



90 Bissel Street

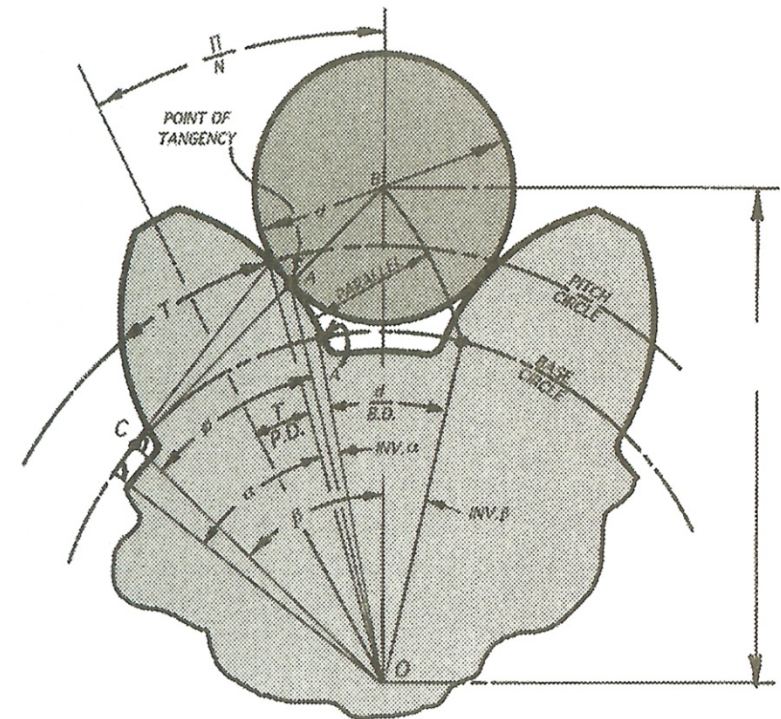
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**EXTERNAL SPUR GEARS –Determining Dimensions Over Pins**

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





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

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

