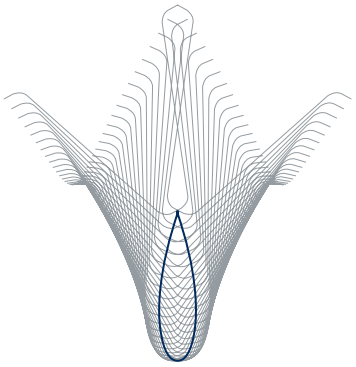
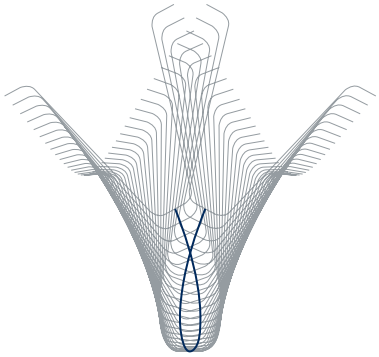
The angle does it! An example for hob optimization and tool life enhancement

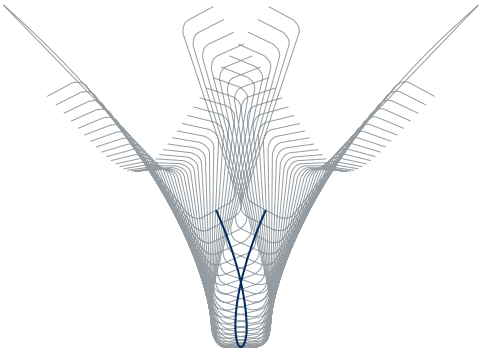
A word on the subject of "short lead"



Pressure angle 20°



Pressure angle 15°



Pressure angle 10°

One possible option for optimizing gear cutting tools is to change the tool data. The illustrations show the changes in the active gear flank surface when the hob module and its pressure angles are changed. The illustrations show a tooth gap.

The pressure angle has been reduced from top to bottom. In the top picture it is still 20°, in the middle 15° and in the bottom picture 10°. What is interesting to see here is how the "loop" made by the tooth tip gets smaller as it hobs the gear profile.

Ideally, this "trochoid" should disappear completely because the cutter tooth would no longer move sideways in the tooth gap base but would instead cut straight and accurately into the gear and back out again.

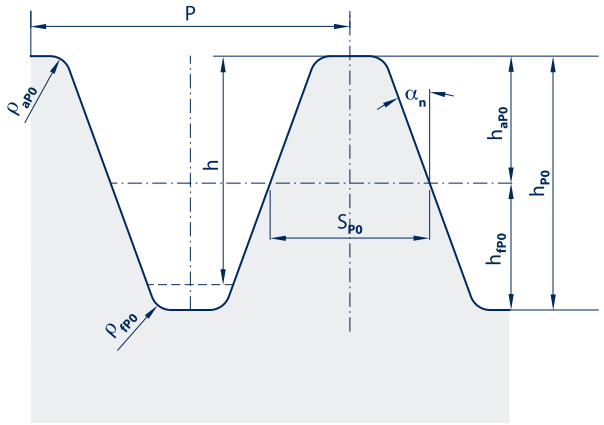
Geometric changes in the area of the gear root can so be utilized for specific changes in the gear root strength or for lengthening the active involute.

Ideal conditions are rare, but this "short lead method" can be used easily for hob modification to optimize tools. Perhaps even yours. Tell us what you need.

