F E D 1 5

Software for

Leaf Springs

for Windows

www.hexagon.de

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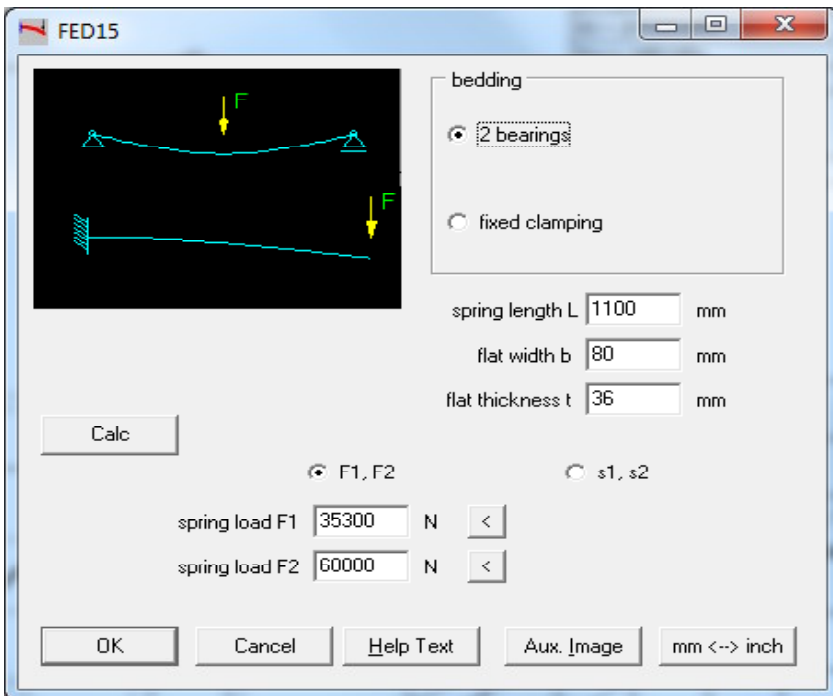

FED15 - Calculation of leaf springs

FED15 calculates simple leaf springs from rectangular flat spring material. Leaf spring can be fixed clamped or on two bearings, and loaded by only one axial force. The load introduction position must be at the spring end if fixed clamping, and in the middle of the spring if bedded on two bearings.

Pre-Dimensioning

FED15 also provides a pre-calculation. Enter one or two loads and deflection, and FED15 calculates dimensions of the leaf spring. Modify ratio of spring length to deflection and safety sigmaz/sigam2 to vary leaf spring dimensions.
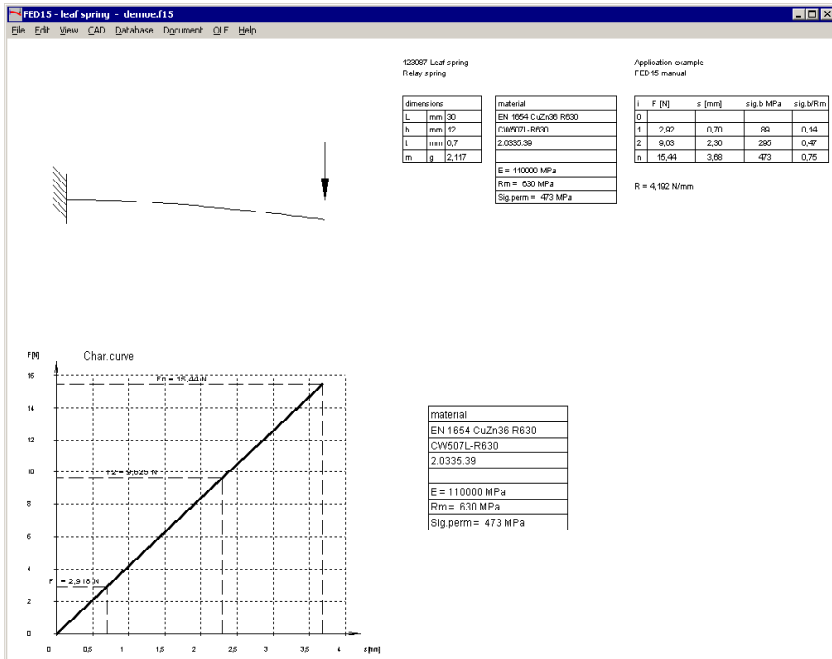
Units

