

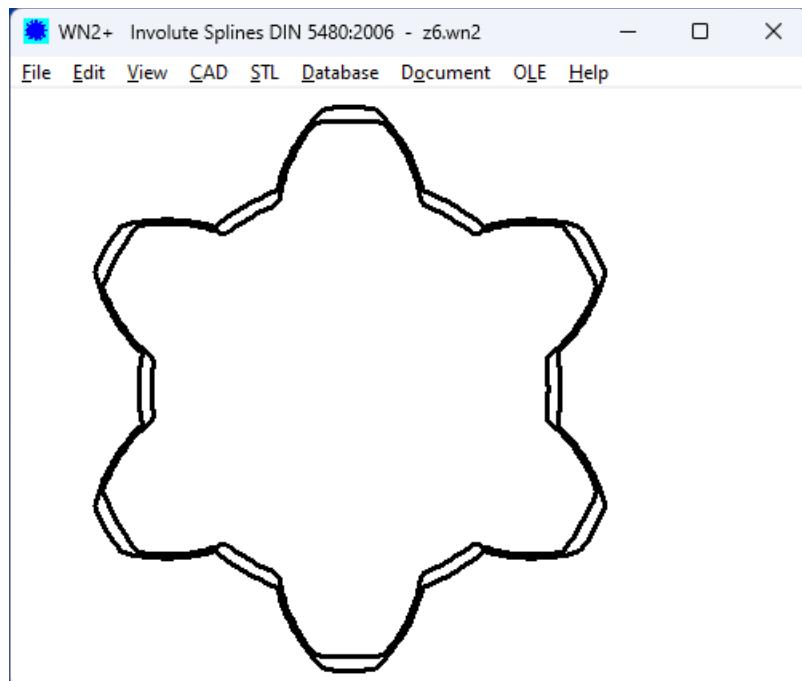
# WN2 / WN2+



## Software for Involute Splines according to DIN 5480

for Windows

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### Involute Splines to DIN 5480

WN2 software calculates dimensions and transferable torque of involute splined shaft/hub joints according to DIN 5480. The plus version WN2+ provides additionally the calculation of non-standard splines by input of tooth height factors and profile shift or measured dimensions over/between pins.

### Dimensions

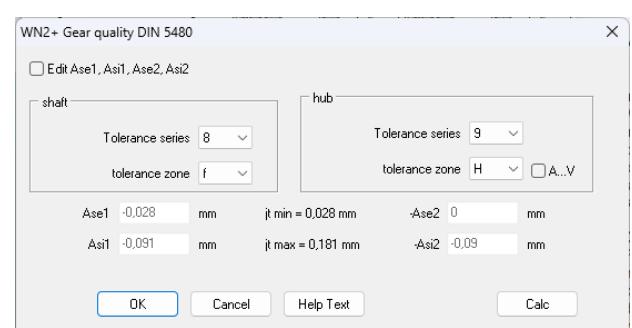
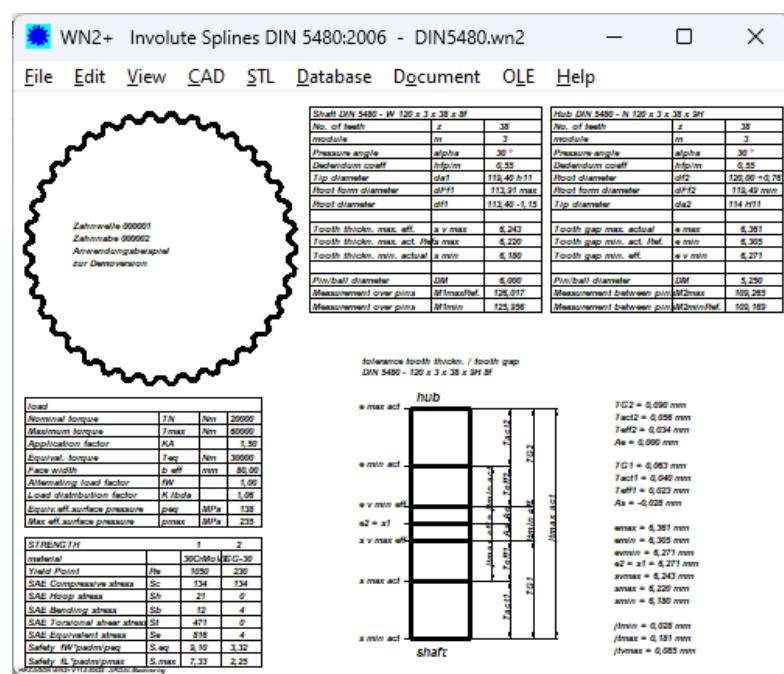
From reference diameter, pressure angle, module, number of teeth and DIN 5480 tolerance zone, WN2 calculates the involute spline dimensions. Profile drawing and data table can be displayed on screen, printed or exported to CAD.

