

TOOLING APPLICATION LEAD MACHINING

Many machines in service for flute machining have fixed lead scrolls. The available leads on these machines are not always corresponding to the required ones. Intermediates values such as 37.34mm for example cannot be achieved with such machines.

Flute machining can be performed without major difficulties if the following steps are respected :

1/ Before machining

A lead length modification is applicable if any Heat Treatment above 500°C (932°F) is performed before machining. Lead length is then increased by a factor of 0.4% of the nominal value.(see FORECREU datasheet TSL 35°).

2/ Machining of the flutes :

FORECREU tolerance guaranties a maximum +/-15° tolerance on hole position. Even if the actual value are definitively lower, machining to the exact lead is highly recommended. If not, following calculation gives the induced angular deviation of the holes in the drill :

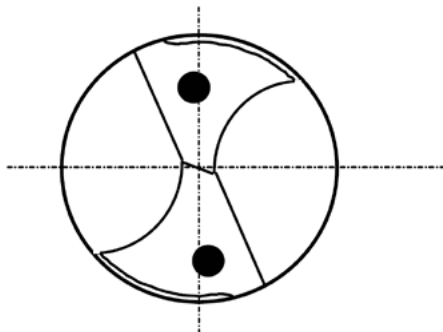
Deviation calculation :

$$\text{Dev}^\circ = [(\text{nominal lead}-\text{machined lead})/(\text{nominal lead})] \times 360$$

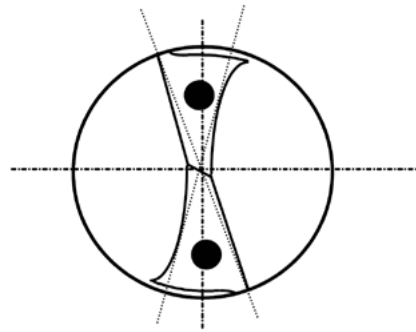
$$\times [\text{machined length} / \text{nominal lead}]$$

EG : manufacturing of a \varnothing 8mm, 120mm long drill. Machined length is 75mm.

- Forecreu delivery is a nominal 37.20 lead.
- After Quenching + tempering, this lead becomes $37.19 \times 1.004 = 37.34\text{mm}$
- The closest lead available on the grinding machine is 38mm.
 $\text{Deviation} = (37.34-38)/(37.34) \times 360 \times (75 / 37.34) = - 12.8^\circ$
- Decision depends highly upon the shape of the manufactured drill :



Standard drill geometry with high thickness :
 deviation shall be maintained below 20-25° of angle.



Special geometry with low thickness :
 deviation shall be maintained below 10-12° of angle.
 (if needed, customer can ask for tighter tolerances)