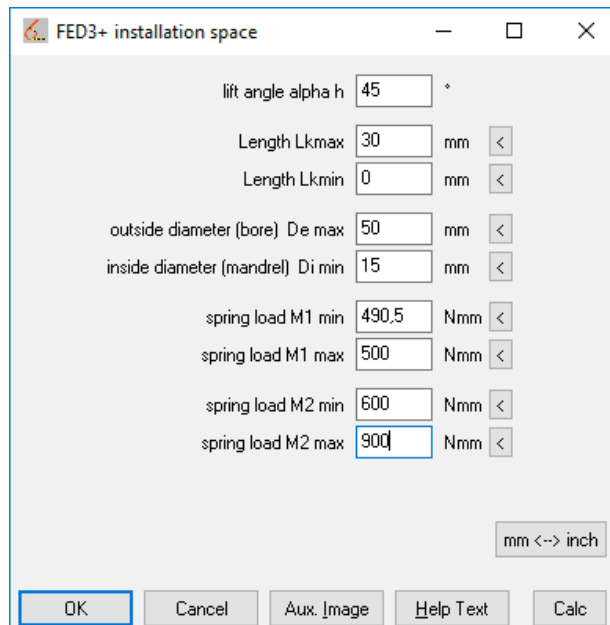


by Fritz Ruoss

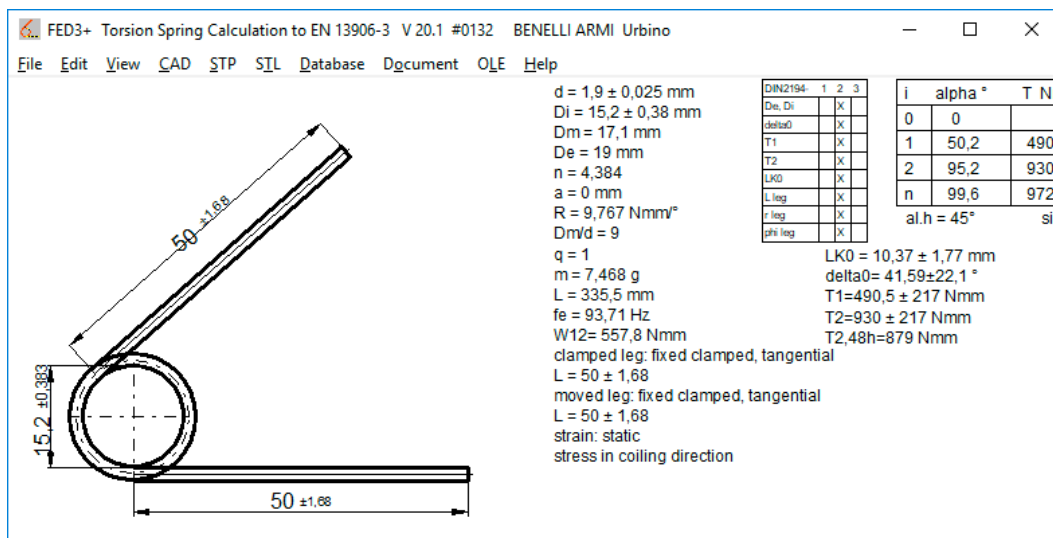
FED3+: Installation Space



Similar to FED1+, you can now also enter an installation space in FED3+ and calculate thousands of springs with different wire diameters, coil diameters and coil numbers. From the calculated variants, you can then choose the optimum torsion spring for the respective application (maximum safety, lowest weight, smallest length, maximum resonance frequency, smallest tolerance of torque according to DIN 2194).

FED3+: Torsion Spring Drawing with Dimensions

In Quick3, Quick4 and production drawing Quick3, the legs are drawn with dimensions now.



FED3+: Quick4 and Quick3 Production Drawing with 3D torsion spring

In Quick views, the number of coils or spring length is not visible in the spring drawing on first glance. Therefore, in the Quick4 view and in the "Production drawing Quick3" a 3D view of the torsion spring (center line) will be drawn now.

