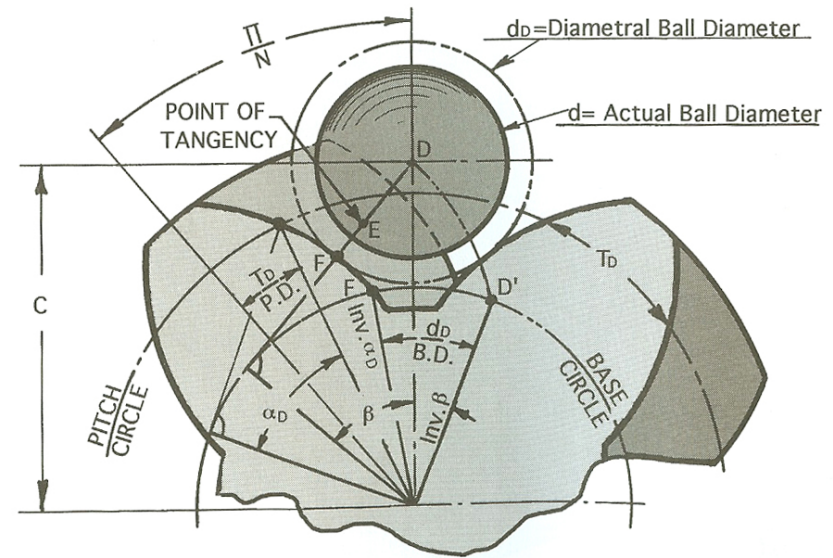


EXTERNAL HELICAL GEARS- Determining Tooth Thickness of External Helical Gear With Dimension Over Pins or Balls

TO GET	HAVING	RULE	FORMULA
N	Number of teeth	Given	31
DP	Normal diametral pitch	Given	11
	Normal pressure angle	Given	25
h	Pitch helix angle	Given	45
d	Pin diameter	Given	0.15709
DE	Dimension over pins even # of teeth	Given	
DO	Dimension over pins odd # of teeth	Given	4.07900
α_d	Transverse pressure angle	$TAN(\alpha_n)=TAN(\alpha)/COS(h)$	33.40320
H	Base helix angle	$TAN(H)=TAN(h) \cdot COS\alpha_d$	39.85571
dD	Transverse pin diameter	$d/COS(H)$	0.20463
PD	Pitch diameter	$N/[DP \cdot COS(h)]$	3.98551
BD	Base diameter	$PD \cdot COS(\alpha_d)$	3.32717
CE	Twice the center distance of pin and gear even # of teeth	DE-d	*****
CO	Twice the center distance of pin and gear odd # of teeth	$(DO-d)/COS(90/N)$	3.92695
β	Pressure angle to pin center	$COS(\beta)=BD/CE$ or CO	32.08442
INV β	Involute function of β	$TAN(\beta)-[\beta(\pi/180)]$	0.06694
INV α_d	Involute function of α_d	$TAN(\alpha_d)-[\alpha_d(\pi/180)]$	0.07646



TO GET	HAVING	RULE	FORMULA
E		π/N	0.10134
D		dD/BD	0.06150
td	Transverse arc tooth thickness	$PD \cdot (E+INV\beta-INV\alpha_d-D)$	0.12082
tn	Normal arc tooth thickness	$td/COS(h)$	0.08544