

Test equipment

Universal Spring Tester



ULBRICH



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Process-Integrated determination of data characteristics and Quality control of Leaf and Coil springs

Springs need to be regularly inspected and their load carrying, energy absorption and elasticity characteristics controlled and recorded.

This testing is carried out by approved Rail and Rolling Stock maintenance organisations. The major elements of testing include the analysis of impact force on springs and the resulting correlation between compression achieved in relation to the height for coil springs, and in the case of leaf springs the relationship between the changing of length as the force is applied and then removed.

The force over distance controlled Ulbrich Spring Tester system enables the operator to carry out all the Statutory testing requirements. Upon tensioning and subsequent release of tension, the resulting compression and in the case of leaf springs,

the changing length; will be recorded by distance and force sensors. Using this saved information, the load carrying capacity, height and even the entire spring characteristic curve can be calculated. Thus allowing the Rail Test centre to use the data from every test cycle to compare the pre-programmed values defined by the Set tolerances with those actually achieved. The analysis of Required / Acceptable Values with those figures actually attained is presented on the Control Screen as IO (In Order) or as NIO (Not In Order) and is automatically saved. In addition to this function it is also possible to print this result onto a label to be then directly attached to the corresponding spring. Springs can now be paired up safely by analysing the information printed on the labels. Only those springs lying within allowable parameters can be paired up. The resulting spring characteristic curve can also be printed if this

should be requested for documentation. The test run for every type of spring is pre-programmed and can be called up by the operator by entering the relevant programme number.

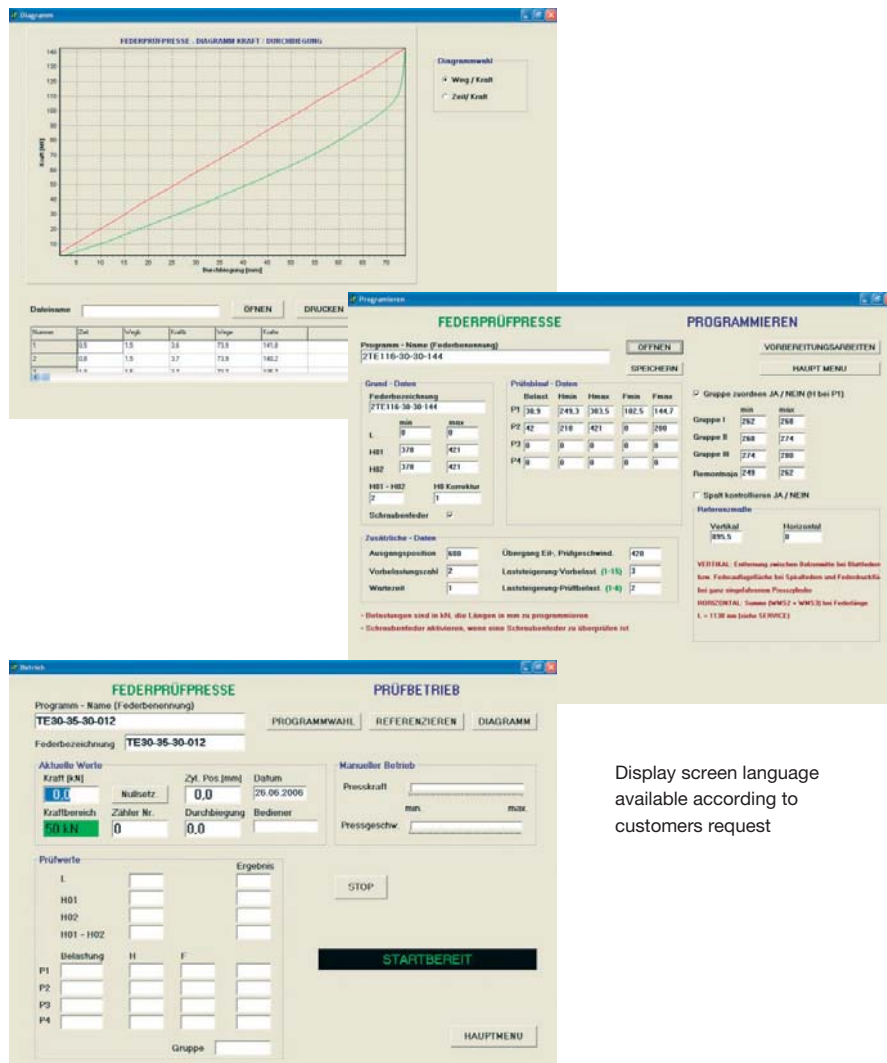
The name of the operator, sequential number and all other important factors are automatically saved for every test cycle.

In addition to fulfilling the criteria of the Quality and Safety Regulations, the utilisation of the fully automatic spring feeder and integrated test run systems enables the Railway test and Service department to raise their efficiency and safety levels whilst also optimising productivity.

