

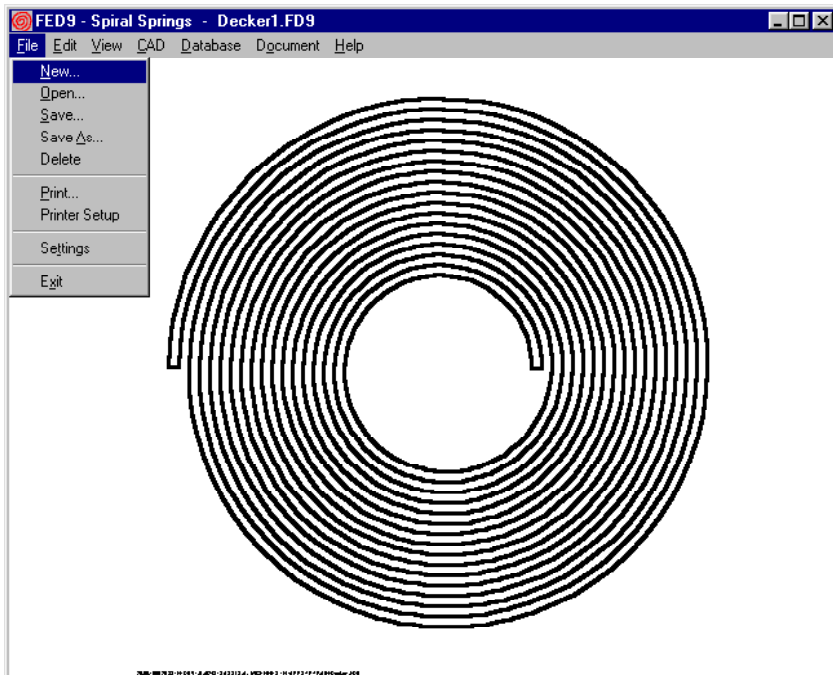
# FED9



www.hexagon.de

## Software for Calculation of Spiral Springs for Windows

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### Calculation

FED9 calculates torque and bending stress of spiral springs of flat steel. Optionally, even spiral springs made of round wire can be calculated. Characteristic curve (torque-torsion diagram) and scaled drawing of the spiral spring can be displayed graphically and exported as DXF or IGES files to CAD or DTP.

### Pre-dimensioning

At pre-dimensioning, only torques and stroke angle are entered. FED9 then roughly calculates the dimensions of an appropriate spiral spring.

### Dimensioning

At dimensioning, FED9 calculates an appropriate spiral spring from spring torque, stroke angle, interior and exterior coil diameter and working temperature.

### Re-calculation

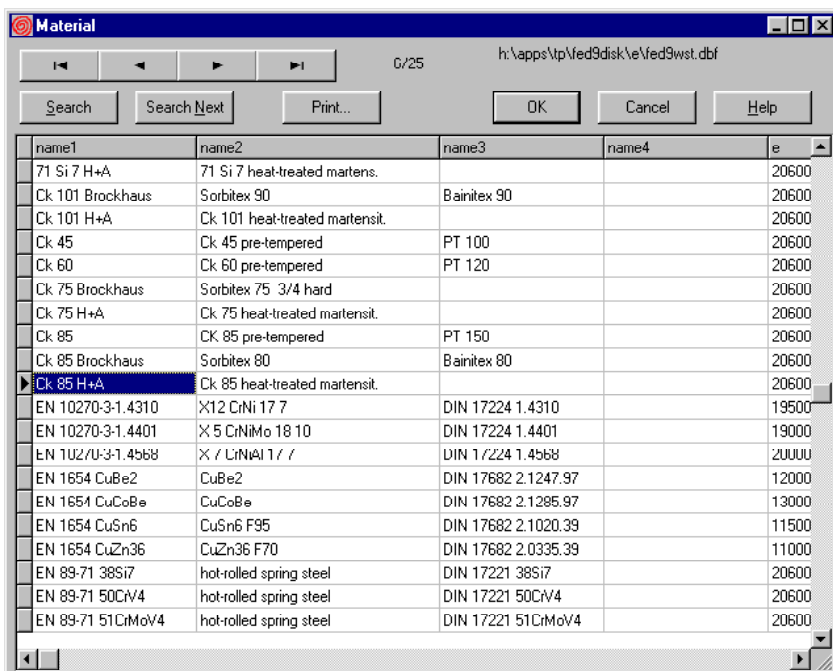
To check an existing spiral spring, enter its dimensions and spring angle. FED9 calculates the torque and bending stress for any spring angle.

