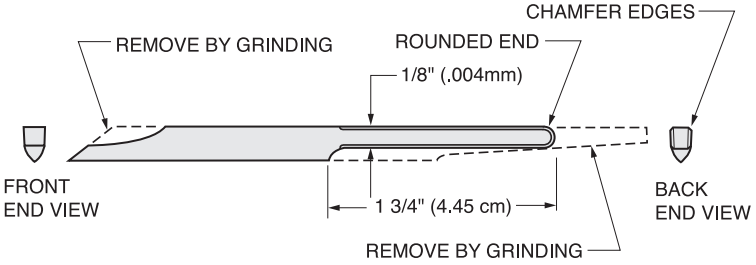
90° / 110° / 120° / 130° SQUARE GRAVER



SQUARE BRIGHT CUT GRAVER



TRADITIONAL GRAVER



GRAVER LENGTH HINT!

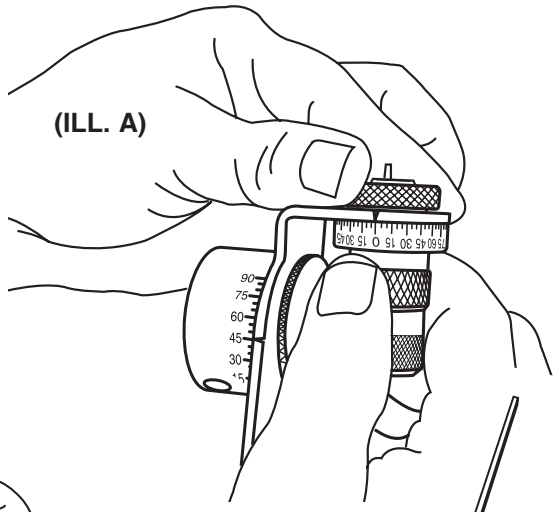
Just past the thumb when the tool is in the handpiece or hand handle!

SHARPENING SQUARE GRAVERS: ◆

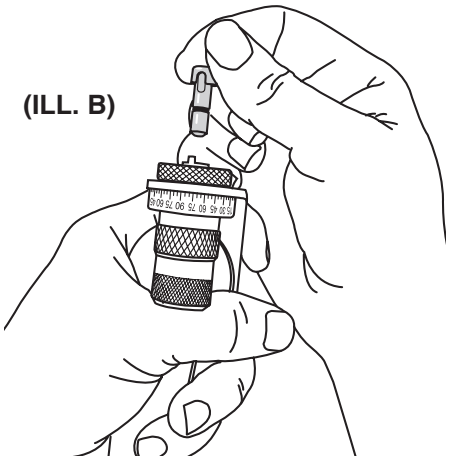
1. FIRST set the receiver dial to 0°. To do this, hold the receiver body and loosening the knurled ring around the insert opening for the QC Holder (ILL. A). Once loose this will allow the dial to rotate freely. Align the dial 0° mark with the center mark on the frame and lock in that position by tightening the knurled ring.

2. Insert a QC Holder into the fixture (ILL. B). Make sure the register pin is seated fully and the QC Holder is inserted completely into the fixture. Note that the receiver body will rotate in intervals of 45° and "click" into position at each interval (ILL. F). Turn the receiver until the "click" that aligns the QC Holder set screw with the 0° center mark.

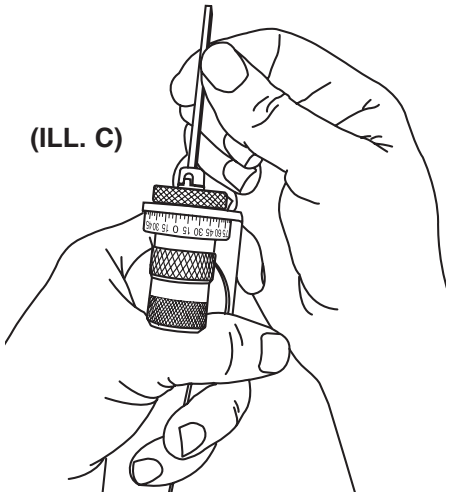
(ILL. A)



