

# New Jersey Blacksmiths Newsletter

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## How to Sharpen Drills by Steve Hildred

In order to discuss the sharpening of drills, it is necessary to define terms and description of drills: Cutting Lips: The parts of the drill that cut.

Point Angle: The inclined angle between the cutting lips. The point angle is varied to correspond with material hardness.

Chisel Angle: The line between the cutting lips, which is the length of web thickness.

Clearance Angle: The amount the cutting lips are relieved. Controls the rate of feed or how fast the drill travels through the material.

Rake Angle or Helix: The angle of the twist of the grooves to the axis of the drill.

To sharpen drills correctly, a drill gauge is highly recommended. It allows the drill point angle to be correctly measured and to center the cutting lips. The point must be in the center of the drill and the point angle must be symmetrical to the axis of the drill.

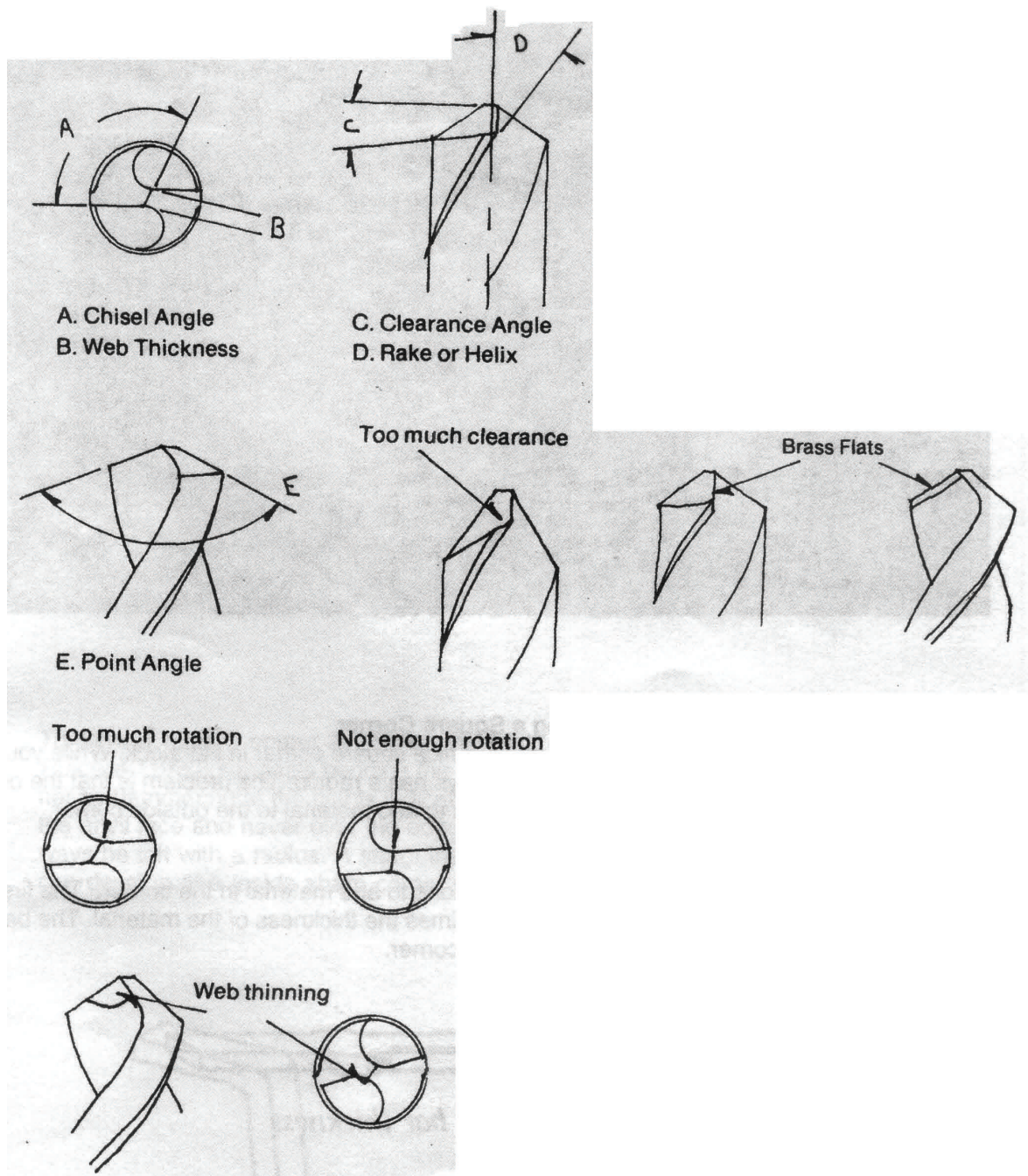
Use a general purpose, 60 grit grinding wheel, 3/4" wide. True the wheel so that the wheel runs smoothly. To test if it is true, very gently brush the wheel with your finger. Be sure that your finger points in the direction of the rotation of the wheel. If you don't, your finger WILL be grabbed by the wheel and get CHEWED UP! If you feel any bumps, it is not smooth enough for a fine edge. Hold the drill shank in your left hand, the point in your right. Steady your right hand against the wheel guard. Using a light pressure to hold the drill to the wheel, begin the grind at the very edge of the lip with the cutting lip facing up. Move the left hand downward to form an arc of 8 to 12 degrees depending on the clearance desired. At the same time, rotate the drill along its axis clockwise 5 to 10 degrees. Both the downward arc and the rotation must be timed together. Rotate the drill 180 degrees and grind the other lip. Continue grinding, rotating the drill from one lip to the other. Keep the web thickness about 1/8 to 1/10 the drill diameter. Try to grind equal amounts from each lip. When grinding don't burn the drill (turn it blue). The drill should never get too hot to touch on the end. If you quench it when hot, it will develop little cracks and chip away.