With the addition of an extra press surface module, the ability to measure and record lateral deformation, lateral forces / vectors of coil springs can also be integrated.

Control Features

- Simple Windows-based control screens
- Programme memory capable of multiple press cycles / multiple spring types
- Programme call up via Part No., Contract No., or other variables.
- Protocol records operator name, part No., contract No.
- All relevant process data presented on a visually accurate and easy to read screen layout
- Actual real time values are displayed throughout press cycle
- Result of press, ie N.I.O. or I.O. displayed on control screen
- Operational hours and No. of parts tested; displayed & recorded
- Press result, operator, date & time, programme No., plus all system relevant data in numerical and graphical format is registered after every press run and saved on the P.C's Hard Drive
- The test results can be printed in the form of a Test Protocol or even printed as a label
- Statistical analysis optional
- Network connectivity
- Further interpretation and utilisation of results via standard software is possible upon request
- Memo fields can be integrated upon request



Display screen language available according to customers request

C200 kN Spring Tester for Leaf and Coil springs

High resolution / fully integrated distance measurement & control

Extra guide cylinder also prevents any unwanted rotational movement

Independent fine tuning of distance over force via high precision proportional hydraulic block

Highly robust precision dynamometer, the option of a second dynamometer provides the option of a second measurement range

Calibration function is included in the software

The entire working area is enclosed by a safety mesh additional protection and safety components can be integrated upon request

Press plate for parabolic springs positioning beneath the plate via transport guides

Lateral tension, travel and vector measurement module available upon request



Communication via PC, industry PC or notebook in order to set test parameters, to display, analyse and save results

Spring contact surfaces and press plates easily interchangeable

Rolling bearings can be easily adjusted in accordance to the spring size

Integrated measurement system to analyse the displacement of leaf spring in correlation to the compression force

Powered by low noise two speed pump mounted on oscillation dampening elements

Control of filter contamination, oil level and operational temperature

Fault display on control screen

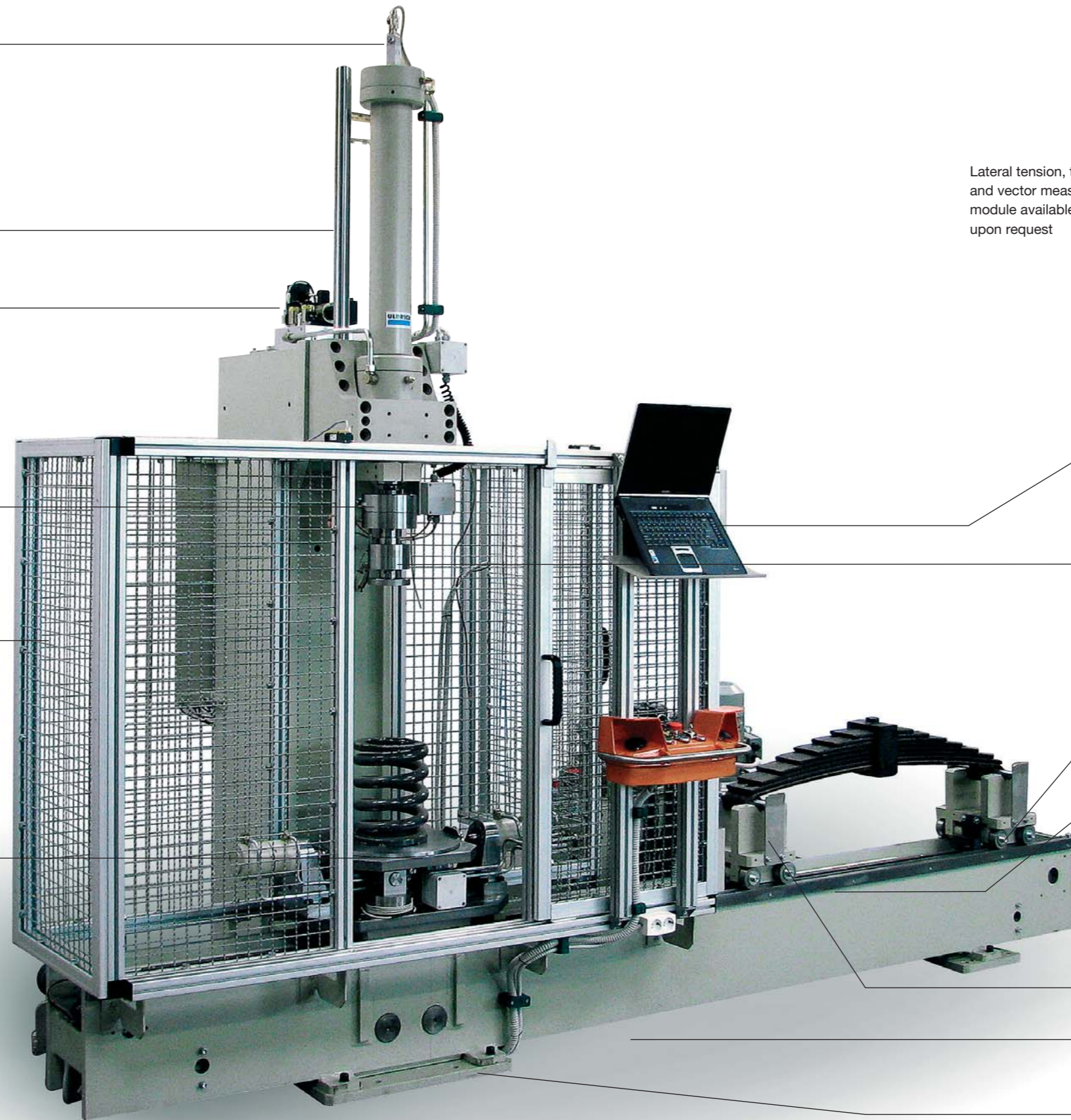
Spring feed and placement via transport guides