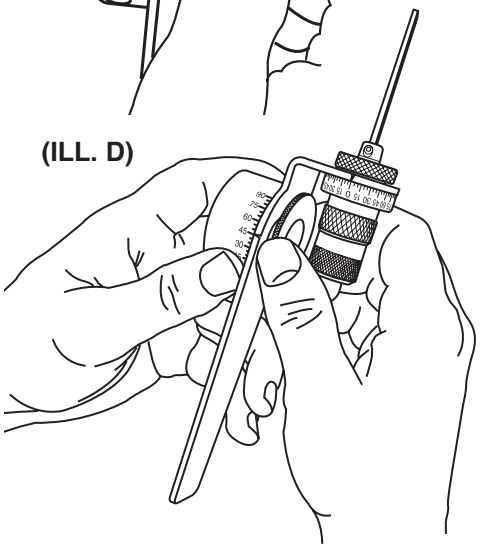
(ILL. B)



(ILL. C)

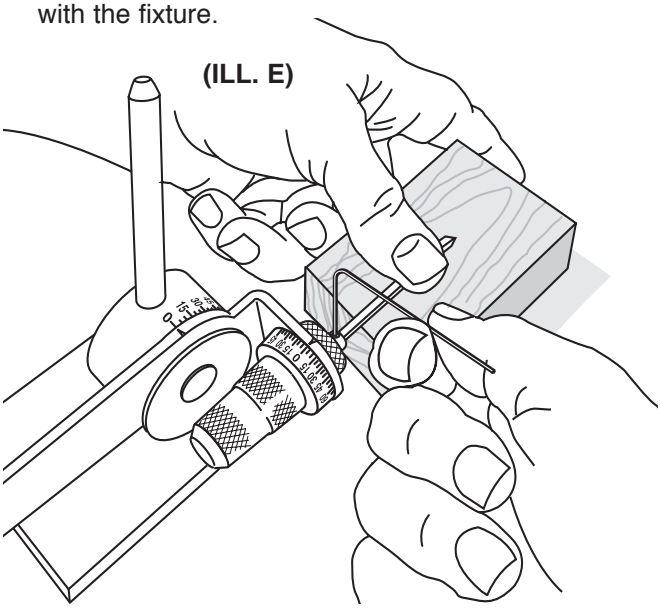


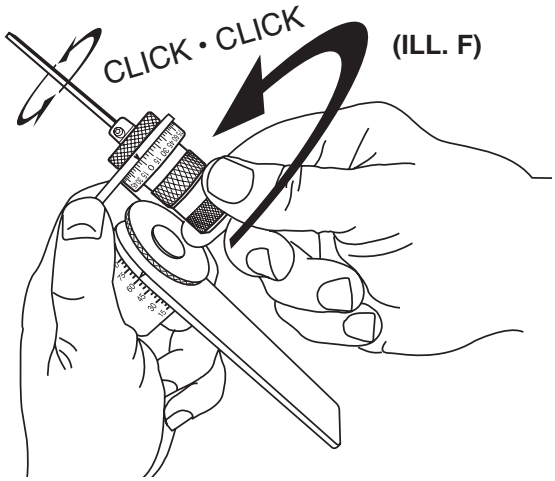
(ILL. D)



3. Insert a SQUARE GRAVER into the QC Holder but do not tighten (ILL. C) set screw. Loosen the POST angle by turning release & lock wheel (the large black wheel with the knurled edge) (ILL. D) and set post dial angle at 0°. Place the fixture body on the stand post. Take a block of wood (or a hard cover book) and lay in front of the fixture. Position the fixture so that the graver is flat against the block of wood (ILL. E). While holding (PRESSING) the graver flat against the block, making sure the graver is fully seated into the QC Holder, tighten the set screw in the QC Holder. Now the graver is properly aligned with the fixture.

(ILL. E)





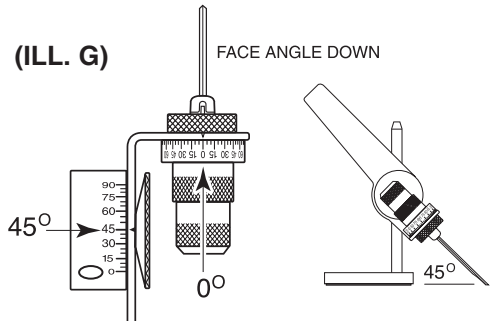
(ILL. F)

4. The tool face is ground first. Rotate the graver by turning the chrome knurled knob until the graver face is facing down (ILL. F). Each click is 45°. To rotate the graver 180° it would take four (4) "clicks". Loosen the POST angle (ILL. D) and select the desired angle you want to make the face angle and tighten.

