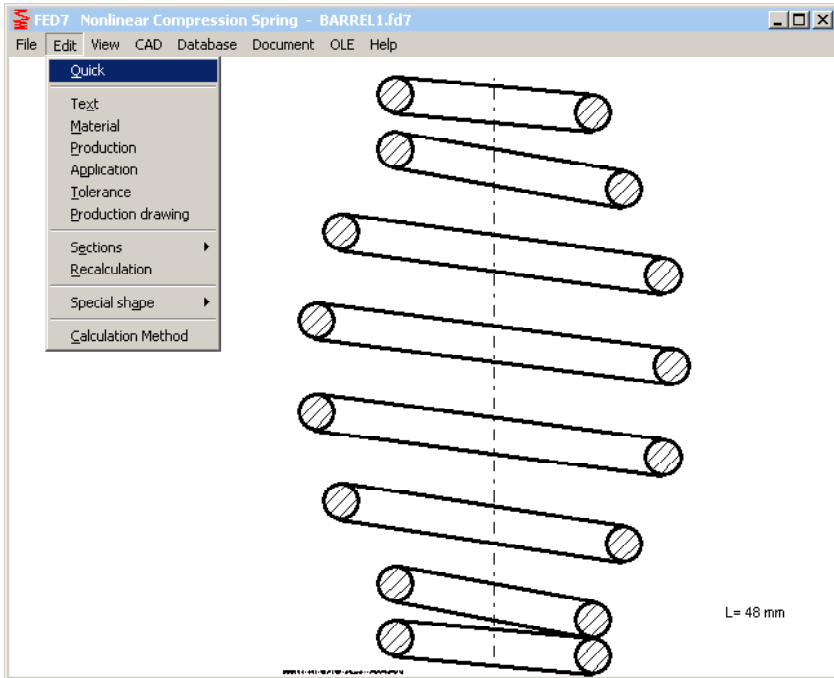# *F E D 7*

www.hexagon.de

Software for Calculation of Non-linear Compression Springs of Any Shape
### *for Windows*

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FED7 calculates spring load, deflection, spring rate and shear stress for compression springs of any shape. Therefore, non-linear compression spring must be divided into cylindrical sections. Diagrams and spring drawings can be graphically displayed and exported to CAD or DTP.

Calculation

The spring rate, and with it the degree of progession, is determined by dividing the spring into up to 500 cylindrical sections and by entering length, number of coils, coil diameter and wire diameter of each spring section. FED7 then calculates all necessary spring loads, deflection, spring rate, spring energy, shear stress, wire length and weight for the defined spring.
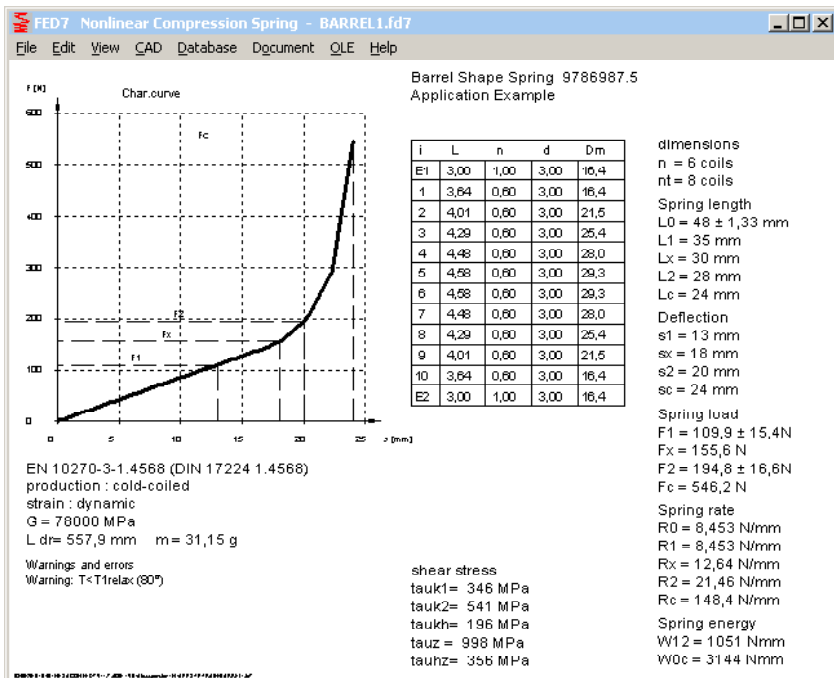
Special Shapes

For conical compression springs, barrel compression springs and waisted compression springs, FED7 generates the necessary spring sections. Generated spring shapes can be modified or extended by additional cylindrical spring sections.