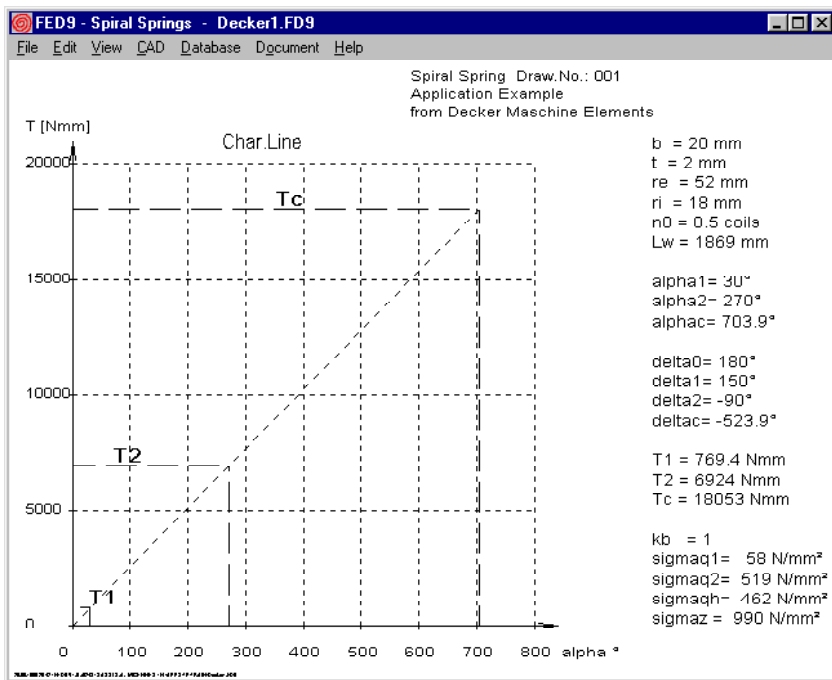
### Printout

The result printout includes all input and result data. The excerpt printout shows the most important spring data, abbreviated, on one page. Output on each Windows printer (or fax, pdf, tif etc.). There is also a feature for output of a HTML document for Intranet/Internet. And you can directly run MS Excel with FED9 calculation results in a worksheet.

### Units

FED9 can be switched between metric units (mm, N, MPa) and imperial units (inch, lbf, psi).





## Spring Drawing

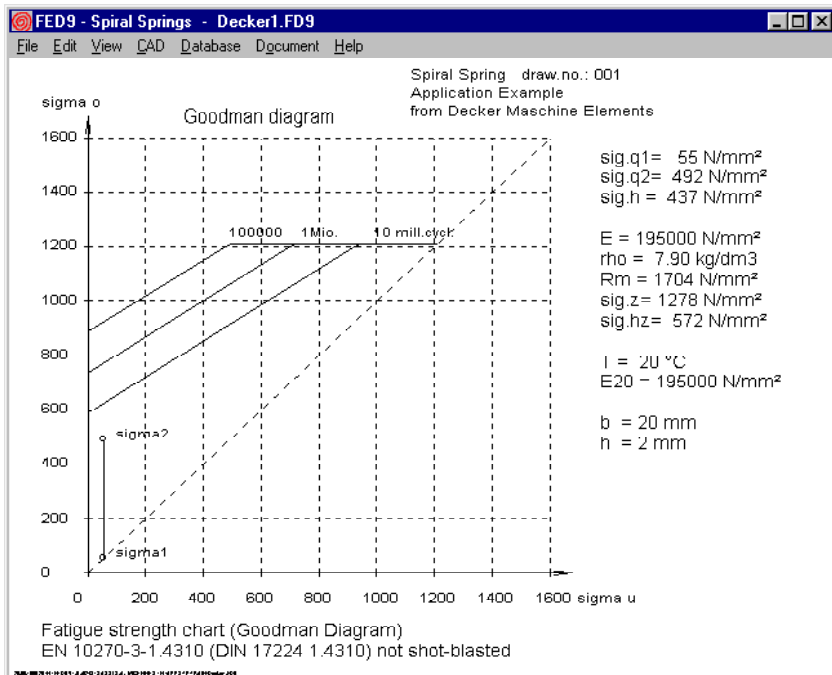
FED9 generates schematic spiral spring drawings which can be exported to CAD as DXF or IGES file.