Face angle recommendations:

- 45° for most purposes (ILL. G - upper right)
- For cutting very hard materials use 50° or 55°
- For softer material use less angle - 45°

Experience will teach you the best angle for your purposes.



5. Place fixture on guide post assembly and place near the stone or Power Hone lap to sharpen the face angle. Power Hone users make sure the wheel area is turning away from the tool and not into the tool. Sweep the tool point across face of stone or lap (ILL. H). Use downward pressure to speed cutting action.

6. Inspect to assure a sharp point. If desired, polish the point by changing to a finer wheel or ceramic lap on the Power Hone. If using a flat stone, switch to a finer stone or polishing paper. Some prefer to polish freehand. Polishing improves the appearance of the cut and a sharp point lasts longer.

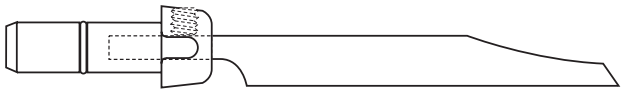
MAKING THE HEEL

An excellent and consistent heel can be put on a square graver with this fixture. Most other graves are best heeled by the freehand method.

Make the heel by changing the POST DIAL to 10° or 15° (15° shown - ILL. I) depending on desired heel angle. Rotate the graver so the face angle is facing up by turning the indexing knob 180° (four "clicks"). Now, to make the heel turn the indexing knob ONE "click" to the left (ILL. J) and make heel (see following instructions) then turn indexing knob to the right TWO "clicks" and do the other side.

We recommend making the heel by sweeping the graver once or twice across the diamond wheel WITHOUT turning the Power Hone on -OR- sweeping across a fine bench stone. If you use two sweeps on one side, use two sweeps on the opposite side.

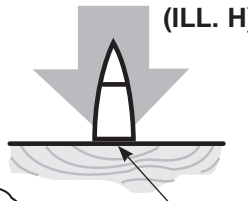
Take care to remove equal amounts off each side for a uniform heel. Polish the surface to obtain a bright cut. Spray diamond on a piece of leather works very nice for this.

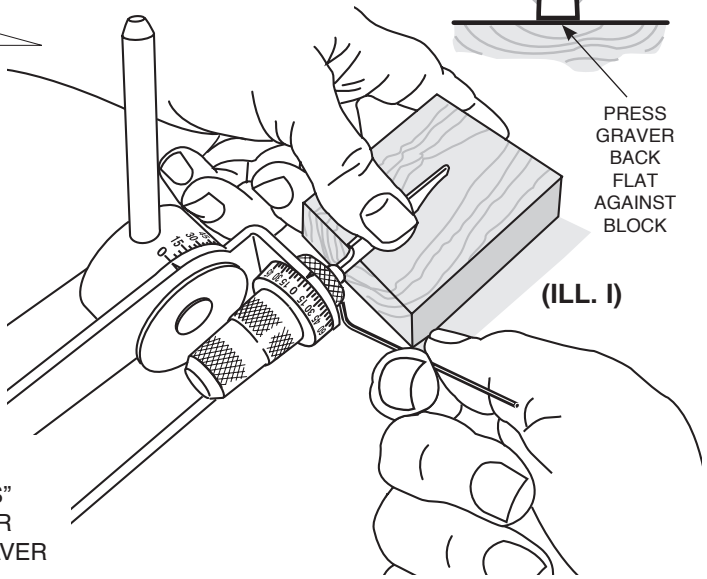


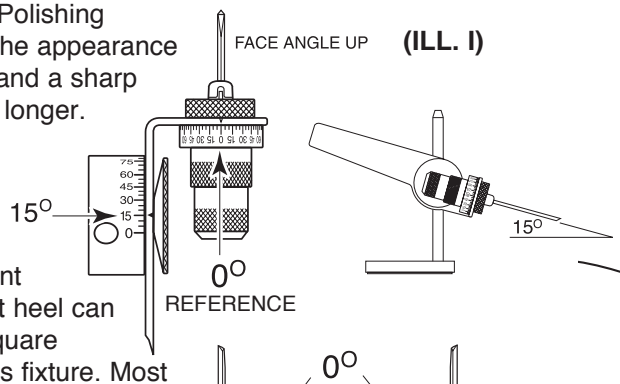
SHARPENING QC GRAVERS -OR- TRADITIONAL GRAVERS THAT HAVE BEEN RESHAPED TO FIT A QC HOLDER

