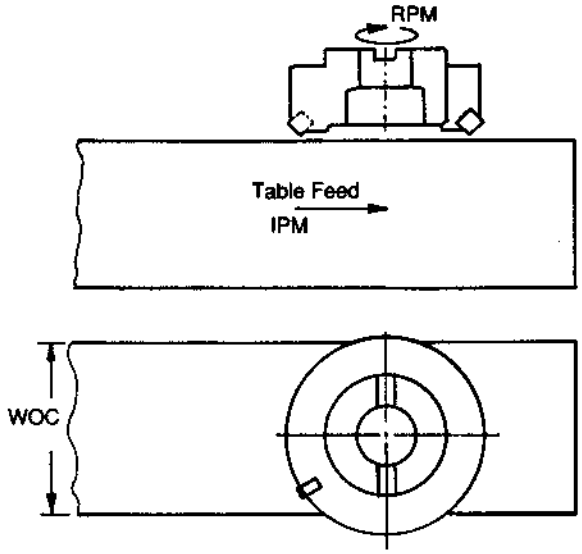

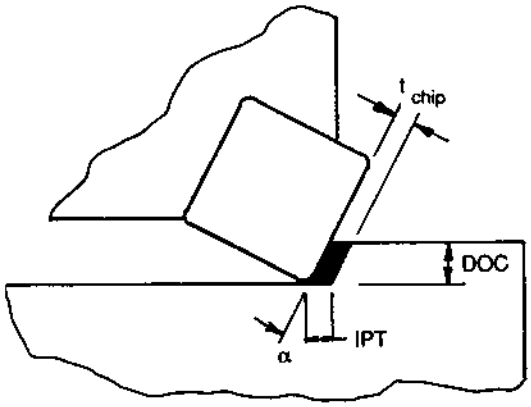

Table Feed with f_1 Compensation (inches/minute)
= IPT × N × RPM × f_1

Surface Speed per Minute

SFM = 0.262 × DIA × RPM

Revolutions per Minute

$$RPM = \frac{3.820 \times SFM}{DIA}$$

Feedrate (inches/minute)

IPM = IPT × N × RPM

Feedrate (inches/tooth)

$$\text{Programmed IPT} = \frac{t_{chip\ Max}}{\cos \alpha}$$

Radial Chip Thinning for 90° Cutters

$$f_1 = \frac{1/2 \left(\frac{Dia}{Ae}\right)}{\sqrt{\left(\frac{Dia}{Ae}\right)^{-1}}}$$

Metal Removal Rate

Q = WOC DOC × IPM (in/min)

Horsepower Required at the Spindle

HPS = Q × UHP

Horsepower Required at the Motor

HPM =

Time in Cut (Seconds)

$$T = \frac{15.7 \times DIA \times LOC}{SFM \times IPR \times N}$$

or

$$T = \frac{60 \times LOC}{IPM}$$

Definition of Terms

DIA = Diameter of the Workpiece (Inches)

D.O.C. = Axial Depth of Cut (Inches)

EFF = Machine Efficiency

f = Feedrate (See IPM, IPR, and IPT)

HPM = Horsepower Required at the Motor (HP)

HPS = Horsepower Required at the Spindle (HP)

IPM = Feedrate (Inches per Minute)

IPR = Feedrate (Inches per Revolution)

IPT = Feedrate (Inches per Tooth)

f_1 = Cutter Compensation Factor

WOC = Width of Cut (Inches)

LOC = Length of Cut (Inches)

N = Number of Effective Teeth in Cutter

Q = Metal Removal Rate (Cubic Inches per Minute)

RPM = Revolutions per Minute

SFM = Surface Speed (Feet per Minute)

T = Time (in Seconds)

$t_{chip\ Max}$ = Maximum Recommended Chip Thickness (Inches)

UHP = Unit Horsepower Factor

α = Lead Angle