FED3+ Torsion Spring Calculation to EN 13906-3 - 375261E.fd3

File Edit View CAD STP STL Database Document OLE Help

HEXAGON FED3+ Torsion Spring Calculation to EN 13906-3 V20.1

l	alpha °	T Nmm	sigma b	delta °	LK mm	Di mm
0	0			180,0	18,68	14,35
q1	75,0	500,0	764	105,0	19,11	13,94
q2	120,0	800,0	1222	60,0	19,36	13,71
qn	140,5	936,8	1431	39,5	19,63	13,47

alpha = 45° sigma_z = 1431 MPa DP = 12,56 Dd <= 12,56

DIN/ISO	1	2	3
Di, Di	X	X	X
delta0	X	X	X
T1	X	X	X
T2	X	X	X
LK0	X	X	X
L leg	X	X	X
r leg	X	X	X
phi leg	X	X	X

W12= 510,5 Nmm
clamped leg: fixed clamped, bent-up, ext.
r = 4+1,4 L = 35±1,7
moved leg: fixed clamped, tangential
L = 50±1,7
strain: dynamic stress in coiling direction

LK0 = 18,68 ± 2,54 mm
delta0 = 180±34,1 °
T1 = 500 ± 228 Nmm
T2 = 800 ± 228 Nmm
T2,48h = 776,9 Nmm

Error messages
Error : sigma_h > sigma_hperm !

T(Nmm) Char.curve

Goodman chart

Fatigue strength chart (Goodman Diagram)
EN 10270-5-5H (ISO 9458-2-5H) not shot-peened

Responsible dept.	Technical reference	Created by	Approved by
Document type		Document status	
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Rev.	Date of issue	Lang.	Page
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28.10.2018 7:48

FED3+: New Price 600 EUR

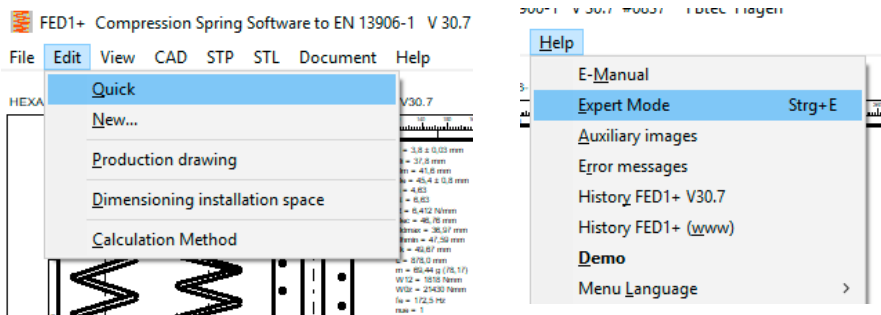
From now on, new price of FED3+ is 600 euro. For existing customers with FED3+ licenses nothing changes, you can update the latest version as usual at the update price of 40 euro. There is also no change in the price of packages containing FED3+ (Spring package, Mechanical Engineering package, complete package).

FED1+ Assembly Space: "Init" row added with initial spring data

Optimize	F1	F2	De	d	R	L0	L1	L2	Ln	Lc	n	tauz/k	tauhz/l	m[g]	Dm/d	freq0	L0/Dm
Init	113	226,1	36	4	9,421	120	108	96	48,98	42,31	8,5	337,4	168,7	97,42	8	167,2	3,75
S2 max (tauz/tauk)	113	199,0	37,6	4,25	7,165	123,8	108	96	72,77	62,49	12,58	258,8	111,8	162,0	7,847	110,5	3,711
Sh max (tauhz/tau)	113,1	180,9	41,5	4,25	5,65	128	108	96	68,11	57,64	11,45	258,3	96,8	166,1	8,765	97,29	3,437
m min [g]	113	180,9	43,45	3	5,658	128,0	108	96	15,26	12,78	2,217	757,7	284,4	25,85	13,48	300,8	3,164
Sa max (Lc min)	113	180,9	53,2	3,2	5,658	128,0	108	96	13,64	11,37	1,520	761,8	286,0	29,3	15,62	306,4	2,559
freq0 max	113	280,3	49,3	4	13,95	116,1	108	96	18,58	16,22	2,024	564,9	337,2	47,9	11,33	350,3	2,563
average S2, Sa	113	189,9	45,4	3,8	6,412	125,6	108	96	30,32	25,39	4,63	411,5	166,7	69,44	10,95	172,5	3,020
tol F min	113,1	180,9	39,55	3	5,65	128	108	96	18,09	15,18	3,010	691,6	259,2	28,3	12,18	271,4	3,503

Spring data of the original compression spring have been added at the first row of the table with optimized springs. This simplifies the comparison of the optimized springs with the initial spring.