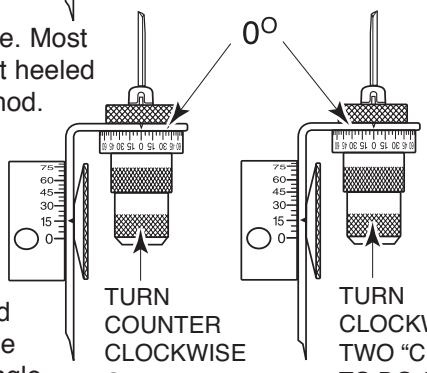
1. To sharpen QC Gravers us the same steps as sharpening a square graver - EXCEPT - DO NOT do step number 1. There is no need to set the dial at 0°. Why you may ask? Because a QC or a reshaped traditional graver will most likely turn in the QC Holder when the set screw is tightened. This will make the degree reading on the dial incorrect.

The most accurate way is to leave the dial ring loose and use the wooden block (or hard cover book) method. With the QC GRAVER back pressed flat against the block (ILL. H) tighten the set screw on the QC Holder. Then, while holding the graver against the block, tighten the knurled ring that locks the dial in place (ILL. I). ***CAUTION: Use care with sharp gravers.*** The degree reading on the dial may or may not be exactly on a mark. But the GRAVER is square to the fixture! You can rotate the graver using the "CLICK" turns to grind the face angle.



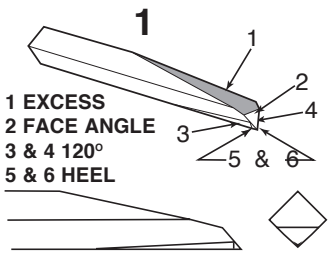


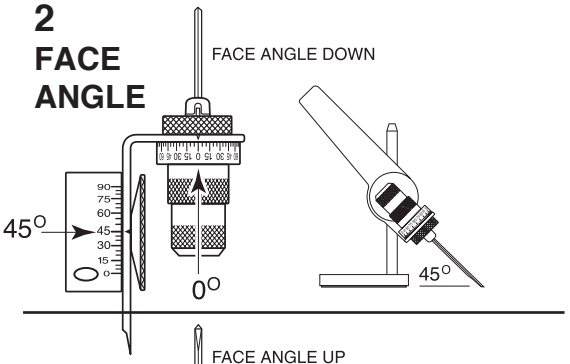




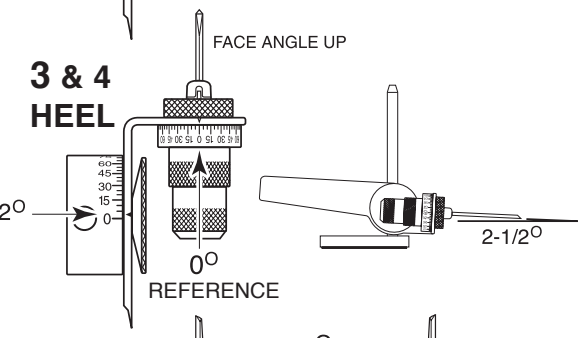
CONTINUED UPPER RIGHT

MAKING A 120° GRAVER FROM A SQUARE GRAVER

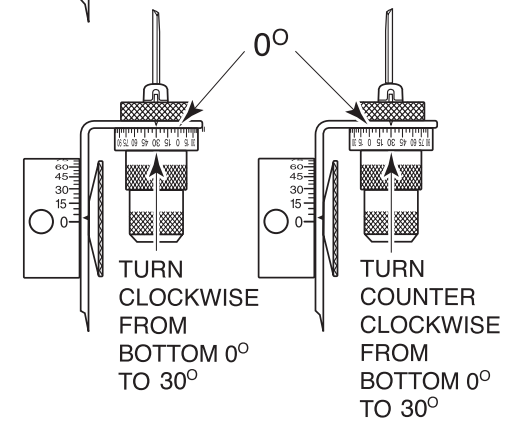




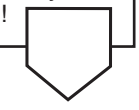
Refer the Square Graver sharpening instructions for details deleted here for space. With the graver's excess metal removed (**1**) properly mount the tool in the QC Fixture. Set the POST DIAL at 45° (or desired face angle) and grind the face (**2**). Rotate the GRAVER around 180° (4 "clicks") and change the POST DIAL to 2-1/2°... halfway between 0° and 5°, and lock in position. Loosen dial lock ring and rotate dial clockwise from 0° to 30° and grind angle (**3**). Make this angle grind about 1/2" long. Loosen ring and rotate TOOL DIAL counter clockwise back past 0° to 30°, lock and grind angle (**4**). Make this side the same length as the other side (**3**). A trick to measure how much you are grinding off is to time it or count while it's grinding. It may be necessary to regrind the other side to make both sides equal. But it is important that the sides are equal and symmetrical.