Basic profiles

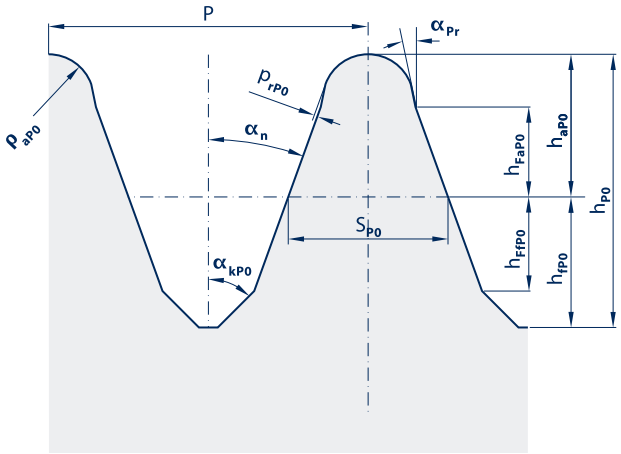
h	cutting depth
h_{P0}	profile height
h_{aP0}	addendum of the basic profile
h_{fP0}	dedendum of the basic profile
h_{CaP}	height of addendum tip relief
h_{CfP}	height of dedendum tip relief
ρ_{aP0}	tip radius
ρ_{fP0}	root fillet radius
h_{FaP0}	tip form height
h_{FfP0}	root form height
α_n	standard pressure angle
α_{Pr}	protuberance angle
α_{KP0}	profile angle of chamfer flank
s_{P0}	tooth thickness
p	pitch
p_{rP0}	amount of protuberance

Standard profiles



Tools with **standard profile** for involute gears. For making spur or helical gears with or without finishing of the outside diameter of the workpiece (see also Stock List)

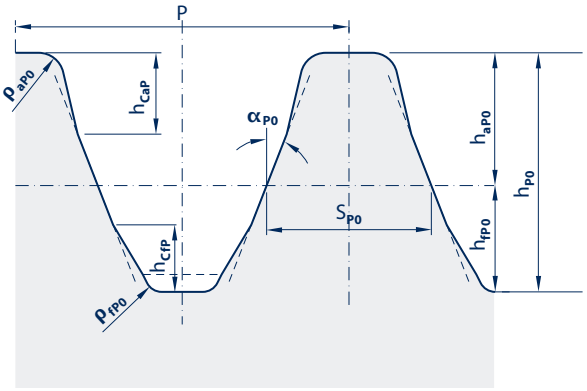
Standard and special profiles



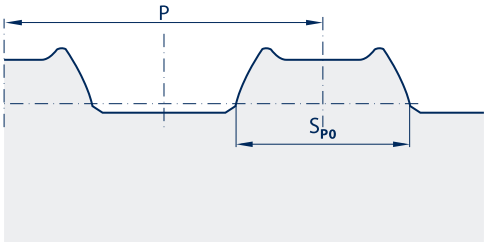
Protuberance tools for involute gears with tip chamfer and flank allowance with simultaneous root cut for subsequent finishing, e.g. honing or tooth flank grinding.

Basic profiles

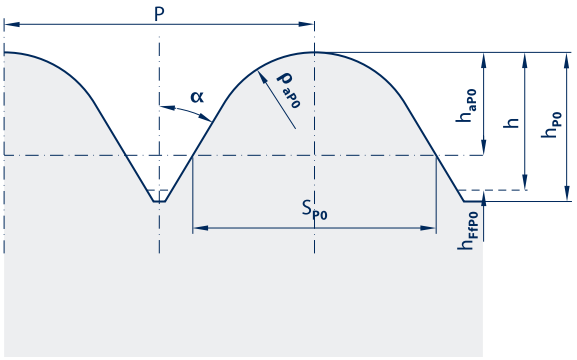
Standard and special profiles



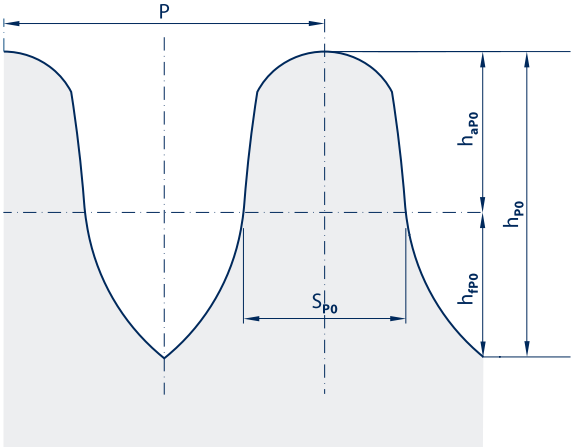
Tools with **tip and root relief** for more silent running and for avoiding contact impact.



Tools with **splineshaft profile** gear-cutting with bump and chamfer



Tools for **sprockets**.



Tools for **cycloid gears**.