FED1+: Expert Mode: Menu simplified for Beginners

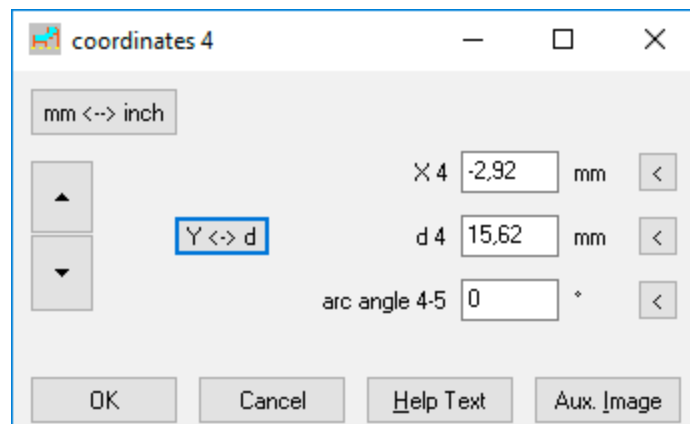


In FED1+, almost all input data was integrated in the Quick Input. Nevertheless, the individual entries still exist in the menu because of the preference of many users. In order to make the menu easier for beginners, you can now switch off the expert mode under "Help -> Expert Mode", then in "Edit" there are only 5 menu items left (instead of 18). Also, Database, OLE, and some positions in the File menu are no longer displayed.

This makes it easier for new users and occasional users to use the program.

GEO2 – Input diameter d or coordinate y

When entering rotation body, you can now input the diameter d instead of the y coordinate.



ZAR5 – Effective Face width

The screenshot shows a dialog box titled "ZAR5 beff." with the following fields and values:

Parameter	S	P	H	Unit
Facewidth b	35	40	44	mm
chamfers at end of face width (chamfer)	1	1	1	mm
face width center offset	0	2		mm

Calculated values:

- bSPeff (Z) = 33 mm bPHeff (Z) = 38 mm
- bSeff (Y) = 35 mm bPSeff (Y) = 38 mm
- bPHeff (Y) = 40 mm bHeff (Y) = 41,5 mm

Buttons: OK, Cancel, Help, Aux. Image

For different face width of the gear wheels, eventually combined with chamfers and center offset, effective face width used for tooth root fracture calculation (beffY) and for flank pressure calculation (beffZ) according to ISO 6336 / DIN 3990 has to be used. The effective tooth width from the input window with different tooth widths, chamfers and center offset is now correctly taken over again in the calculation of the pairs sun-planet and planet-ring gear.

SR1: Edit -> Clamping Plates: Insert/Delete Plates with self-defined material data

The screenshot shows a dialog box titled "clamping plates" with a list of clamping plates and buttons for New, Modify, Insert, Delete, and Drill hole.

ID	de	di	l	Material
01	99,0	17,7	0,35	chamfer
02	99,0	17,0	29,65	P 1
03	99,0	17,0	30,00	P 2

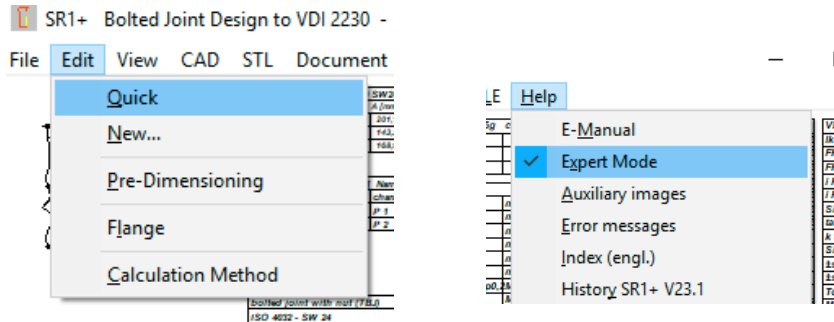
Buttons: New, Modify, Insert, Delete, Drill hole, OK, Cancel, Help, Aux. Image

When inserting clamping pieces between existing clamping plates under "Edit\ Clamping Plates", the permissible pressure against creep pGKr was not taken over, as a result of which the pGKr values □□ in the following clamping plates were changed. But only in the case that material data was entered individually and not selected by database. The bug was corrected in version 23.0.1. The error only affected users, which

1. do not use the quick input but "Edit \ Clamping Plates"
2. do not select the material from database, but enter material data manually.
3. use the buttons "Insert" and "Delete" under "Edit \ Clamping Plates".
4. calculation "Creep" activated at "Calculation Method".

