



Spur gearing, Helical gearing [in/AGMA]

i	Check lines:3.11;4.12;5.9;10.0;	Pinion	Gear
ii	<input type="checkbox"/> Project information		

? Input section

1.0 ☒ Options of basic input parameters

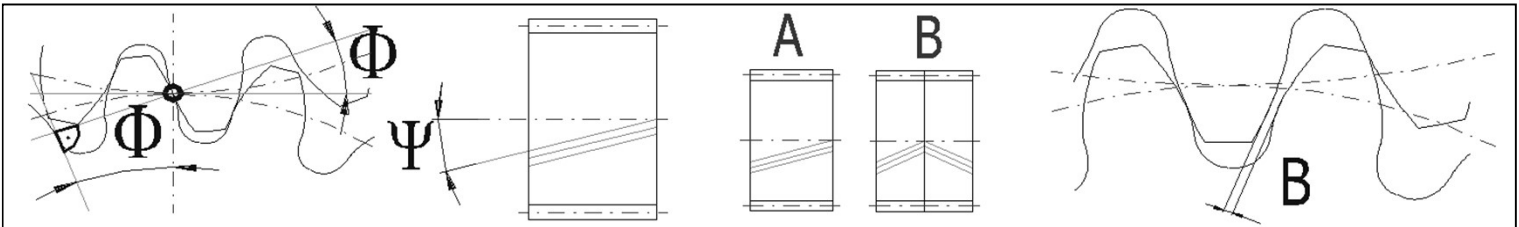
1.1	Transferred power	P [HP]	0.250	0.244
1.2	Speed (Pinion / Gear)	n [/min]	1000.0	769.2
1.3	Torsional moment (Pinion / Gear)	T [lb.in]	15.75	19.99
1.4	Transmission ratio / from table	i	1.30	
1.5	Actual transmission ratio / deviation	i	1.30	0.00%

2.0 ☒ Options of material, loading conditions, operational and production parameters

2.1	Material identification according standard :	ANSI		
2.2	Material of the pinion :	D...Alloy structural steel AISI 4130 (S=135 Mpsi) heat treated		
2.3	Material of the gear :	D...Alloy structural steel AISI 4130 (S=135 Mpsi) heat treated		
2.4	Loading of the gearbox, driving machine - examples	A...Continuous		
2.5	Loading of gearbox, driven machine - examples	A...Continuous		
2.6	Type of gearing mounting	B...Commercial enclosed gearboxes		
	Type of gearing mounting	A...Symmetric gearing support		
2.7	Degree of accuracy AGMA2015-1 Ra max min	A 7 (10) (Ra min.= 32 / max.= 63)		
2.8	Failure probability (fewer than one failure in:)	FP 100		
2.9	Desired service life	Lh 10000		[h]
2.10	Coefficient of safety (contact/bend)	SH / SF 1.30 1.60		
2.11	Automatic design			

