

WN 8

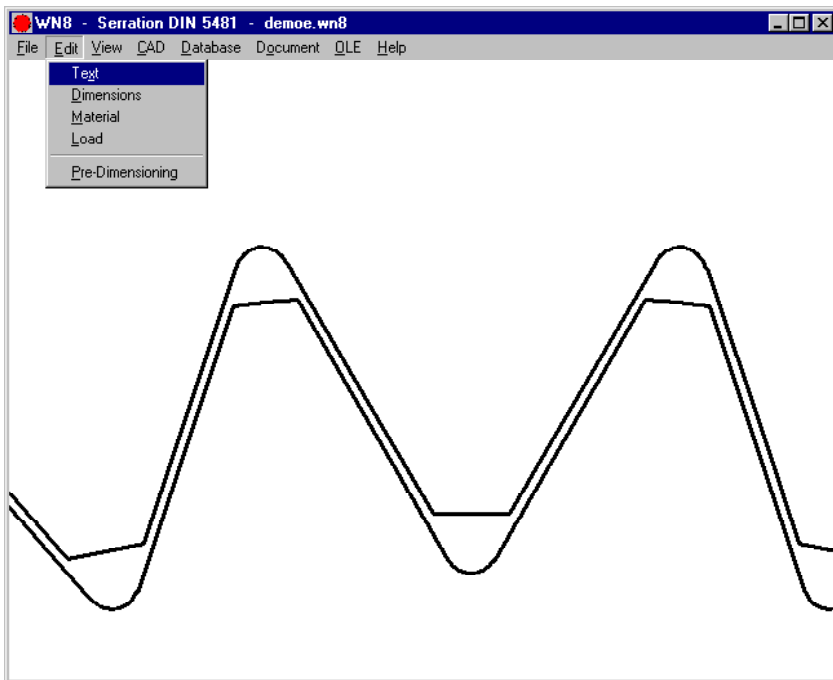


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Software for

Serrations according to DIN 5481

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Calculation of Serration Splines to DIN 5481
 WN8 calculates dimensions, tolerances and load bearing capacity of serrations with straight flanks according to DIN 5481. A true-scale drawing of the spline is generated by WN8 and may be exported as CAD file. Dimensions and material data are loaded from the integrated material database.

Pre-Dimension

In Pre-Dimension, WN8 calculates a suitable spline size for the required transferable torque.

Dimensions

Standard sizes to DIN 5481 may be selected from integrated database. Or you can enter the dimensions for self-defined serration splines.

Tolerances

WN8 calculates tolerances for tolerance class fine or coarse according to DIN 5481.

Quick View

Profile drawing and tables with most important dimensions and results on one screen.

Profile Database

Profile database includes all sizes of DIN 5481. Database may be extended by the user.

shaft DIN 5481 - 12x14

No. of teeth	Z		31
Modul	m	mm	(0,4194)
Gap angle exterior	gam.e	°	60,000
Pitch diameter	D	mm	13,00
Tip diameter	Dee	mm	14,2 a11
Root fillet radius	Remax	mm	0,10
Root diameter	Die	mm	11,93
Pitch	P	mm	1,32

hub DIN 5481 - 12x14

No. of teeth	Z		31
Modul	m	mm	(0,4194)
Gap angle interior	gam.i	°	48,387
Pitch diameter	D	mm	13,00
Root fillet radius	Rimax	mm	0,10
Tip diameter	Dii	mm	12,0 A11
Root diameter	Dei	mm	14,23
Pitch	P	mm	1,32

Load

Rated torque	TN	Nm	500
Maximum torque	Tmax	Nm	1500
application coefficient	KA		1,00
Equivalent torque	Teq	Nm	500
profile length	l	mm	26,50
load distribution coefficient	Kll		1,00
Load distrib.coeff.	Klambda		1,10
equivalent pressure	peq	MPa	438
max. equivalent pressure	pmax	MPa	1056

STRENGTH

	1	2		
yield strength	Re	MPa	320	230
Stpp. Factor	fs		1,20	2,00
Hardness factor	fh		1,00	1,00
Permissible pressure	padm	MPa	384	460
Load peak frequency factor	fl		1,00	1,00
scale: 1/1000	Coq		0,88	1,06
scale: 1/1000	Smaz		0,35	0,42

NAME	DII	DEE	D	Z	GAMMA_E	RJ_MAX	RE_MAX	INFO1
7x8	6,9	8,1	7,5	28	60	0,08	0,08	DIN 5481
8x10	8,1	10,1	9	28	60	0,08	0,08	DIN 5481
11x12	10,1	12	11	30	60	0,1	0,1	DIN 5481
12x14	12	14,2	13	31	60	0,1	0,1	DIN 5481
15x17	14,9	17,2	16	32	60	0,15	0,15	DIN 5481
17x20	17,3	20	18,5	33	60	0,15	0,2	DIN 5481
21x24	20,8	23,9	22	34	60	0,15	0,25	DIN 5481
26x30	26,5	30	28	35	60	0,25	0,3	DIN 5481
30x34	30,5	34	32	36	60	0,3	0,4	DIN 5481
36x40	36	39,9	38	37	60	0,45	0,3	DIN 5481
40x44	40	44	42	38	60	0,5	0,4	DIN 5481
45x50	45	50	47,5	39	60	0,45	0,4	DIN 5481
50x55	50	54,9	52,5	40	60	0,6	0,4	DIN 5481
55x60	55	60	57,5	42	60	0,6	0,5	DIN 5481
60x65	60	65	61,5	41	55	0	0	
65x70	70	75	67,5	45	55	0	0	
70x75	70	75	72	48	55	0	0	

Units

WN8 may be switched between metric units (mm, N, MPa) and imperial units (in, lbf, psi).