### Data Base

WN2 includes a data base which contains all combinations of DIN 5480 standard sizes (700 data records). The database file may be modified and extended by the user. Material properties can be selected from included material database.

### Tolerances

Select DIN 5480 tolerance series and tolerance row, and WN2 calculates tolerances and permissible deviations of shape, angle and run-out.

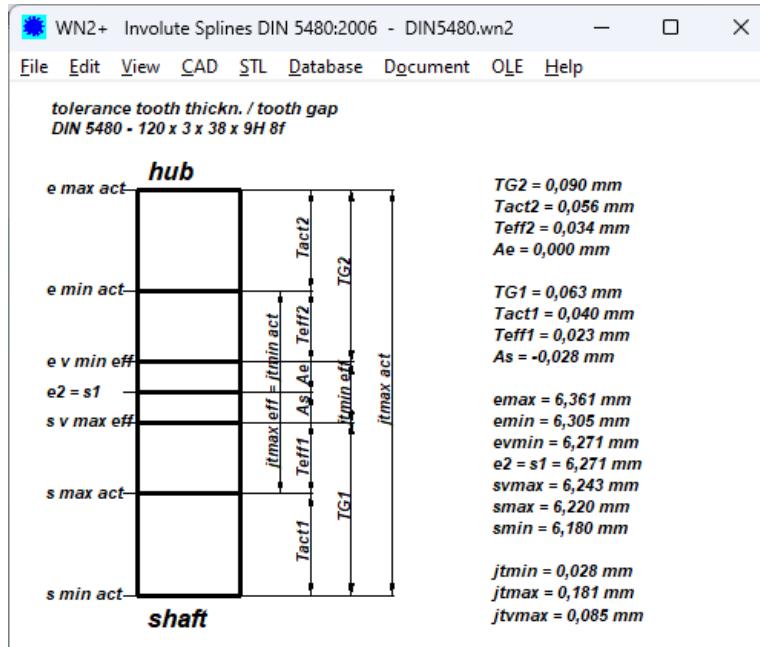


### Measurement

The program calculates span width and dimensions over / between pins (min, max & nom. values). Number of teeth measured and pin diameter can be modified.

