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input same Nw for ZI & ZK to calculate Correctly

Red Fonts are inputs, **Blue Fonts** is Calculated
all inputs are decimal inch

Annex A
(Informative)
Formulas for worm thread profiles

[The foreword, footnotes, and annexes, if any, are provided for informational purposes only and should not be construed as a part of AGMA 6022–CXX, *Design Manual for Cylindrical Wormgearing*.]

Let

	ZI Worm
Nw=	2
d =	.48897638
φn =	20.14
λ =	20.14
	form on Z1 worm
ρni =	1.452157696
check dimension	1.452157696
d*sinφn =	0.344315222
2*sin^2λ=	0.237105945

LET

	ZK Worm
Nw=	2
R=	5
Δφn =	1.208775451
90/Nw=	45
d/2RCOS^2(λ+d/2)=	0.658058416
SIN^3λ=	0.040819593
cos^2(λ+d/2)=	0.074305923
check Δφn =	1.208775451
	form on ZK worm
℗n =	1.532715097
d*ρni=	0.710070814
2Rcos^2λ=	8.814470277

A.1 Purpose

The purpose of this annex is to provide formulas for finding approximate thread profiles for form ZI and form ZK .

A.2 Form on involute worm

The amount of form on an involute profile, form ZI, is determined as follows:

$$\rho_{ni} = \frac{d}{2}\frac{\sin \phi_n}{\sin^2 \lambda} \quad \text{...(Eq A.1)}$$

where

ρ_{ni} is the radius of normal thread profile ZI, in (mm);

d is the worm pitch diameter, in (mm);

ϕ_n is the normal pressure angle of cutter or grinding wheel;

λ is the lead angle at the worm pitch diameter.

Figure A-1 – Radius of normal thread profile ZI

A.3 Form on ZK worm

The amount of form on a worm produced by a straight sided cutter or grinding wheel, form ZK, is

$$\rho_n = \rho_{ni} + \frac{d\rho_{ni}}{2R \cos^2 \lambda} \quad \text{...(Eq A.2)}$$

where

ρ_n is the radius of normal thread profile ZK, in (mm);

R is the radius of cutter or grinding wheel, in (mm).

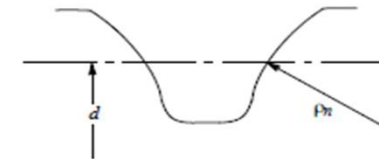Figure A-2 – Radius of normal thread profile ZK

A.4 Reduction of normal pressure angle

The slight reduction of the normal pressure angle of the thread from the cutter or grinding wheel angle is as follows:

$$\Delta\phi = \frac{90}{N_w}\frac{d}{2R \cos^2(\lambda + d/2)}\sin^3 \lambda \quad \text{...(Eq A.3)}$$

where

$\Delta\phi$ is the reduction in thread angle from the cutter or grinding wheel angle, degrees;
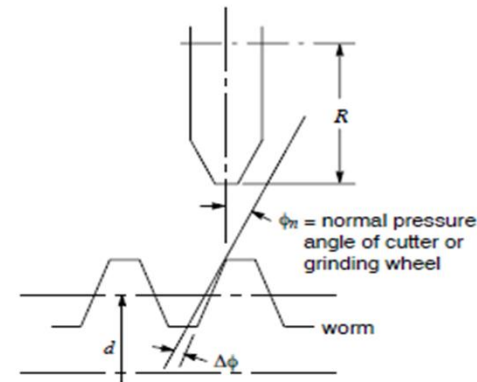
N_w is the number of threads in worm.

Figure A-3 – Reduction in thread angle from the cutter or grinding wheel angle – Form ZK