FED15 can be switched between metric units (mm, N. MPa) and imperial units (inch, lbf, psi)
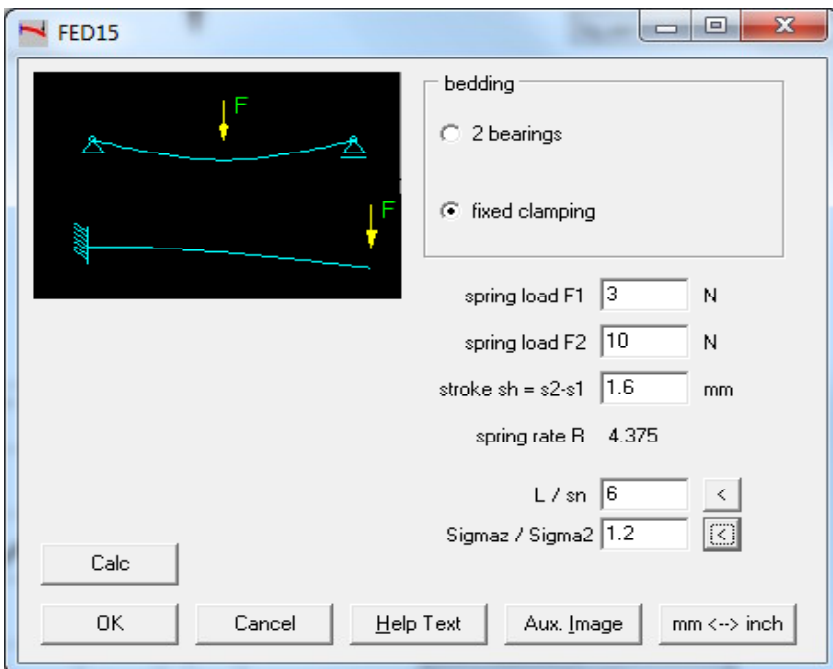
Material Database

Material properties of the most important flat spring materials (tensile strength, permissible shear stress and bending stress as function of material thickness, modulus of elasticity, density) are stored at the integrated material database. The dbf file may be extended and modified by the user.

123087 Leaf spring
Relay spring

Application example
FED15 manual

dimensions		
L	mm	30
h	mm	12
t	mm	0,7
m	g	2,117

material
EN 1654 CuZn36 R630
CW507L-R630
2.0335.39
E = 110000 MPa
Rm = 630 MPa
Sig.perm = 473 MPa

R = 4,192 N/mm

i	F [N]	s [mm]	sig.b MPa	sig.b/Rm
0				
1	2,92	0,70	89	0,14
2	9,63	2,30	295	0,47
n	15,44	3,68	473	0,75

Char.curve

Load-deflection diagram
FED15 calculates load-deflection line of the leaf spring.
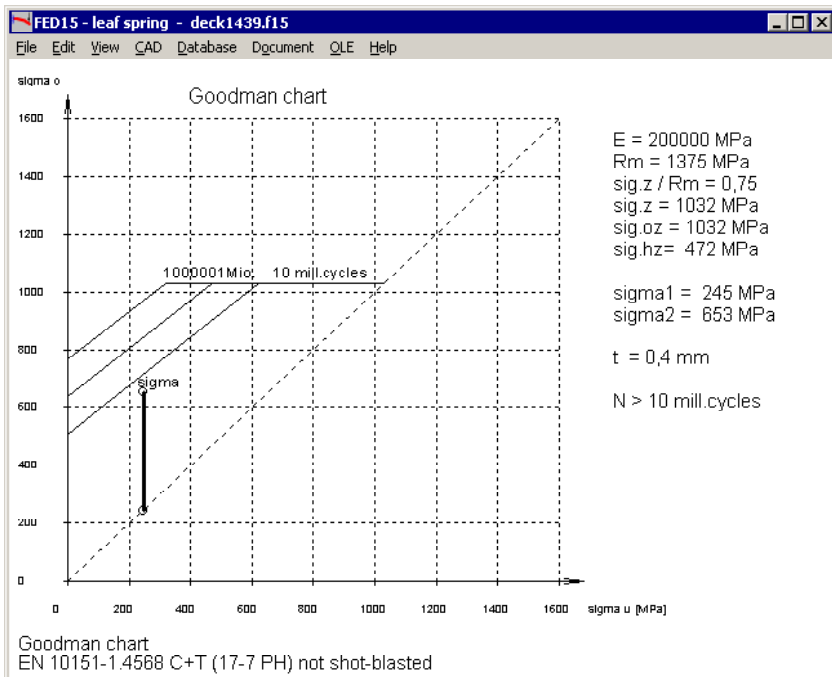
Goodman-Diagram
If dynamically loaded, Goodman diagram is useful to calculate fatigue strength safety and bearable load cycles of the spring.