WN2+ Involute Splines DIN 5480:2006 - DIN5480.wn2

Shaft DIN 5480 - W 120 x 3 x 38 x 8f			Hub DIN 5480 - N 120 x 3 x 38 x 9H 8f		
No. of teeth	z	38	No. of teeth	z	38
module	m	3	module	m	3
Pressure angle	alpha	30 °	Pressure angle	alpha	30 °
Dedendum coeff	hfpm	0,55	Dedendum coeff	hfpm	0,55
Tip diameter	da1	119,40 h11	Root form diameter	df1	113,91 max
Root form diameter	df1	113,91 max	Root diameter	df1	113,40 -1,15
Root diameter	df1	113,40 -1,15			
Tooth thickn. max. eff.	s v max	6,243	Tooth gap max. actual	e max	6,381
Tooth thickn. max. act. Ref.	s max	6,220	Tooth gap min. act. Ref.	e min	6,305
Tooth thickn. min. actual	s min	6,180	Tooth gap min. eff.	e v min	6,271
Pin/ball diameter	DM	6,000	Pin/ball diameter	DM	5,250
Measurement over pins	M1maxRef.	126,017	Measurement between pins	M2max	109,265
Measurement over pins	M1min	125,956	Measurement between pins	M2minRef.	109,169
Load			STRENGTH	1	2
Nominal torque	TN	Nm	Material	30CrMoV9	GG-30
Maximum torque	Tmax	Nm	Yield Point	Re	1050 230
Application factor	KA		SAE Compressive stress	Sc	134 134
Equivalent torque	Teq	Nm	SAE Hoop stress	Sh	21 0
Face width	b eff	mm	SAE Bending stress	Sb	12 4
Alternating load factor	rw		SAE Torsional shear stress	St	471 0
Load distribution factor	Klbd		SAE Equivalent stress	Se	816 4
Equiv.eff.surface pressure	peq	MPa	Safety rW'padm/peq	S.eq	9,10 3,32
Max eff.surface pressure	pmax	MPa	Safety rL'padm/pmax	S.max	7,33 2,25



WN2+ Involute Splines DIN 5480:2006 - DIN5480.wn2

Shaft DIN 5480 - W 120 x 3 x 38 x 8f		
No. of teeth	z	38
module	m	3
Pressure angle	alpha	30 °
Dedendum coeff	hfpm	0,55
Tip diameter	da1	119,40 h11
Root form diameter	df1	113,91 max
Root diameter	df1	113,40 -1,15
Tooth thickn. max. eff.	s v max	6,243
Tooth thickn. max. act. Ref.	s max	6,220
Tooth thickn. min. actual	s min	6,180
Pin/ball diameter	DM	6,000
Measurement over pins	M1maxRef.	126,017
Measurement over pins	M1min	125,956
Fit Dim.	Max.Dim.	Min.Dim.
119,4 h 11	119,400	119,180

material: 30CrMoV9

## Strength Calculation

WN2 calculates transmissible torque or safety according to Niemann/Höhn (2005, as in DIN 3892) or according to Roloff/Matek.

## Drawing Tables

Drawing tables with dimensions and results can be printed or exported to CAD.

## Tooth Contact

Drawings of involute spline profile, tooth gap, tooth contact, tooth shape and reference profile can be printed or exported as true-scale drawing to CAD.

## Production Drawing

Drawing and table with dimensions may be generated by WN2 with ISO 7200 drawing header.

## WN2+ for Non-Standard Splines

The extended version WN2+ provides an additional input window for tooth height factors and profile shift coefficients. This enables you to design non-standard splines. Reference diameter dB is calculated from profile shift x for this case. Profile shift coefficients can be entered, or calculated from span width or over-pin-dimension. This eases the design of a partner profile for an existing internal/external spline.

WN2+ Dimensions

Pressure angle alpha	30
Normal module mn	2 mm
Number of teeth z	22
<input type="checkbox"/> DIN 5480	
Nominal Diameter dB	47 mm
1 (extern.)	2 (intern. spline)
Addendum hf/mn=haP0/mn	0,55 0,52
Root fillet radius rf/m	0,16 0,16
Profile shift coeff. x nom	0,2 -0,2
Profile shift coeff. xe min	0,169 -0,23
Profile shift coeff. xe max	0,19 -0,2
DM, k	s1min W1min M1min M2min e2max W?
Ase, Asi	s1max W1max M1max M2max e2min M?
OK	Cancel Help Aux. Image mm <-> inch Calc

## CAD Interface

A true-scale drawing of the involute splines can be exported to CAD via DXF or IGES files.

## Hard and Software Requirements

WN2 / WN2+ is available as 32-bit app or 64-bit app for Windows 11, Windows 10, Windows 7.

## Scope of Delivery

Program with user manual (pdf), database files, example applications, declaration of conformity, non-expiring perpetual license for unlimited time use with update rights.

## Guarantee

HEXAGON gives a 24 month guarantee on full functionality of the software. HEXAGON Software is continuously improved and updated. Registered users are kept informed of updates and new editions.