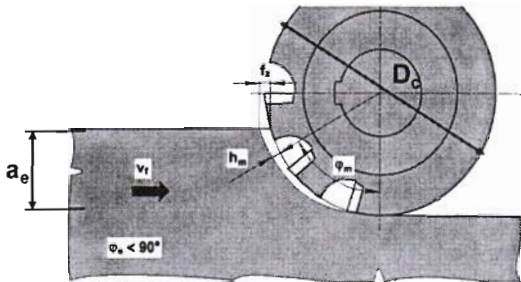


## Radial Chip Thinning

### Average Chip Thickness

- $f_z$  = Feed per tooth
- $h_m$  = Average thickness of cut (chip thickness)
- $\phi_m$  = Cutting arc angle
- $v_f$  = Feed rate
- $\phi_s$  = Average angle between tool entry and exit



If WOC ( $a_e$ ) / Cutter Dia.  
( $D_c$ ) < 0.25

$$h_m = f_z \cdot \sqrt{\frac{a_e}{D}}$$

$$f_z = h_m \cdot \sqrt{\frac{D}{a_e}}$$

typical amount for  $h_m$  value:

- .006 - .010 steel, cast iron, nodular cast iron
- .003 - .006 stainless, titanium alloys, HRSA
- .002 - .003 aluminum, non ferrous alloys



## Radial Chip Thinning

Example: Average Chip Thickness  $h_m$

F2252 Cutter Dia. ( $D_c$ ): 16 inches

Material: 4140

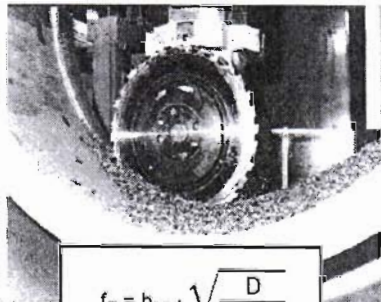
$a_e$ : 2 Radial DOC

.006 Catalog Recommended Feed

??? Actual Programmed Feed

1. Double check  $a_e / D_c$ ;  $(2 / 16) = 12.5\%$

2. If  $a_e / D_c$  is smaller than 25% calculate  $h_m$ :



$$f_z = h_m \cdot \sqrt{\frac{D}{a_e}}$$

$$f_z = .006 \cdot \sqrt{\frac{16}{2}} = .017 \text{ inch}$$

