WN4
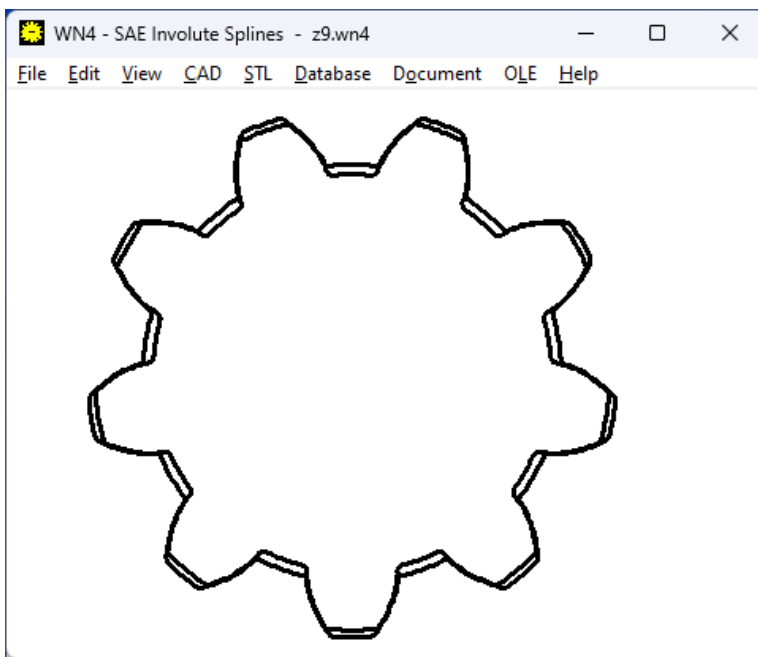
*Software for Involute Splines
according to ANSI B92.1*

for Windows

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Calculation Base
WN4 software calculates dimensions, tolerances, measurement and stresses for SAE Involute Splines according to ANSI B92.1 and ANSI B92.1b. WN4 uses imperial units; metric units are supported as well. The program was designed to calculate spline fit types "Flat Root Side Fit" and "Fillet Root Side Fit" as well as "Major Diameter Side Fit". Pressure angle can be 30°, 37,5° or 45°. Normal Circular Pitch can be selected between "2.5 / 5" and "128 / 256".

Clearance, Tolerance
According to ANSI B92.1, WN4 calculates admissible deviation and tolerance. Additionally, you can select the appropriate spline fit class, if you choose calculation according to ANSI B92.1b. When entering centerline runout, WN4 calculates required clearance.
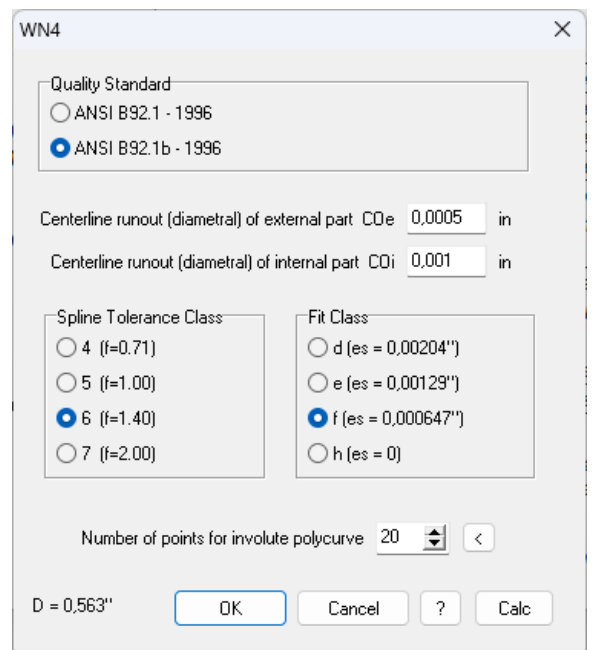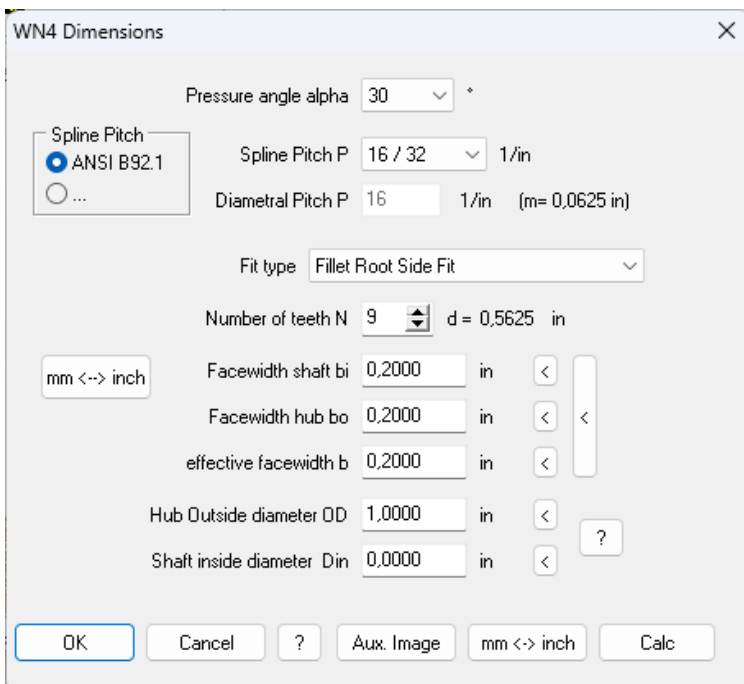
WN4 Material Data

