

Lathe Tool Grinding

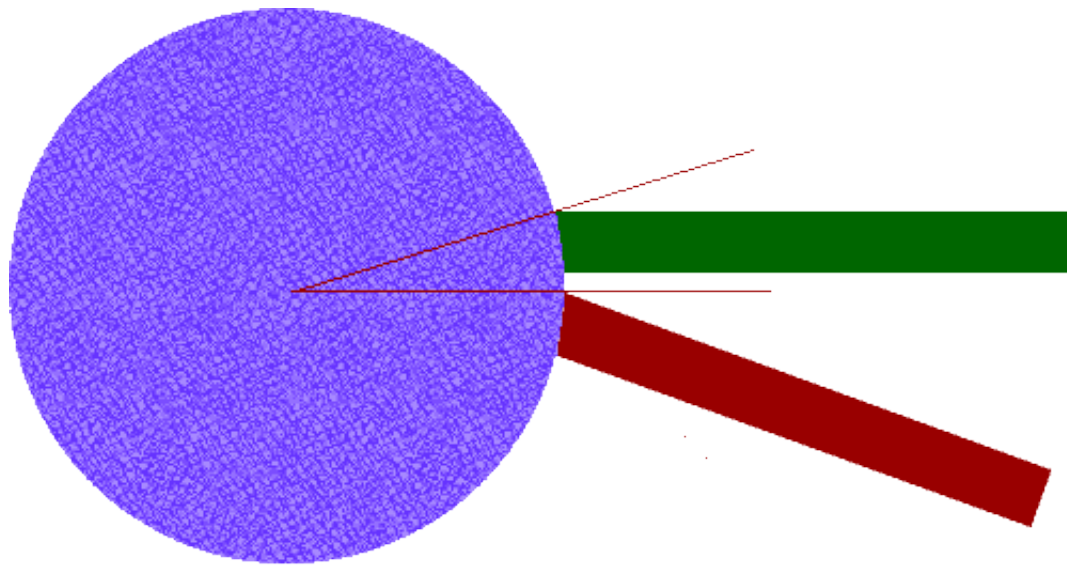
I am sure you have all read the excellent [tutorial](#) on lathe grinding written by Sherline.

Recently Frank Hoose has put up a page with some [very good pictures](#) explaining what to do. As a beginner, I could not picture the process in my head. Frank's photos made that much easier.

Now my only problem was to get the tool at the appropriate angle to the grinding wheel. The Sherline pages suggest an angle of 7 degrees for all faces and the instructions would have you adjust the rest so that the appropriate angle is made with the wheel.

My (cheap) grinder won't let me adjust the rest in that way. It won't even line up perpendicular to the wheel. I messed about with wedge shaped bits held on the rest but that was not very satisfactory.

After a bit, it occurred to me that all you actually have to do is change the *height* of the tool while keeping it level and the angle will appear by the magic of geometry. As ever, a picture may help..



Note that nothing is meant to be to scale.

The lower (red) tool is held at an angle but up to the horizontal centerline for grinding. The upper (green) tool is simply held horizontally but elevated above the centerline of the wheel. both ways give the same angle. The advantage is that it is much easier to control the height of a horizontal tool than the angle of a tool that must point at some arbitrary spot in space.

OK, so now we have to worry about how high to mount the tool. In case trigonometry was not among your very best subjects at school, I have made a table to let you see how high to place the tool. The table is in inches and shows the correct height of the top of the tool above the wheel centre for the angle in the left column. Clearly, the curvature of the wheel will mean that only the very edge will have this angle but that's just what you get from grinding against a wheel edge anyway. Conversion to metric is left as

an exercise for the reader 😊

As an example, suppose you have a 1/4" tool to be ground at 7 degrees on a 6 inch wheel. I am assuming you have the rest set up horizontal at wheel center height. The table shows a height of 0.366 inches. Well, this is nearly 0.375 or 3/8". You can simply fix a 1/8" flat spacer to the rest and you are all set up.

Wheel Diameter (inches)

Angle	6	8	10	12
5	0.261	0.349	0.436	0.523
6	0.314	0.418	0.523	0.627
7	0.366	0.487	0.609	0.731
8	0.418	0.557	0.696	0.835
9	0.469	0.626	0.782	0.939
10	0.521	0.695	0.868	1.042
11	0.572	0.763	0.954	1.145
12	0.624	0.832	1.040	1.247
13	0.675	0.900	1.125	1.350
14	0.726	0.968	1.210	1.452
15	0.776	1.035	1.294	1.553
16	0.827	1.103	1.378	1.654
17	0.877	1.169	1.462	1.754
18	0.927	1.236	1.545	1.854
19	0.977	1.302	1.628	1.953
20	1.026	1.368	1.710	2.052
21	1.075	1.433	1.792	2.150
22	1.124	1.498	1.873	2.248
23	1.172	1.563	1.954	2.344
24	1.220	1.627	2.034	2.440
25	1.268	1.690	2.113	2.536

Also look here:

[Sherline Tool Grinding Page](#)

[Frank Hoose's Tool Grinding Photos](#)

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