Make the heel (**5 & 6**) by changing the POST DIAL to 15° (or desired heel angle). The TOOL DIAL is already at 30° left, so make this heel and rotate TOOL DIAL right, past reference 0° to 30° and make the other heel. The 120° graver is complete.



GRS offers a 120° graver that is ready to be sharpened!



GRS 120° SHAPE

120° FROM 90°

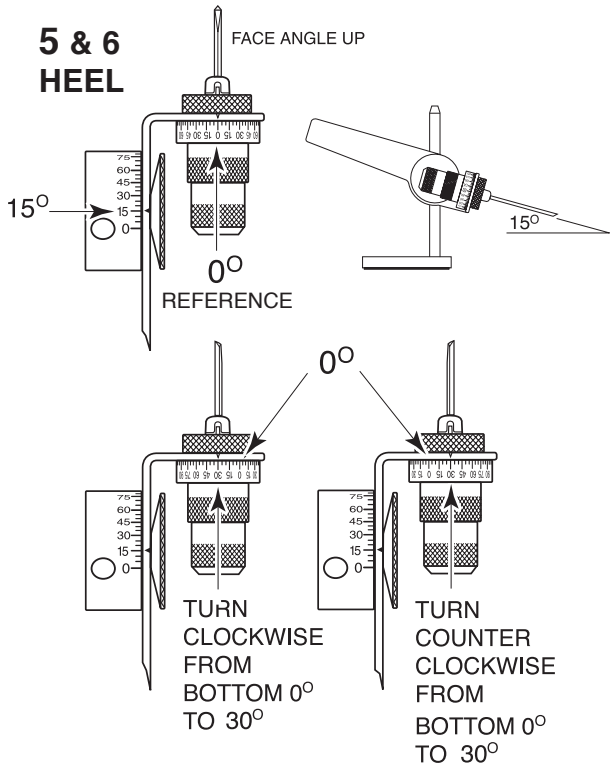
HOW TO MAKE A 110° & 130° OUT OF A SQUARE GRAVER

Basically, making a 110° or 130° graver is the same as making a 120° graver, just change the TOOL DIAL angle (steps 3 & 4) for different side angles.

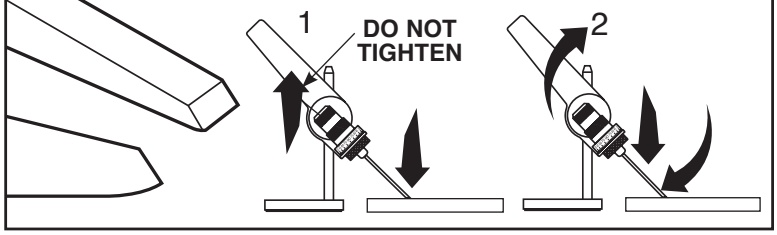
For a 110° graver - steps 3 & 4: The side angle POST DIAL is set at 2-1/2°, but set the TOOL DIAL from 0° left 35° and make one side, then right 35° from 0° to make the other side.

For a 130° graver - steps 3 & 4: The side angle POST DIAL is set at 2-1/2°, but set the TOOL DIAL from 0° left 25° and make one side, then right 25° from 0° to make the other side.

How do you figure this angle setting? The sides of a 90° tool mounted in a fixture, dial set at 0°, are 45° from the wheel. Adding all angles: 45° + 45° + 90° = 180° (a flat plane). Using 180° minus (desired tool angle) let's say…110° = 70°. There are two sides to the tool, so you divide 70° by 2 which equals 35°, the setting to make a 110° graver.



FLAT GRAVER Making a flat graver is very simple, set and grind the face angle you desire then rotate and make the heel angle. Some prefer a heel with a radius. To make a small radius, hold the tool tip on the wheel or stone while pulling the QC fixture body up the post (1 & 2). This makes a nice even radius.



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