Import/Export from/to MS-Excel

As alternative for internal input, spring sections can be entered in MS Excel, or imported from Excel.

Spring Drawing and Animation

Schematic spring drawings of any clamping length can be graphically displayed and exported to CAD. The different deflection of the individual coil sections under load are taken into account. The motion between any two spring positions can be simulated on screen in an animation.
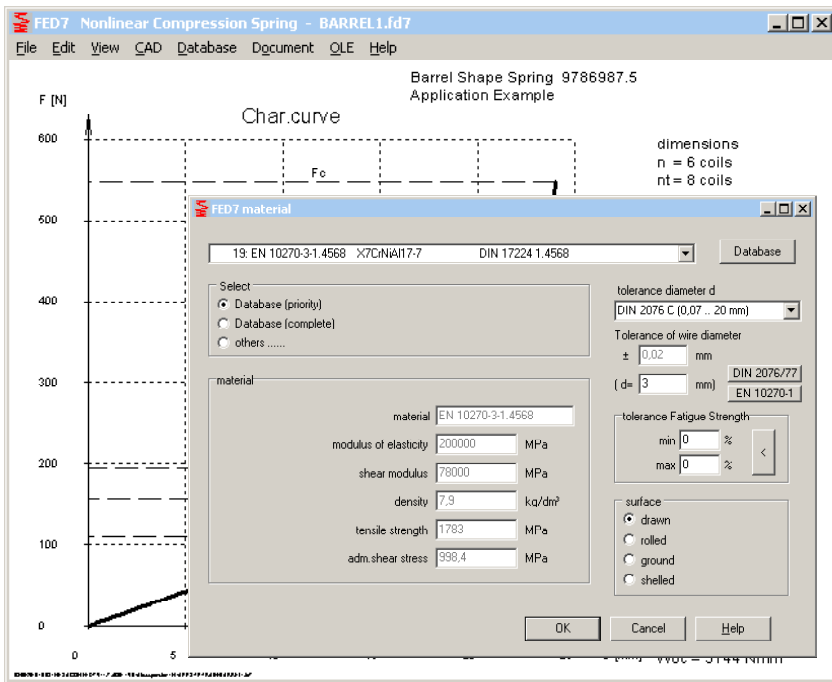
Diagrams
Loads and deflections of the spring curve, spring rate and spring energy are shown on screen in a diagram. Each screen graphic can be printed or exported to CAD and word-processing programs via the DXF or IGES interface.

Spring Curve and Spring Rate
The curve of a non-linear compression spring becomes progressive as soon as the first coils begin to touch. Spring load and spring rate are shown in a diagram as function of deflection.

Spring Energy
The spring energy is calculated from the integral of the load-deflection curve.

Goodman Diagram
The fatigue stress diagram shows whether or not the permissible variation of stress has been adhered to for dynamically loaded springs. The curves for fatigue stress (>10 mill.) as well as for one million and 100,000 load cycles are shown.

S-N Diagram and Haigh Diagram
As alternative to Goodman diagram, FED7 generates S-N diagram or modified Haigh diagram.

Quick View
Quick View displays drawings, diagrams and tables altogether on one screen.

Material Data Base
FED7 obtains the propertiues for the most important spring materials (tensile strength, permissible shearing stress in relation to wire diameter, shear module, E module, density) from material database.

Animation
Animation simulates oscillating of the spring between two self-defined positions.

Production Drawing
FED7 generates a complete production drawing which can be printed directly, or exported to CAD using DXF or IGES interface.

Export Formats
DXF, IGES, HTML, TXT, DBF, Excel, FD7.

System Requirements
FED7 is available as 32-bit app or as 64-bit app for Windows XP, Vista, Windows 7, 8, 10.

Scope of Delivery
FED7 program with database files, example applications, help images, user manual (pdf), non-expiring license for unlimited time use.

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.