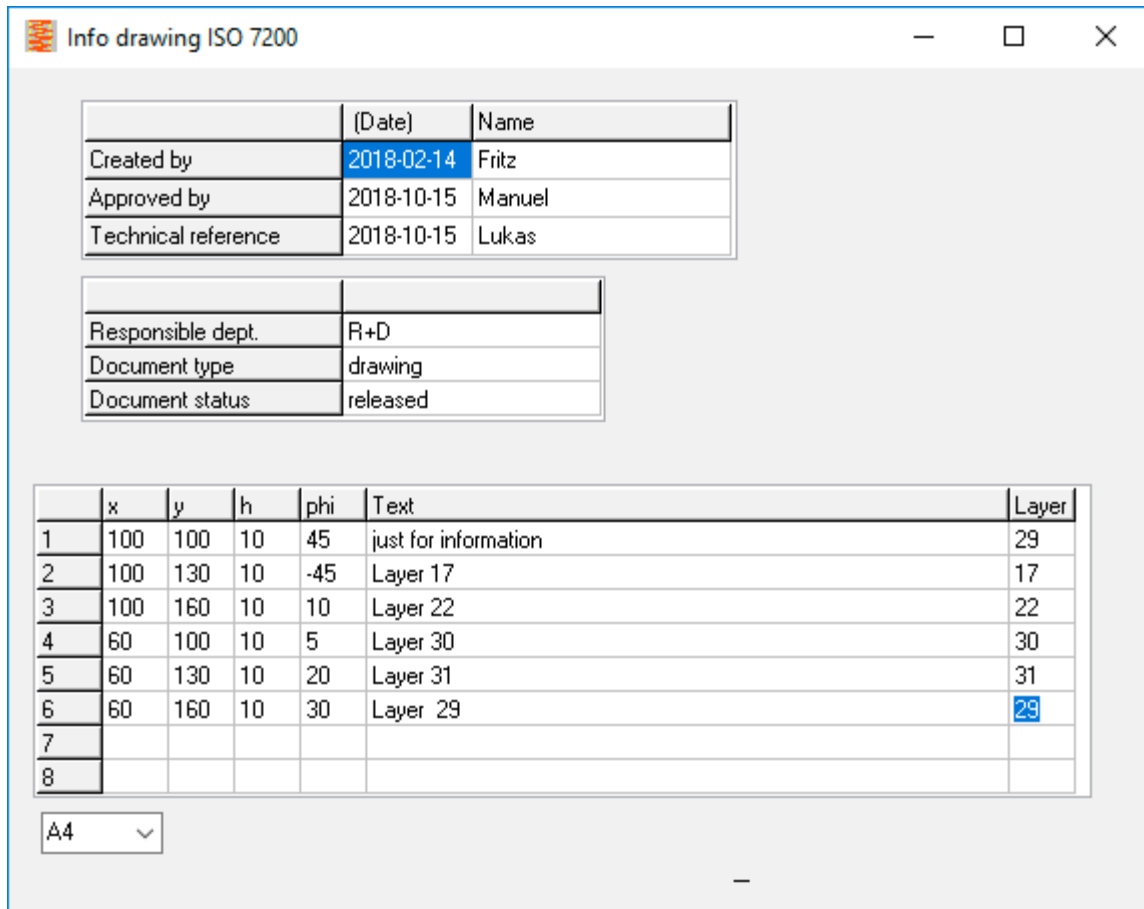
SR1+: Expert Mode

As in FED1+ you can also switch off "Expert Mode" in SR1 menu, then only the Quick Input is displayed instead of the individual entries. This is clearer and faster. But if you want to enter the material data of the clamping plates individually or even enter a spring constant for the clamping plate, you have to switch to expert mode (or remain in expert mode). The programs start with Expert Mode on.