That is really all there is to it except lots of practice. The real challenge is to know how you goofed and how to fix it. Refer to the drawings for trouble shooting. When drilling tough material or when you want the least possible burr, grind the point angle wide, 128 to 135 degrees. For a soft material like plastic, change the point to 90 degrees. For general drilling use 118 degrees. When you are drilling brass or opening up a hole, put Brass Flats on the cutting lips. This makes the drill cut slower so it doesn't pull through the material. When cutting really tough material or one that has the tendency to work-harden, use a carbon steel drill and apply pressure to the work before the drill is started, and use slow speed.

Good luck. All you need is ten thousand drills to practice on and a bunch of ornery machinists to gripe at your lousy drills. Before you know it you'll be able to sharpen anything!

! Reprinted from Forge Facts - by the Rocky Mountain Smiths - Winter 2009

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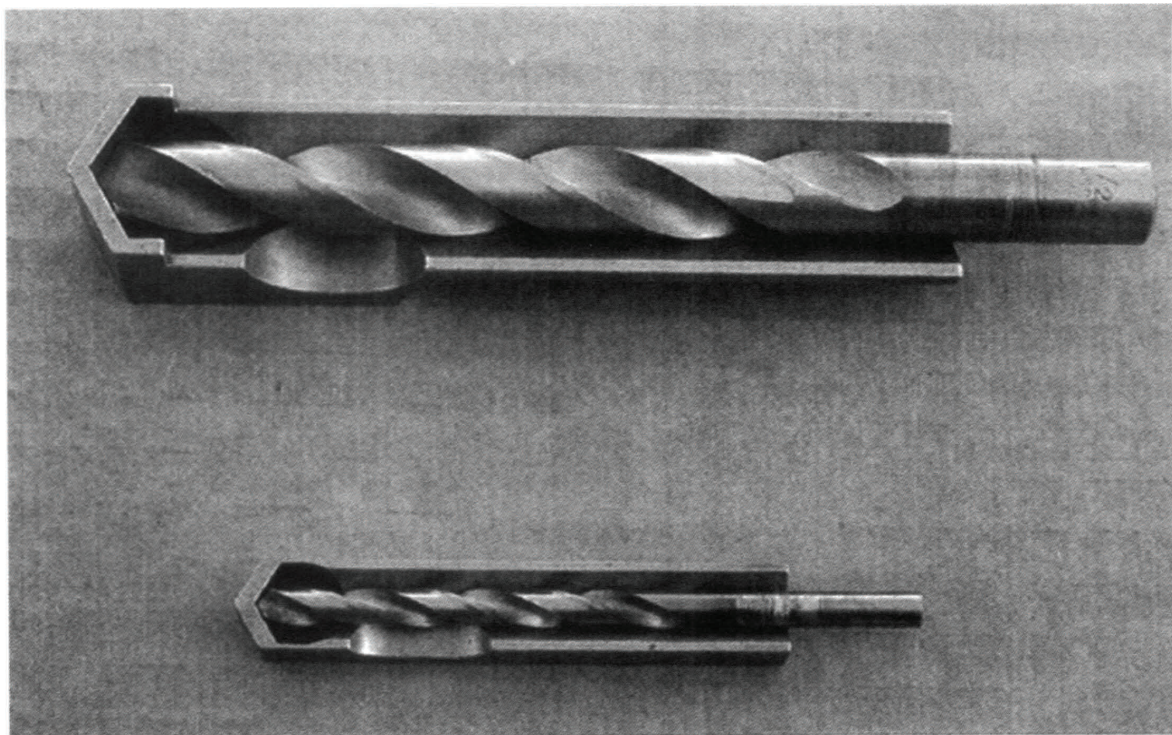
Ed. Note: My father was a tool & die maker and taught me how to sharpen drill bits as described by Steve above. Steve mentioned a 'drill gauge.' I inherited my father's tools. On the next page are examples of drill sharpening gauges in two sizes. The point angle and centering is checked in the 'roof end' of the gauge.