## Diagrams

Spring characteristic curves and diagrams of tensile strength and bending stress dependent on the material thickness are shown on screen. The diagrams can be printed or exported to CAD or DTP.

## Goodman Diagram

The operating zone of the selected material for the calculated spiral spring is shown in the fatigue strength diagram. You can see whether or not the permissible variation of stress has been adhered to for dynamically stressed springs. The curves for fatigue strength (>10 million), as well as for 1 million and 100,000 load cycles are shown.



## Spring Energy

Spring energy is calculated and can be displayed as diagram.

## Quick View

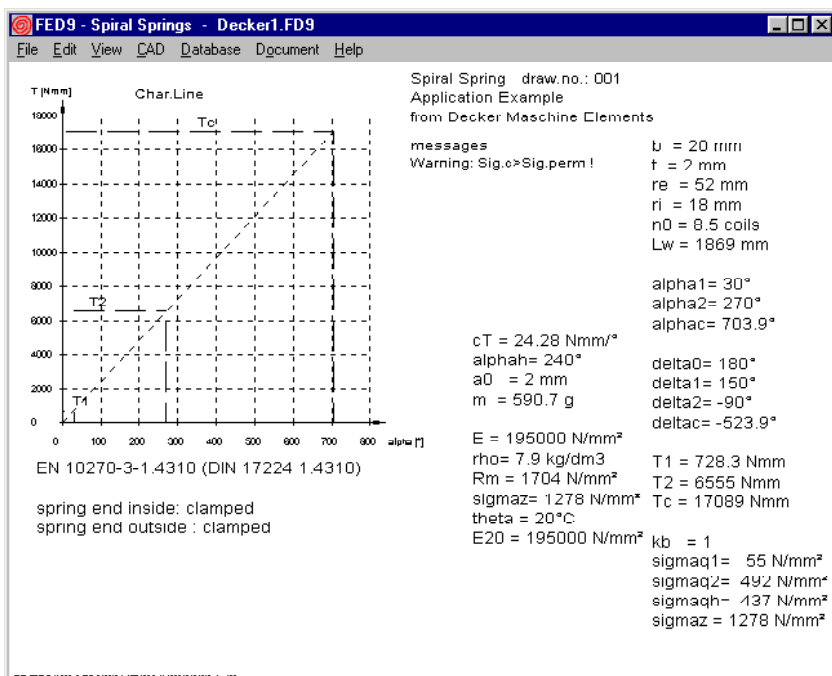
Quick Views show most important spring data together with drawings and diagrams altogether on one screen, or one print page, or export to CAD as DXF or IGES file.

## Material Data Base

The characteristic data of the most important spring materials (tensile strength, perm. shearing stress in relation to bar diameter, shearing modulus, E-modulus, density) is taken by FED9 from the integrated data base. The DBF file can be edited and appended by the user.

## Help System

You can display a help window for each input value. There are also auxiliary pictures for each symbol used, and each calculation formula. FED9 displays warnings when values are exceeded. For each error message you can display a more detailed description of the error and a remedy suggestion.



## Hard- and Software Requirements

FED9 is available as 32-bit or 64-bit application for Windows XP, Vista, 7, 8, Windows 10.

## Scope of Delivery

The FED9 program incl. sample data, auxiliary images, help text, user manual (pdf), input forms, license for unlimited time use and update service

## Guarantee

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

## Information and Update Service

HEXAGON Software is continuously improved and updated. Customers are regularly informed about updates and new editions.