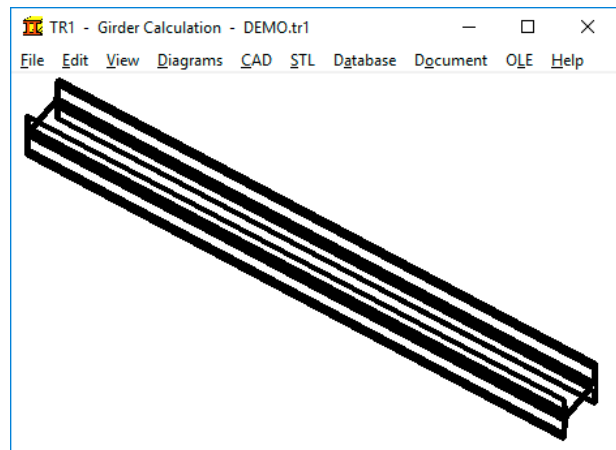
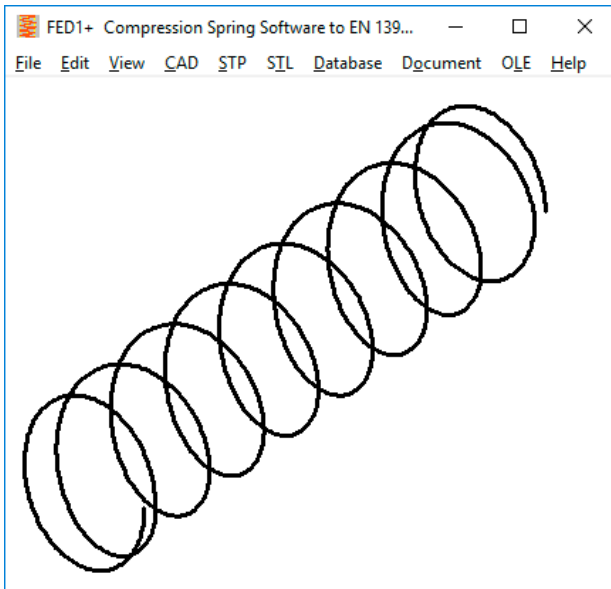
Self-defined text in drawings: Configure Layer (or colour)

When entering additional text under "Document\Drawing Info", you can now also configure the layer. The colour is assigned to the layer under "File\Settings\Colour". If you configure colour white, the text will be displayed on the screen (if the background is black), but not printed.



3D Drawing with/without coordinate system

Until now, a coordinate system has always been drawn in 3D drawings. This can now be omitted, so that the actual drawing is more visible.



Tip: Start program (FED1 + floating license) by double-clicking on the file

Question: Is there also the possibility to start the program directly from the .fed file? When I try to open a .fed file by double-clicking or "open with", it does not load the material databases as configured, as it probably does not know the correct working directory. Is there any possibility here? The same problem also affects Teamcenter, because we can not start the spring calculation directly from our folder system and need to save locally and then have to open separately via HEXAGON.

Answer: Yes, for all users of the network version you have to copy the cfg file from the start folder or working directory to "C:\HEXAGON\". Or in "C:\HEXAGON\FED1" at FED1+. In these folders, FED1+ will search the file fed1.cfg with the configuration data if it is not found in the folder containing the .fed file.

Google Translator Blossoms: “Entreprise de Ressort” is a “Frühlingsgesellschaft”



Apparently, Google Translator always translates in 2 steps: first everything to English, then to the target language. The French-to-English translation is still correct for “entreprise de ressort”: "Spring company", the error happens in the second step English-into-German (spring = Frühling). Vice versa, if you want to translate "Federfabrik" into French, nothing happens. Only when you write with blank "Feder fabrik", the translator displays "fabrique de plumes", in English "feather factory".

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Key Code

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HEXAGON Industriesoftware GmbH

Stiegelstrasse 8 D-73230 Kirchheim Tel. +49 7021 59578, Fax +49 7021 59986

Kieler Strasse 1A D-10115 Berlin Mühlstr. 13 D-73272 Neidlingen

Mobile: +49 163 7342509 E-Mail: info@hexagon.de Web: http://www.hexagon.de