OMNIGEAR
& Machine Corp

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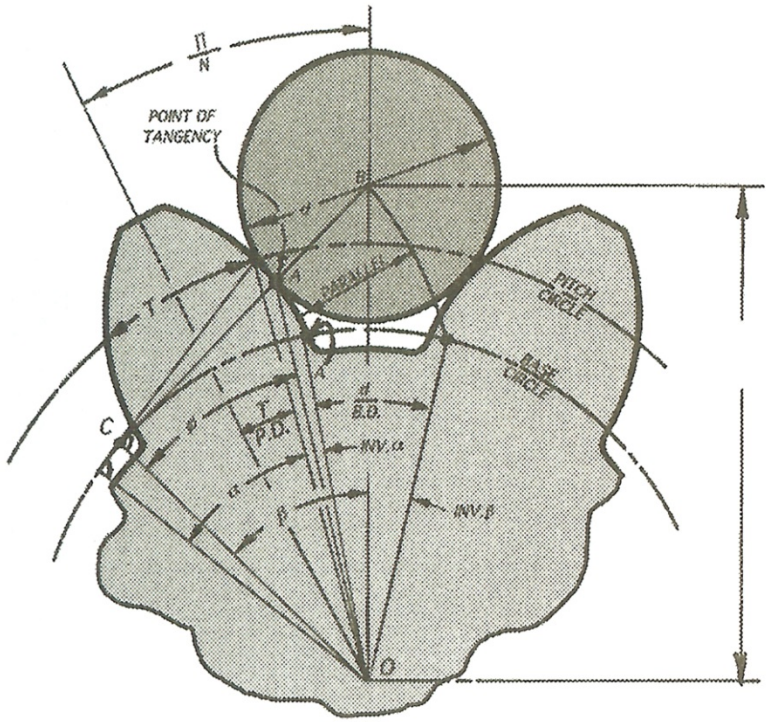
EXTERNAL SPUR GEARS –Determining Dimensions Over Pins

TO GET	HAVING	RULE	FORMULA
N	Number of teeth	Given	35
DP	Diametral pitch	Given	10
A	Pressure angle	Given	20
T	Arc tooth thickness	Given	0.15500
d	Pin diameter	Given	0.17280
PD	Pitch diameter N/Dp	Given	3.50000
BD	Base diameter	PD•COS(α)	3.28892
A		t/PD	0.04429
D		d/BD	0.05254
E		π/N	0.08976
INV α	Involute function of α	TAN(α)- [α(π/180)]	0.01490
INVβ	Involute function of β	A+D+INV α-E	0.02197
β	Pressure angle to pin center	see tables (pages G14)	22.65108
CC	Twice the center distance of pin and gear	BD/COS(α)	3.56381
DE	Dimension over pins even # of teeth	CC+d	**********
DO	Dimension over pins odd # of teeth	COS(90/N)•CC+d	3.73302
Φ	Pressure angle to point of tangency	TAN(Φ)=TAN(α)-D	0.04026
RT	Radius to point tangency	R BD/[2•COS(Φ)]	1.75045



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EXTERNAL SPUR GEARS –Determining Arc Tooth Thickness Given Dimensions Over Pins

TO GET	HAVING	RULE	FORMULA
N	Number of teeth	Given	50
DP	Diametral pitch	Given	8
α	Pressure angle	Given	20
d	Pin diameter	Given	0.21144
DE	Dimension over pins even # of teeth	Given	6.53345
DO	Dimension over pins odd # of teeth	Given	**********
PD	Pitch diameter	N/DP	6.25000
BD	Base diameter	PD•COS(α)	5.87308
CE	Twice the center distance of pin and gear even # of teeth	DE-d	6.32201
CO	Twice the center distance of pin and gear odd # of teeth	(DO-d)/COS(90/N)	**********
β	Pressure angle to pin center	COS(β)=BD/CE or CO	21.72221
INVβ	Involute function of β	TAN(β)-[β(π/180)]	0.01927
E		π/N	0.06283
D		d/BD	0.03600
INVα	Involute function of α	TAN(α)-[α(π/180)]	0.01490
t	Arc tooth thickness	PD(E+INVβ-INVα-D)	0.19500