Wayne Frame - Forge Facts



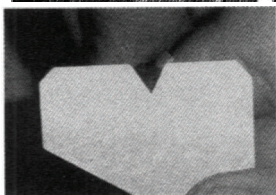
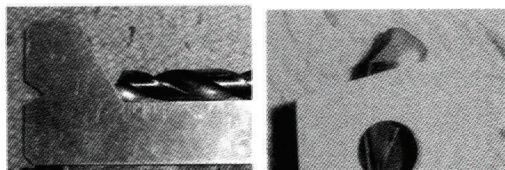
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## Drill Bit Sharpening Gauges



Above, Wayne's gauge.

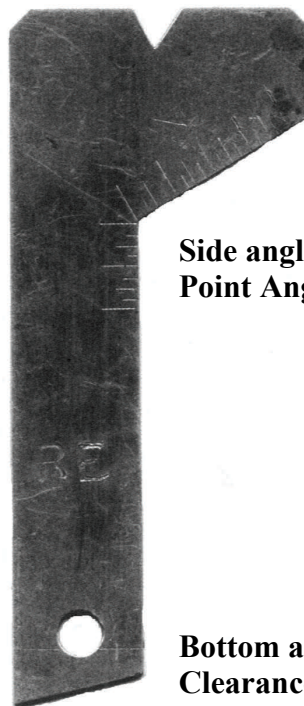
Notch on top used to check the Chisel Angle (A)



My gauge in use checking point, clearance, and chisel angles.

Ed. Note:

I made this gauge (right) in shop class, more years ago than I'd like to remember. It's cut out of a piece of 16ga aluminum. With some practice and frequent checks to the gauge I can do a fair job of sharpening a drill. I have found that if I don't use a gauge, I tend to make the drills too pointy. If you let them get too far out of shape it can be hard to get them back to the proper configuration. Bob Ehrenberger - BAM



Side angle used to check the Point Angle (E)

Bottom angle used to check the Clearance Angle (C)

# New Jersey Blacksmiths Newsletter

## Blacksmithing Workshops and Classes:

**Peters Valley Craft Education Center**  
19 Kuhn Rd., Layton, NJ 07851 (973)948-5200  
pv@warwick.net www.pvcrafts.org

**Academy of Traditional Arts  
Carroll County Farm Museum**  
500 South Center St. Westminster, MD 21157  
(410)848-7775 (410)876-2667

**Touchstone Center for Crafts**  
R.D.#1, Box 60, Farmington, PA 15437  
(724)329-1370 Fax: (724)329-1371

**John C Campbell Folk School**  
One Folk School Rd.  
Brasstown, NC 28902  
1-800-365-5724 www.folkschool.com

**Brookfield Craft Center**  
286 Whisconier Road  
P. O. Box 122  
Brookfield, CT 06804-0122  
203.775.4526

## Open Forges

If any members have a forge at home and work in the evenings or weekends and want to open it up to help a few local guys, let me know, Larry Brown, editor, as we get requests from members who have a hard time traveling to some of the open forge locations.

Please contact, Larry Brown, Editor.  
*We want to encourage all to join us at:*

### Monday Night Open Forge in N.J.

Marshall Bienstock is hosting an open forge in his shop at 7 pm almost every Monday night ( Please call ahead on holidays to make sure , (732)780-0871 )

### Open Forge in Long Island

Sunday from 10:00 am to 6pm.  
Starting the 1st Sunday in November until the end of April. Please call ahead to confirm and get directions. Ron Grabowski, 110 Burlington Blvd. Smithtown, NY (631) 265-1564  
Ronsforge@aol.com

## Business Members

We would like to thank those who joined with our new Business Membership category .

