

**Q.** - - -What types of cutters (carbon steel, high speed steel, carbide, diamond, etc.) do you use on which woods at what depths of cut at what feed rates at what rpm (either the workpiece on the lathe spindle or the cutting frame)?

**A.** - - -I use mostly tungsten carbide for simple wood removal, as in horizontal cutting on the rose engine, and also for slash-cutting with the Universal Cutting frame, and circle cutting with the Eccentric Cutting Frame using a point tool. I make some from 1/8" TC rod and some I make by silver-soldering pieces of TC onto steel shanks. I use them because they sharpen well with diamond paste and the cutting edge lasts a long time. For basketwork I use cutters I got from USA made from an alloy steel called 'A11' as they are accurately ground to 1/10" width and also take a very durable edge. I have been a bit miserly in my use of diamond tools and I don't quite know why this is except that I tend to save them for special jobs. Also, I don't have all the profiles I need in diamond - I need a 120° point for ECF work and a 25° narrow point with small radiused tip for rose engine work. I guess if I had these I would use diamond more often. I use high carbon steel for form tools because I can forge and file them to any shape before hardening them; this is because I don't have the special grinding equipment I would need to make form tools from tungsten carbide. I use ordinary High Speed Steel tools only for roughing out and planing surfaces. This is because I don't think HSS takes a sharp enough edge for ornamentation.

As to cutting speeds and feeds I have very little information to give. I run the ECF slowest of all and I run it at a speed that feels right; I guess it might be 2000 rpm but I have never measured it. I run the Universal CF (includes HCF & VCF) faster, maybe 3000-4000 (just a guess) but at a speed that feels comfortable. I run a drilling spindle fastest of all; again at a guess, this is probably around 5000-6000 rpm. When using a fixed cutter in the slide-rest I run the lathe spindle at a moderate speed, probably between 500 and 1000 rpm. This is because antique ornamental turning lathes, although capable of being run faster, were designed to be driven by foot power and, as such, would rarely exceed 1000 rpm.

Some people run cutters very fast and it sometimes shows as scorch marks on the work (or maybe the cutter was blunt!).

As to feed rates: I try to get shavings coming off in gossamer thin flakes or streams. I run my belts quite slack and I use low-power motors to drive my cutters, so if a cutter is struggling the belt can slip or the motor will slow down and that tells me either the feed rate is too fast or the cutter needs sharpening. Another clue to a blunt cutter is that you are turning dust instead of flakes.

I use mostly exotic hardwoods so I don't differentiate in the cutters I use. Some woods are harder and others are more abrasive, in which cases cutting feed needs to be slower or tools need to be sharpened more frequently. Softer woods need different cutter angles but they are not very suitable for ornamental turning so I tend not to use them.