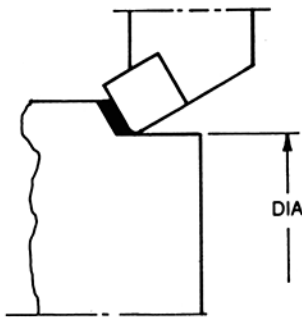


# BASIC FORMULAS (Inch)

## Turning



Surface Speed per Minute  
 $SFM = 0.262 \times DIA \times RPM$

Revolutions per Minute  
 $RPM = \frac{3.820 \times SFM}{DIA}$

Feedrate (inches/minute)  
 $IPM = IPR \times RPM$

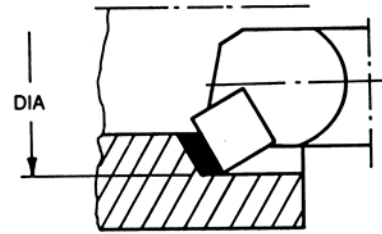
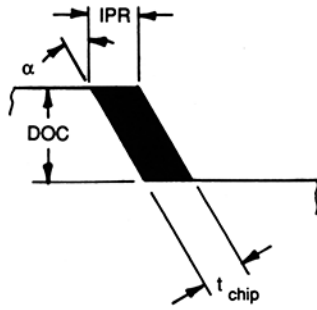
Chip Thinning for Non-Round Inserts (inches/revolution)

$$\text{Programmed IPR} = \frac{t_{\text{chip Max}}}{\cos 1}$$

Chip Thinning for Round Inserts (inches/revolution)

$$\text{Programmed IPR} = \frac{t_{\text{chip Max}}}{\sqrt{\frac{4ap}{ic} - \left(\frac{2ap}{ic}\right)^2}}$$

## Boring



Metal Removal Rate  
 $Q = 12 \times DOC \times IPR \times SFM \text{ (in}^3\text{/minute)}$

Horsepower Required at the Spindle  
 $HPS = Q \times UHP$

Horsepower Required at the Motor  
 $HPM = \frac{HPS}{EFF}$

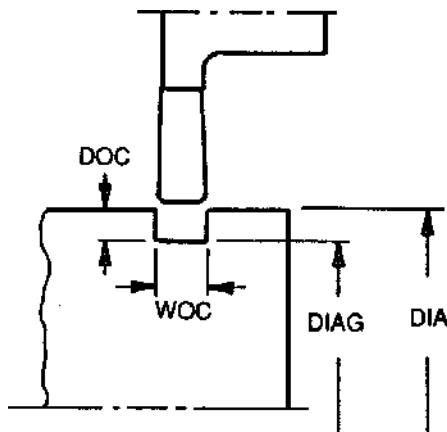
Time in Cut (seconds)

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

or

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

## External Grooving



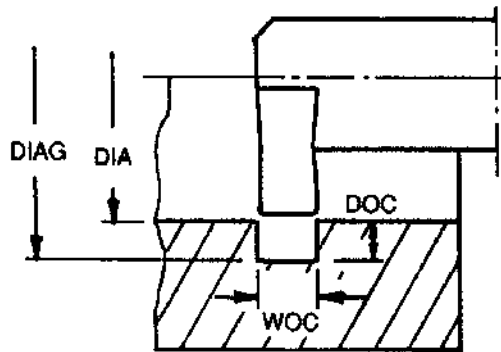
Surface Speed per Minute  
 $SFM = 0.262 \times DIA \times RPM$

Revolutions per Minute  
 $RPM = \frac{3.820 \times SFM}{DIA}$

Feedrate (inches/minute)  
 $IPM = IPR \times RPM$

Feedrate (inches/revolution)  
 $IPR = t_{\text{chip}}$

## Internal Grooving



Metal Removal Rate  
 $Q = 12 \times WOC \times IPR \times SFM \text{ (cu.in/minute)}$

Horsepower Required at the Spindle  
 $HPS = Q \times UHP$

Horsepower Required at the Motor  
 $HPM = \frac{HPS}{EFF}$

Time in Cut (seconds)

$$T = \frac{7.85 \times DOC \times (DIA + DIAG)}{SFM \times IPR}$$

or

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

A	GRADES
B	INSERTS
C	CBN & PCD
E	TURNING
F	BORING
G	GROOVING
H	CUT-OFF
J	THREADING
L	SOLID END MILLS
M	MILLING
P	SPARE PARTS
R	TECHNICAL
T	INDEX