Business dues are \$40

Please show them our support

**John Chobrda, Dragon Run Forge**  
P.O. Box 315 Delaware City, DE, 19706  
302-838-1960 jchob@verizon.net

**Eric Cuper Artist Blacksmith**  
109 Lehman Lane, Neshanic Station, NJ 08853  
908 642-6420 ericuper@msn.com

**Bruce Hay, Jr.**  
50 Pine St., Lincroft, NJ 07738

**Jayesh Shah, Architectural Iron Design**  
950 S. 2nd St., Plainfield, NJ 07063  
jay@archirondesign.com

**Louise Pezzi, Blacksmith**  
1241 Carpenter St  
Philadelphia, PA 19147  
215 336 6023 pezziandjr@gmail.com

**Mark Balzarette, Blue Sun Customs LLC**  
124 Greenwood Ave. STE.C Suite C  
Midland Park, NJ 07432

## BLACKSMITH TOOLS FOR SALE!

**John Chobrda**

Has a large selection of tools for sale.  
Anvils – Forges - Leg Vices—Blowers  
Tongs – Hammers  
and/or resurfaced Anvils  
Call John for prices and availability  
(302) 838-1960 cell (609) 610-3501

### In Southern NJ contact

Joshua Kuehne, 543 Amos Ave.  
Vineland, NJ 08360  
(856) 503-5297 iforgeiron88@yahoo.com

**In Northern Delaware and Southern NJ,  
contact Kerry Rhoades or John Chobrda**  
Kerry (302) 832-1631 John (302) 838-1960  
(609) 610-3501 (cell)

NAME \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_  
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 EMAIL \_\_\_\_\_



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**703-680-6222 VOICE** Website; WWW.ABANA.ORG Email; ABANA@ABANA.ORG

\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_  
 EXPIRATION DATE \_\_\_\_\_

**Join ABANA or Check out other area chapters!**

## **Northeast Blacksmiths Association**

Northeast Blacksmiths holds its meets  
 twice a year at the Ashokan Field Campus  
 in New York State.

The Ashokan campus is located in  
 Olivebridge, N.Y., several miles west of  
 Kingston, N.Y. The meets are held the  
 first weekend in May and in the first  
 weekend in October every year. The main  
 demonstration is in the blacksmith shop  
 and there is a "Hands On" workshop for  
 beginners. A main demonstrator is  
 brought in for each meet, food and bunk-  
 house style lodging are provided as part of  
 the cost of the weekend long meet.

**Contact :** Tim Neu

to register for hammer-ins

or subscribe to the newsletter;

Tim Neu, The Ashokan Center,

447 Beaverkill Rd.

Olivebridge, N.Y. 12461 [914]657-8333

For more info check out the web site;

<http://www.northeastblacksmiths.org/>

## **Join The Pennsylvania Blacksmiths Association!**

\_\_\_\_\_  
 Name

\_\_\_\_\_  
 Address

\_\_\_\_\_  
 City, State, Zip code

\_\_\_\_\_  
 Home / work Phone #

\_\_\_\_\_  
 E-mail (optional)

New Member \_\_\_ Renewal \_\_\_

Do you have any particular skills (welder, accountant, carpenter,  
 doctor) that may be helpful to the group or membership?

### **Suggestions for PABA demonstrations**

What is your skill level?

☐ Beginner ☐ Intermediate ☐ Advanced ☐ Professional

Membership paid by \_\_\_ Cash \_\_\_ Check # \_\_\_\_\_

Send your completed application with \$ 20 ( one year dues) to;

PABA Treasurer, Buzz Glahn

1667 Wyomissing Rd.

Mohnton, PA 19540

(make Checks payable to PABA)

### **PABA Membership Application**

Membership is from Jan. 1 — Dec. 31

**New Jersey Blacksmiths Association**  
**Attn: Larry Brown, Editor**  
**90 William Avenue**  
**Staten Island, New York 10308**



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## **How to Join or Renew your Membership in NJBA:**

**NJBA Dues are \$20 per year.**

**NJBA Business Dues are \$40 per year**

**Please make your check out to: "NJBA"**

**Please mail checks to:**

**NJBA, P.O. Box 224, Farmingdale, NJ 07727-9998**

Please include payment with the information listed below. You will receive a postcard confirmation of your membership, and will receive a newsletter within a month.

NJBA's "year" runs from June to June. If you join mid-year, the postcard will offer a prorated dues option which will then allow you to extend your membership till the following June. The following information will be listed in a roster available to other members.

Name \_\_\_\_\_ Home Phone \_\_\_\_\_  
Address \_\_\_\_\_ Day Phone \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_  
E-Mail \_\_\_\_\_ Skill Level (optional) \_\_\_\_\_  
Comments \_\_\_\_\_