Open and easily accessible space for simple loading and unloading of heavy springs by fork-lifter or crane

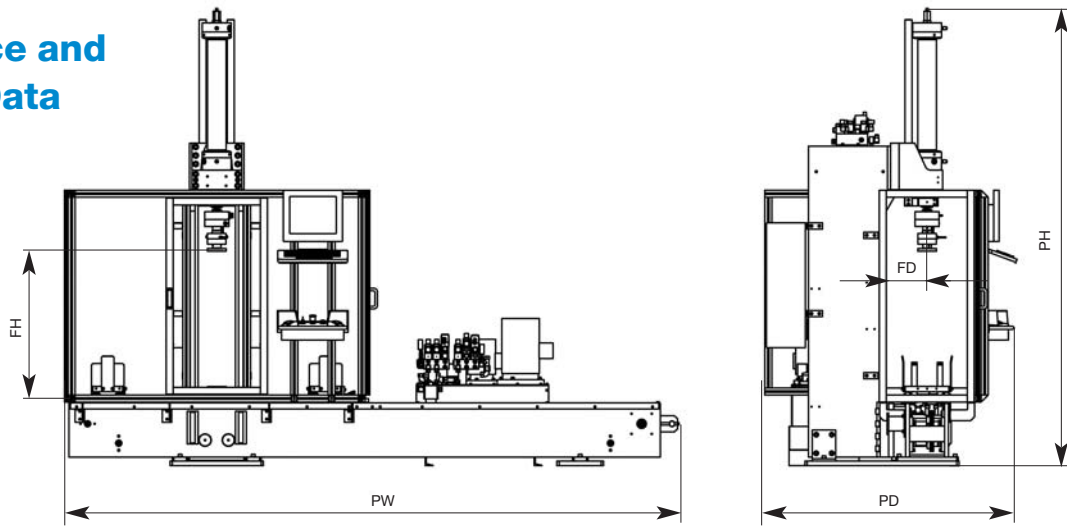
Wide and adjustable pedestal, hence no special flooring or extra foundations needed

Elongation of the press itself is compensated by the Spring Tester Software

Simple Windows based programming following the pre-defined requirements and test parameters set out by the relevant Governing Statutory Authority



Performance and Technical Data



Force kN	Nominal force max.	200	Press Dimensions mm	Depth of aperture FH	900
	Control range	10-195		Overhang FD	250
	Accuracy of force control	<2%		Minimum working height	460
	Testing Force Range 1	20-195		Width of press (dependant on length of springs)	4000
	Testing Force Range 2, (Optional)	5-50		Depth of press PD	1700
	Accuracy (from 10% of nominal force)	<1%		Pickup hole diameter	25
	Display resolution accuracy	0,1		Height of press PH	3000
Position mm	Total stroke	700	Weight kg	4500	
	Measuring accuracy	0,01	Motor		
	Positioning accuracy	0,1	Performance kW	5,5	
	Display resolution accuracy	0,1			
Speed mm/sec	Press speed	30			
	Feeding speed	70			
	Return speed	70			

Option to measure and record lateral force and vectors of coil springs

In addition to the analysis of the spring characteristics curve it is also frequently necessary to measure the lateral forces and accompanying vector data. This requirement can be fulfilled using our own specially designed software and hardware.

The lateral vector measurement module is simply mounted to the standard press platform. Three sensors placed below the press plate at a spacing of 120° measure the force applied simultaneously. The resulting vector of displacement (directional / force concentration) is calculated, following the release of the spring tensioning the spring is then turned in-line with the lateral force measurement sensor positioned along the lateral axis of the press, the pre-programmed force is then applied again. Thus

allowing the precise measurement and calculation of the force / displacement vector. If required the spring can be pushed back against this resulting force / displacement

beyond the centre point of the vertical spring axis. This can be subsequently plotted in conjunction with the spring characteristic curve.

