OMNIGEAR & Machine Corp

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HELICAL GEARS

To Get	Having	Rule	Formula
Normal D.P.	Transverse D.P. and helix angle	Divide the transverse D.P. by the cosine of the helix angle	Pnd=Pd/cos Ψ
Transverse D.P.	Normal D.P. and helix angel	Multiply normal D.P. by the cosine of the helix angle	Pd=Pnd/cos Ψ
Normal P.A.	Transverse P.A. and helix angle of gear	Multiply the tan of the transverse P.A. by the cosine of the helix angle =IN/tan normal P.A.	tanΦtcosΨ=inv/tan Φn
Transverse P.A.	Normal P.A. and helix angle of gear	Divide the tan of NPA by the cosine of the helix angle = TAN trans. P.A.	tanΦt = tanΦn/cosΨ
Pitch diameter	No. of teeth, normal pitch and tooth angle	Divide the number of teeth by the product of the normal pitch and the cosine of the tooth angle.	D=NG/Pndcos y
Pitch diameter	No. of teach plus transverse diameter pitch	Divide the number of teeth in the gear by the transverse diametral pitch	D=N/Pd
Normal circular path	Transverse CP and helix angle	Multiply the transverse CP by the cosine of the helix angle	$Pn=P_1$ cosΨ
Lead of helical gear	Pitch circumference and helix angle	Divide the pitch circumference by the tangent of the helix angle	L=π●Dw/tanΨ
	Normal CP, no. of teeth and helix angle	Divide the product of the number of teeth times the norm. CP by the sine of the helix angle	L=N●Pn/sinΨ
Helix angle	Normal CP and transverse circular pitch	Divide thenormal CP by the transverse circular pitch; the quotient will be the cosine of the helix angle	cosΨ=Pn/Pt
	Pitch diameter plus lead	Multiply the pitch diameter by π divide the results by the lead	cosΨ=D-π/L
	Normal and trans. P.A.	Divide the tangent of the normal P.A. by the tangent of the trans. P.A. = cos HA	cosΨ=tan Φ/tanΦt
Outside diameter	Pitch diameter and addendum	Add twice the addendum to the pitch diameter	D_o=2●α+D
Center distance	Pitch diameters of both gears	Add together the pitch diameter for the two gears and divide the sum by 2	$C=(D_1+D_2)/2$

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Number of teeth for which to select from cutter	Number of teeth and tooth angle	Divide the number of teeth in the gear by the cube of the cosine of the tooth angle	$Nc=N/(\cos y)^3$
Lead of tooth helix	Pitch diameter and helix angle	Multiply the pitch diameter by π times the cotangent of the tooth angle	$L=\pi \bullet D \cot \Psi$
Addendum	Normal D.P. and helix	Divide 1 by the normal diametral pitch	$\alpha = 1/Pnd$
Whole depth of tooth	Normal D.P. and helix	Divide 2.157 (or 2.25) by the normal diametral pitch	$Ht=2.15/Pnd$
Normal tooth thickness at pitch line	Normal D.P. and helix	Divide 1.571 by the normal diametral pitch	$Tn=1.571/Pnd$
Operating transverse diametral pitch	No. of teeth in both gears plus operating center distance	Add the no. of teeth in both gears together, divide by two, then divide by the operating center distance	$Pod=[(N1+N2)/2]/Co$
Operating center distance	No. of teeth in both gears plus the operating transverse diametral pitch	Add the no. of teeth in both gears together, divide by two, then divide by the operating transverse diametral pitch	$Co=[(N1+N2)/2]/Pod$
No. of teeth in gear	Pitch diameter plus transverse diametral pitch	Multiply the pitch diameter by the transverse diametral pitch	$N=D \bullet Pd$
Transverse DP	Pitch diameter and no. of teeth	Divide TPD by # of teeth	$Pd=N/D$
Base diameter	Pitch diameter and trans. P.A.	Multiply the Pd by trans. PA	$Db=D \bullet \cos.\Phi t$