3.0 ☐ Parameters of the cutting tool and tooth profile

4.0 ☒ Design of a module and geometry of toothing

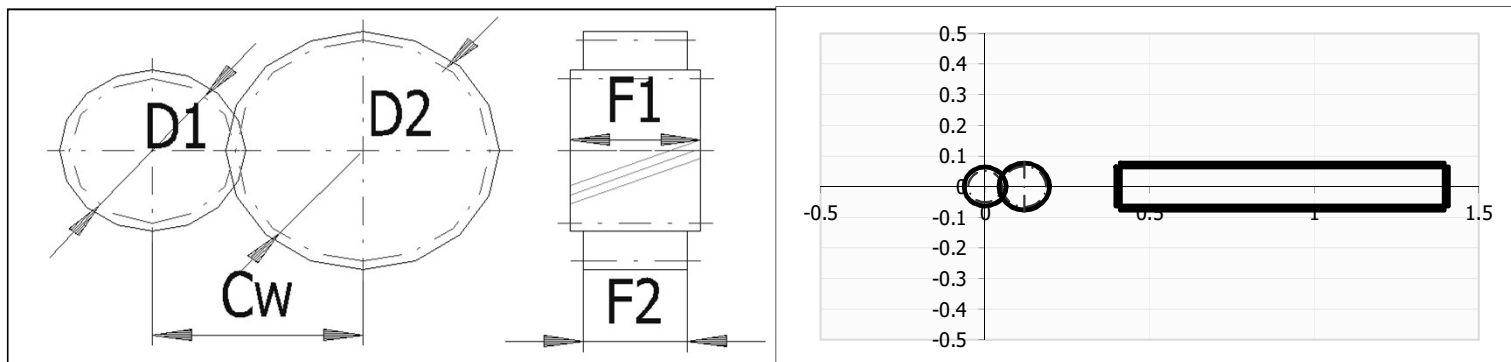


4.1	Number of teeth Pinion / Gear	N	10	13	
4.2	Normal pressure angle	Φ	24.62		[°]
4.3	Base helix angle	Ψ	0.00		[°]
4.4	Setting of the ratio of the width of the pinion to its diameter				
4.5	The ratio of the pinion width to its diameter	Ψ _d / max	1.2	< 1.4	
4.6	Diametral Pitch	P	97.7		
4.7	Circular Pitch / Module	CP/m	0.032	0.010	[in]
4.8	Reference diameter Pinion / Gear	D1/D2	0.102	0.133	[in]
4.9	Recommended width of gearing		0.06 - 0.14		[in]
4.10	Face width (Pinion / Gear)	F1/F2	1.010	0.984	[in]
4.11	Working face width	Fw	0.984		<input checked="" type="checkbox"/> [in]
4.12	The ratio of the pinion width to its diameter	Ψ _d / max	9.87	< 1.4	
4.13	Working center distance	Cw	0.119		[in]

4.14 Approximate weight of the gearing

4.15 Minimum coefficient of safety

m SH / SF	0.00		[lb]
	0.13	0.25	



4.15 Normal backlash

4.16 - Recommended min. | max. value

4.17 - Selected normal backlash

B	0.0004	0.0016	[in]
B	0.0010		[in]

5.0 ☒ Correction of toothing (Addendum modification)

5.1 Types

5.2 - Permissible undercutting of teeth (min. value)

5.3 - Preventing undercutting of teeth (min. value)

5.4 - Prevents tapering of teeth (min. value)

5.5 Pinion addendum modification coefficient setting

5.6 Addendum modification coefficient Pinion / Gear

5.7 Sum of addendum modification coefficients | min. value

5.8 Total contact ratio

5.9 Unit tooth thickness on the tip diameter

5.10 Specific sliding on tooth root

5.11 Specific sliding on tooth tip

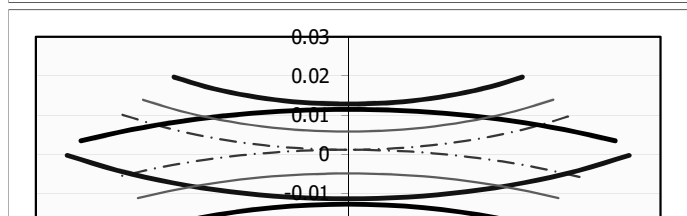
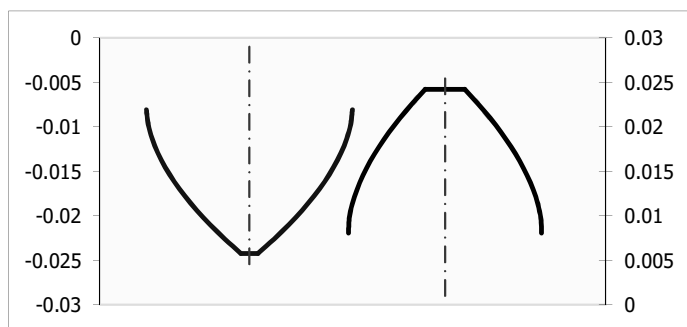
5.12 Sum of all specific slidings

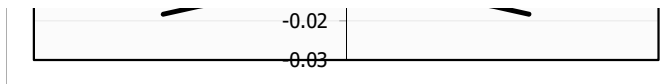
5.13 Safety coefficient for surface durability

5.14 Safety coefficient for bending durability

5.15 Display of tooth and tool turn for:

	0.000	-0.231	$\Sigma =$	-0.231
	0.200	-0.077	$\Sigma =$	0.123
	0.635	0.363	$\Sigma =$	0.997
			<input checked="" type="checkbox"/>	
x	0.1100	-0.1100	[modul (1/P)]	
Σx	0.0000	> -0.717	[modul (1/P)]	
$\varepsilon\alpha/\varepsilon\gamma$	1.4342	1.4342		
sa*	0.1479	0.3406		
$\vartheta A1/\vartheta E2$	-16.0349	-8.4896		
$\vartheta E1/\vartheta A2$	0.8946	0.9413		
Sum ϑ	26.3604			
SH	0.13	0.13		
SF	0.27	0.25		
Pinion				0 [°]