WN8 - Serration DIN 5481 - demoe.wn8

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WN8 DIN 5481 - 12x14 Tolerance tooth thickness + tooth gap

Ev = Sv = P/2 = 0,659mm

TG,j = 0,036mm

Iact,j = U,525 IG = U,123mm

Teff,j = 0,375 TG = 0,014mm

TG,e = 0,071mm

Tact,e = 0,625 TG = 0,045mm

Teff,e = 0,375 TG = 0,027mm

E max = 0,695mm

E min = 0,672mm

Sv = 0,659mm

S max = 0,632mm

S min = 0,587mm

Material Database

Integrated material database includes strength values for the most common steel materials, and may be modified and extended by the user.

Material Shaft

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Search Search Next OK Cancel

IDENT	MATERIAL	MAT_NR	NR	RM	RE	E_MODUL	AS	Z
1.7147	20MnCr5	1.7147	7	1000	700	210000		8
1.7149	20MnCr5	1.7149	7	1080	735	210000		7
1.7160	16MnCrB5	1.7160	7	0	0	210000		0
1.7176	55Cr3	1.7176	26	1320	1175	210000		6
1.7213	25CrMo4	1.7213	13	900	700	210000		12
1.7218	25CrMo4	1.7218	13	900	700	210000		12
1.7218	25CrMo4	1.7218	27	780	590	210000		14
1.7218	25CrMo4	1.7218	20	540	345	210000		18
1.7219	26CrMo4	1.7219	2	590	440	210000		18
1.7220	34CrMo4	1.7220	13	1000	800	210000		11
1.7223	41CrMo4	1.7223	8	1080	885	210000		10

Load Bearing Capacity

Safety against bearable flank pressure is calculated according to Niemann/Winter/Höhn and DIN 6882 from torque, material data, application and load type. Application factors and load coefficients can be determined by means of WN8 auxiliary images.

Printout

Calculation results may be printed, saved as HTML table, or directly exported to MS-Excel.

Tables and Drawings

WN8 generates true-scale drawings of shaft and hub profile which may be exported to CAD via DXF or IGES file. Tables with dimensions and tolerances are also generated by WN8.

Production Drawing

WN8 generates a production drawing with tooth profile and dimensions for external spline (shaft) and internal spline (hub). Drawing information and modification index is entered in WN8.

User Interface

The dialogue windows of WN8 allow even the less experienced PC user to find his way around the program quickly. WN8 provides users with a help text wherever they are in the program. When the demo mode is selected, WN8 runs through a demo program in which an example calculation is performed. WN8 contains auxiliary pictures with geometrical signs and formulas used by the program.

System Requirements

WN8 is available as 32-bit app or as 64-bit app for Windows XP, Vista, Windows 7, 8, Windows 10.

Scope of Delivery

WN8 Software with user manual (pdf), example applications and help images, non-expiring license for unlimited time use with update rights.

Software Maintenance

HEXAGON Software is continuously improved and updated. Registered users are regularly kept informed of updates and new editions.

Guarantee

HEXAGON gives a 24 month guarantee on full functionality of the software.

WN8 - Serration DIN 5481 - demoe.wn8

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HEXAGON WN8 - Serration DIN 5481 V1.9

shaft DIN 5481 - 12x14			
No. of teeth	Z		31
Modul	m	mm	(0,4194)
Gap angle exterior	gam.e	°	60,000
Pitch diameter	D	mm	13,00
Tip diameter	Dee	mm	14,2 a11
Root diameter util.	DFe	mm	12,03 max
Root fillet radius	Remax	mm	0,10
tooth thickness max.effective	Sv	mm	0,6587
tooth thickness max.actual Ref.	Smax	mm	U,5319
tooth thickness min.actual	Smin	mm	0,5873
meas. circle diameter	DRe	mm	0,750
dimension over balls max.Ref.	MRemax	mm	14,0281
dimension over balls min.	MRemin	mm	13,9486
Total profile error	Falpha	mm	0,025
Total alignment deviation	Fβ	mm	0,020
Total pitch error	Fp	mm	0,050
Circular deviation	Fr	mm	0,020

Fit Dim.	Max. Dim.	Min. Dim.
14,2 a 11	13,910	13,800

Responsible dept.	Technical reference	Created by	Approved by

Document type	Document status
Shaft	1

Rev.	Date of issue	Lang.	Page
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