Section #1 Acetal, Nylon
#5 Polyolefins

1, and by firmly supporting the work against deflection. For definition of cutting tool angles see Fig. 2.

Use sharp tools with generous clearances so that only the cutting edge contacts the materials. Regular or chrome-plated high speed steel is acceptable for short runs, if cutting edges are kept sharp.

For long production runs, tungsten carbide and diamond bit tools are preferred. They hold a better edge and require less frequent dressing to keep sharp edges. Carbide tools should be honed with a very fine 400 grit diamond wheel after grinding for best results. A soft iron wheel impregnated with a fine grit of powdered diamond can be used.

Rubbing action between sides of the cutting tool and the plastic is detrimental to finish and tolerance. See tool geometry diagram for clearance on front and sides. In addition, 0° to 5° negative rakes on the tool are generally preferred, to balance cutting tool pressures.

Smooth surfaces are easily achieved on both heavy and light cuts. Consequently, roughing cuts are rarely required. This saves production time and contributes to low unit costs for machined plastic parts.

In turning large diameters of all nylons, light cuts 1/16″ to 1/8″ deep and light feeds of .003″ to .007″ per revolution are recommended. However, heavy cuts up to 3/8″ deep and feeds of .015″ per revolution can be utilized with care for greater productivity. Feeds and speeds depend mostly on the nature of the cut and desired finish. Roughing cuts can be made at high speeds, although roughing cuts are seldom required if recommended tool geometry is followed.

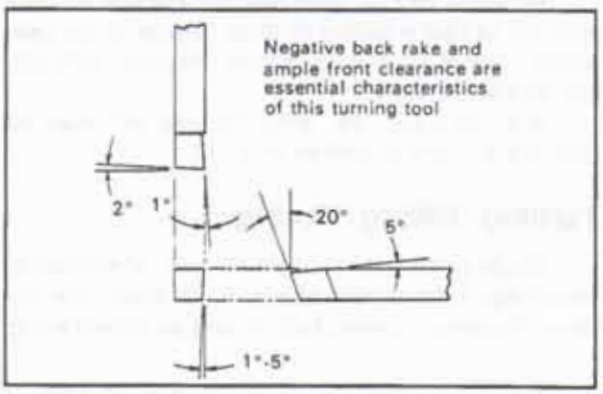

Figure 1 Tool Geometry

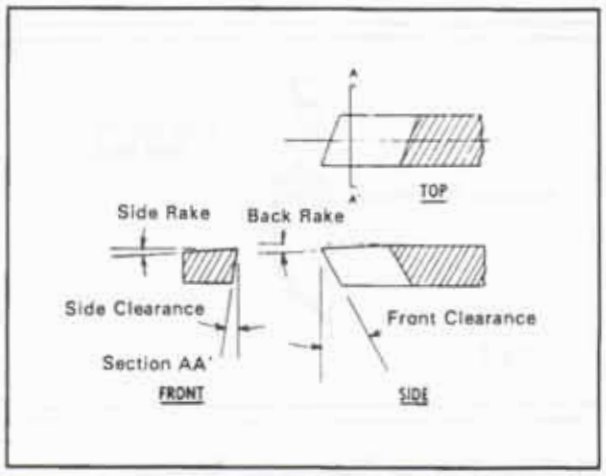

Figure 2 Definition of cutting tool angles

Cut-Off

Cut-off operations are performed with conventional tools modified for plastics. Fig. 1 illustrates a cut-off tool designed for plastics. The cut-off blade illustrated in Fig. 1 is ground to suit a variety of conditions and materials.

Side clearance ample enough to prevent rubbing and to keep heat to a minimum is required in cut-off operations. The blade must be set square to the work to prevent a concave or convex surface. The setup should provide a minimum of tool overhang for greater rigidity and less deflection.

A slight burr is often raised by the cut-off blade at its point of entry unless the work piece is prepared with a chamfer. (Fig. 2)

Before cut-off, form a "V" in the surface of the work with a cutter mounted on the machine cross slide. Thus, both ends of the work piece will become chamfered, and burrs should be eliminated.

Blades should be kept sharp. A dull cutting edge will leave a burr at the end of the cut. Having the cut-off tool dwell near the terminal point of the cut-off permits the work to fall free.