Spline: Flexible Spline
Material: Carburized, Rc58
Revolutions: 100.00 Millions
Torque cycles: 100,000
Torque cycles: Uni directional
Power Source: Light
Load intermittent: Uniform
Misalignment: 0.002 in./in.
Misalignment face width: 1 in.

Shaft Torque, T: 10000 lbfin
Maximum allowable shear stress, Sas: 50000 psi
Maximum allowable compressive stress, Sac: 15000 psi
Wear life factor, Lw: 1.0
Fatigue life factor, Lf: 0.5
Spline overload factor, Ko: 1.2
Misalignment factor, Km: 1.0

[OK] [Cancel] [Help Text] [mm <--> inch] [Calc]

WN4 No. of teeth measured, Ball and pin diameters

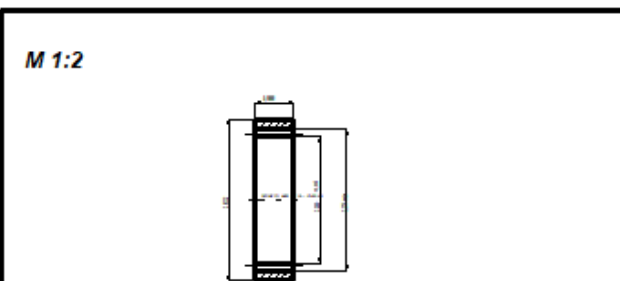|	External	Internal Spline	
No. of teeth measured k	5	-3	<
Ball and pin diameters DM	0,24000	0,21598 in	<

[tooth gap1 + DM 1] [tooth gap2 + DM 2]

[OK] [Cancel] [?] [mm <--> in] [Calc]

WN4 - SAE Involute Splines - sae1b.wn4

File Edit View CAD STL Database Document OLE Help

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M 1:2

Internal Involute Spline Data 000002	
SPLINE TO ANSI B92.1b - CLASS 6H	
Fillet Root Side Fit	
Number of teeth	25
Spline pitch	8 / 16
Pressure angle	30 deg
Base diameter	2,706329 ref
Pitch diameter	3,125000 ref
Major diameter	3,375 max
Form diameter	3,275
Minor diameter	3,000 / 3,009
Circular space width	
Min effective	0,1963
Max actual	0,2012
Measurement between pins	
Min actual	2,8118
Max actual	2,8157
Pin Diameter	0,2160
Fillet Radius	0,043

Hub
000002
2024-04-30

Measurement

Defined by dimensions and tolerance class, WN4 calculates span width and dimensions over/between pins (min, max, mean value). Number of teeth measured, and pin diameter may be changed.

Strength Calculation

WN4 calculates compressive stress, spline teeth shear stress, hoop stress, bending stress, torsional shear stress and equivalent stress according to "Design Guide for Involute Splines", SAE 1994. The program generates error messages, if allowable material values are overridden. Material values, application factors and wear life factors can be selected from tables, or you can enter the values directly.

Production Drawing

Drawing tables with dimensions and tolerances according to ANSI B92.1 are generated by WN4, together with a draft of shaft or hub, and ISO 7200 drawing header. Drawings may be printed on any Windows printer, or exported to CAD as DXF or IGES file.

Tooth Contact

Drawings with teeth, tooth gap, tooth contact, and tool profile are displayed on screen.

CAD Interface

True-scale drawings of involute splines and tool geometry can be exported to CAD as DXF or IGES file, as well as a table with the spline data according to ANSI B92.1.

User Interface

The dialogue windows of WN4 allow even the less experienced PC user to find his way around the program quickly. WN4 provides users with a help text wherever they are in the program. When the demo mode is selected, WN4 runs through a demo program in which an example calculation is performed. WN4 contains auxiliary pictures with geometrical signs and formulas used by the program.

System Requirements

WN4 is available as 32-bit app or as 64-bit app for Windows 11, Windows 10, Windows 7.

Scope of Delivery

Program 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.

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