Lathe Tool Sharpening

What are typical rake and clearance (relief) angles for HSS tool bits?
See Figure A–1 and Table A–1.

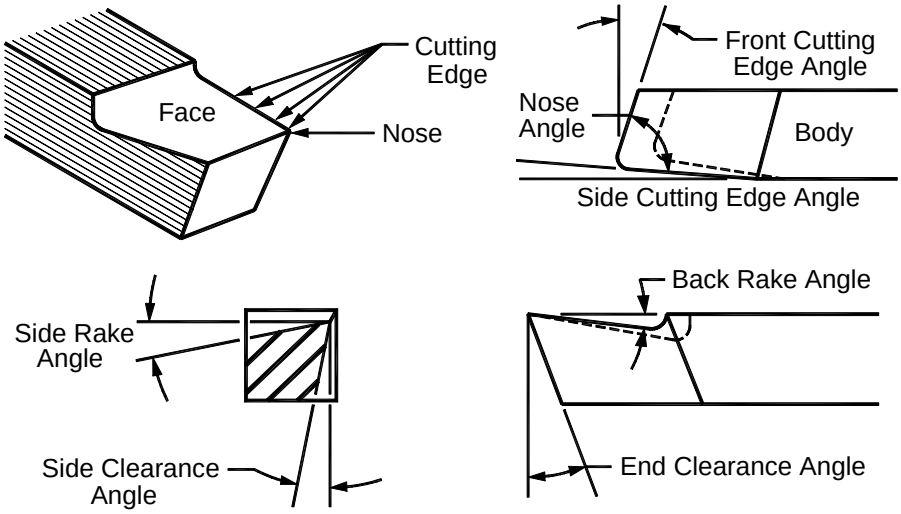

Figure A–1. Tool bit nomenclature.

Material	Side Clearance	Front Clearance	Side Rake	Back Rake
Aluminum	12	8	16	35
Brass	10	8	5 to −4	0
Bronze	10	8	5 to −4	0
Cast Iron	10	8	12	5
Copper	12	10	20	16
Machine Steel	10–12	8	12–18	8–15
Tool Steel (unhardened)	10	8	12	8
Stainless Steel	10	8	15–20	8

Table A–1. Clearance and rake angles in degrees for common metals.

What is the procedure for sharpening HSS general-purpose lathe tools?
Begin by dressing the grinding wheel. Next, look up the typical angles for the workpiece material, and then follow the steps in Figure A–2. Dip the tool in coolant frequently to keep it from overheating and annealing. Any discoloration on the bit indicates it may no longer be hardened. If this happens, consider starting over again from the beginning. Tool bit angles are not critical and most tools will cut material satisfactorily, just less effectively.

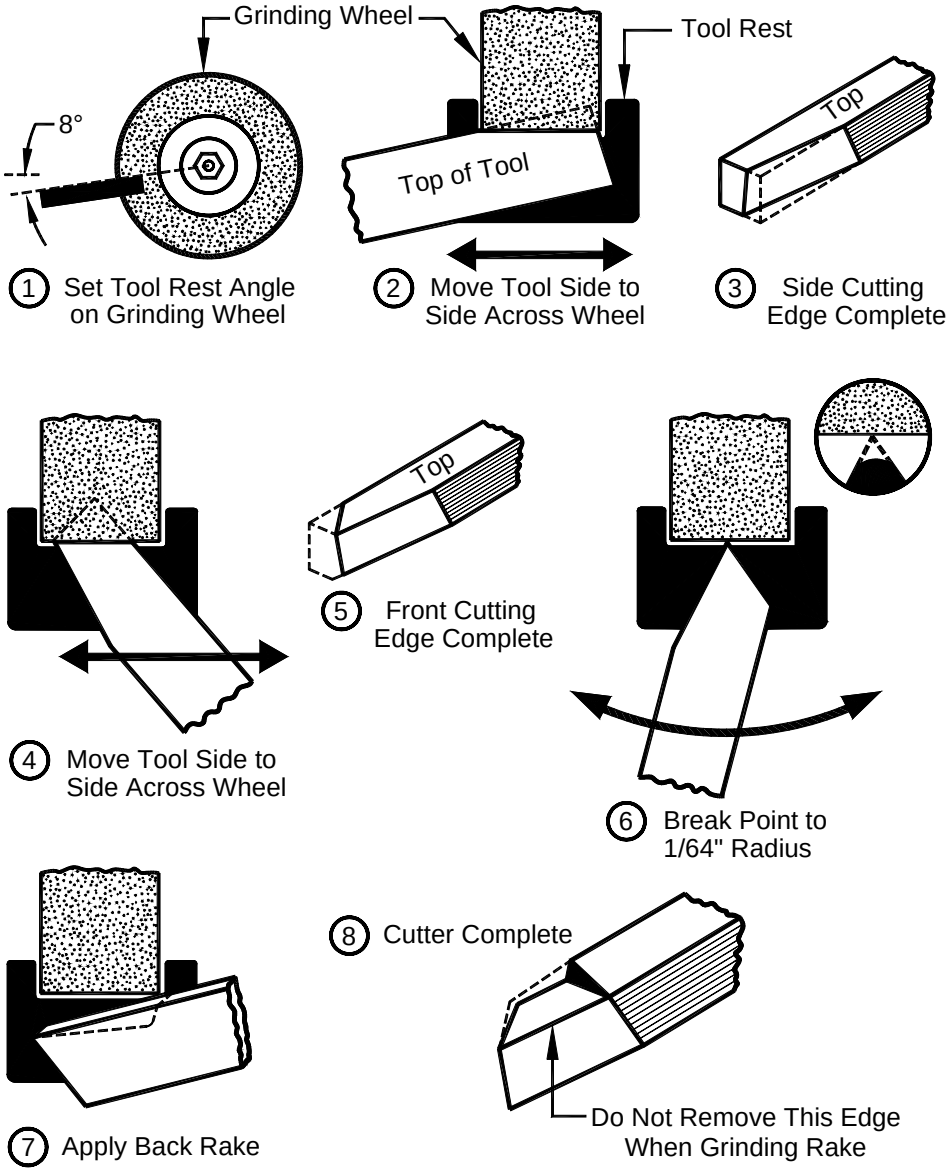

Figure A–2. Steps for sharpening HSS tool bits

Extracted from *Machine Shop Essentials: Q & A*