Quick View
Load-deflection diagram together with tables of the essential spring data and results are printed on one screen.

Printout
Input data and calculation results with spring travel, spring length, spring load and stresses for different spring positions may be printed, saved as text or HTML file, or exported to MS Excel via OLE interface.

FED15 - leaf spring - deck1439.f15
File Edit View CAD Database Document OLE Help

Goodman chart

E = 200000 MPa
Rm = 1375 MPa
sig.z / Rm = 0,75
sig.z = 1032 MPa
sig.oz = 1032 MPa
sig.hz = 472 MPa

sigma1 = 245 MPa
sigma2 = 653 MPa

t = 0,4 mm

N > 10 mill.cycles

1000001 Mio   10 mill.cycles

Sigma

sigma o   sigma u [MPa]

Goodman chart
EN 10151-1.4568 C+T (17-7 PH) not shot-blasted

Production Drawing
FED15 generates a production drawing of the leaf spring. Drawing name, date, users and modifications are described in FED15.

HEXAGON Help System
Auxiliary text and images are available for all dialogue windows. If error messages appear, you can get description and remedy suggestion.
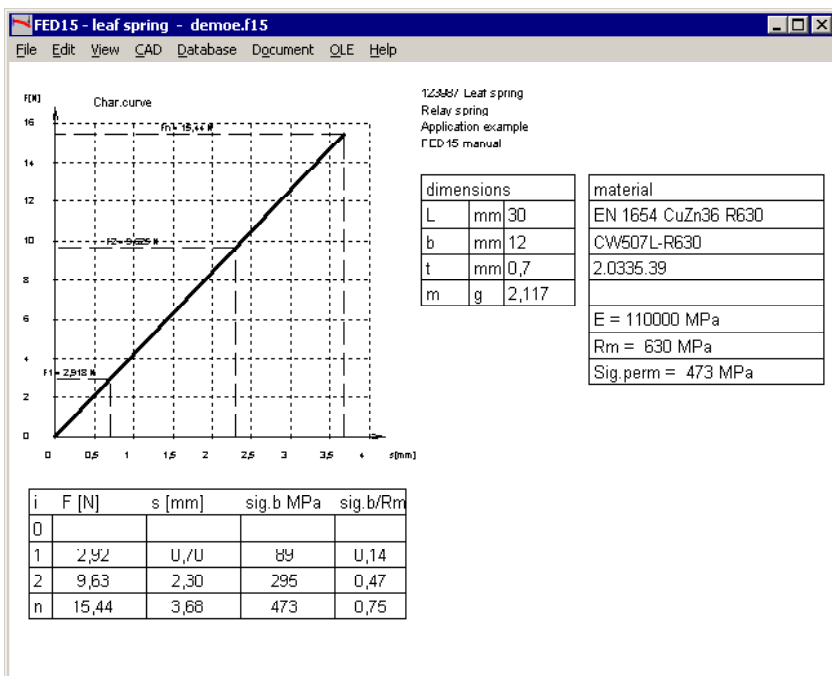
Interfaces
All drawings and diagrams can be saved as DXF or IGES file to be loaded with CAD programs.
The OLE interface lets you import/export data from/to Excel.

Export Formats
DXF, IGES, HTML, TXT, DBF, Excel, F15.

Import Formats
TXT, DBF, Excel, F15.

FED15 - leaf spring - demoe.f15
File Edit View CAD Database Document OLE Help

Char.curve

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System Requirements
FED15 is available as 32-bit app or as 64-bit app for Windows 7, Windows 8, Windows 10.

Scope of Delivery
Program with user manual (pdf), database files, 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. We provide help and support by email and hotline without extra charge.