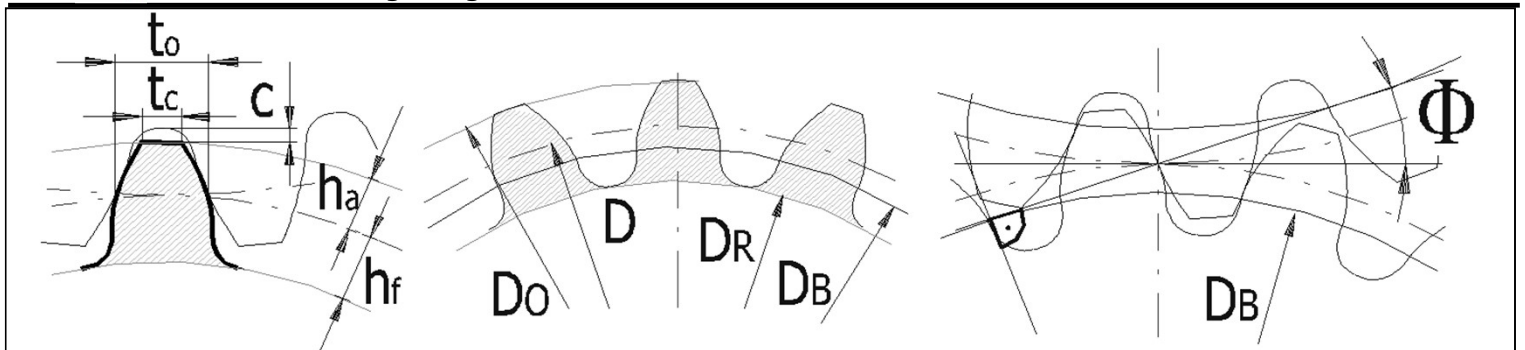




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Results section

6.0 ☒ Basic dimensions of gearing



6.1	Number of teeth Pinion / Gear	N	10	13	
6.2	Face width (Pinion / Gear)	F	1.0100	0.9840	[in]
6.3	Normal module	mn	0.0102		[in]
6.4	Transverse module	mt	0.0102		[in]
6.5	Diametral Pitch (normal)	Pn	97.7000		
6.6	Diametral Pitch (transverse)	Pt	97.7000		
6.7	Circular pitch	pn	0.0322		[in]
6.8	Transverse circular pitch	pt	0.0322		[in]
6.9	Base circular pitch	pN	0.0292		[in]
6.10	Base circular pitch transverse	pT	0.0292		[in]
6.11	Center distance (pitch)	C	0.1177		[in]
6.12	Center distance (production)	Cm	0.1177		[in]
6.13	Center distance (working)	Cw	0.1189		[in]
6.14	Pressure angle	Φ	24.6190		[°]
6.15	Transverse pressure angle	Φ_t	24.6190		[°]
6.16	Pressure angle at the pitch cylinder	Φ_{wn}	24.6190		[°]
6.17	Transverse pressure angle at the pitch cylinder	Φ_{wt}	24.6190		[°]
6.18	Helix angle	Ψ	0.0000		[°]
6.19	Base helix angle	Ψ_b	0.0000		[°]
6.20	Tip diameter	DO	0.1275	0.1537	[in]
6.21	Reference diameter	D	0.1024	0.1331	[in]
6.22	Base diameter	DB	0.0930	0.1210	[in]
6.23	Root diameter	DR	0.0790	0.1052	[in]
6.24	Operating pitch diameter	DW	0.1024	0.1331	[in]
6.25	Addendum	ha	0.0126	0.0103	[in]
6.26	Dedendum	hf	0.0117	0.0139	[in]
6.27	Tooth thickness on the tip diameter	tno	0.0015	0.0035	[in]
6.28	Tooth thickness on the tip diameter (transverse)	tto	0.0015	0.0035	[in]
6.29	Tooth thickness on the pitch diameter	tnc	0.0171	0.0150	[in]
6.30	Tooth thickness on the pitch diameter (transverse)	ttc	0.0171	0.0150	[in]
6.31	Tooth thickness on the root diameter	tr	0.0155	0.0149	[in]
6.32	Unit tooth thickness on the tip diameter	to*	0.1479	0.3406	[modul (1/P)]

6.33	Unit correction	dY	-0.0012		[in]
6.34	Total unit correction	x1+x2	0.0000		[modul (1/P)]
6.35	Addendum modification coefficient	x	0.0011	-0.0011	[in]
6.36	Achieve the requested tip diameter with change the unit head clearance ca* [3.11]				
6.37	Unit head clearance	ca*	0.2500	0.2500	[modul (1/P)]
6.38	Unit head clearance	ca*	0.0026	0.0026	[in]
6.39	Tip diameter can be varied from-to	DO min/max	0.122/0.125	0.149/0.151	[in]
6.40	Requested tip diameter	DO req	7.100	17.000	[in]

7.0 ☐ Supplemental parameters of gearing

8.0 ☐ Qualitative indices of gearing

9.0 ☐ Coefficients for safety calculation

10.0 ☐ Stress and safety coefficients

11.0 ☐ Check dimensions of gearing, ANSI/AGMA 2015-1-A01, 2015-2-A06, Accuracy Classification System

12.0 ☐ Force conditions (forces acting on the toothing)

13.0 ☐ Parameters of the chosen material

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Additions section

14.0 ☐ Calculation of gearing for the given axis distance

15.0 ☐ Power, warming-up, gearbox surface

16.0 ☐ Preliminary design of shaft diameters (steel)

17.0 ☐ Approximate module calculation from the existing gear

18.0 ☐ Auxiliary calculations