

SPRING TESTING MACHINES OVERVIEW

Spring testing has been one of the main interests of CADIS Prüftechnik GmbH from our beginning!

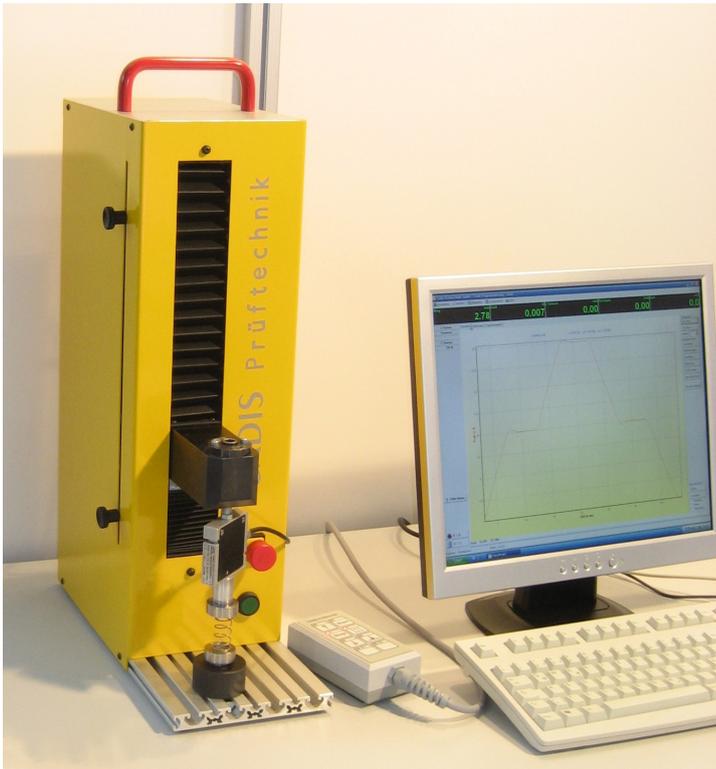
Starting with retrofitting and improving testing machines of our competitors with new control systems for better performance, we are designing and building load frames for testing machines for nearly 20 years now for every range of springs and components in a load range from 1kN to 500kN. Bigger machines starting at a maximum load of 100kN are designed for electromechanic or hydraulic drives.

For all of our testing machines, the design respects the special needs for spring testing from the first step, therefore every CADIS testing machine can be used for spring testing without any restrictions.

All machine series are available in a range of standard models but because of the modular design with modern 3D-CAD systems, modifications to meet customers needs are our speciality.

Common features of all our testing machines:

- High stiffness of load frames in axial and as well in lateral direction
- Robust design with steel guidings
- Electromechanical machines with preloaded, gapless ballscrews and gapless drive with timing belts
- Servo drives with high capacity for high dynamic and high testing speeds
- Hydraulic machines with low friction cylinders for accurate closed loop operation
- Control system always working in closed loop operation, capable of handling up to three independent axis and control of all axis
- Optional overload protection for load sensors
- Optional protection door / housing



Spring testing machine 81890 / 500N

Spring testing machine 81890

The smallest member of the CADIS family designed for testing small springs of any kind with the same performance as all other machines.

The machine was originally designed as a special design for testing contact forces or electrical connectors but soon found its place for testing small coil springs as well.

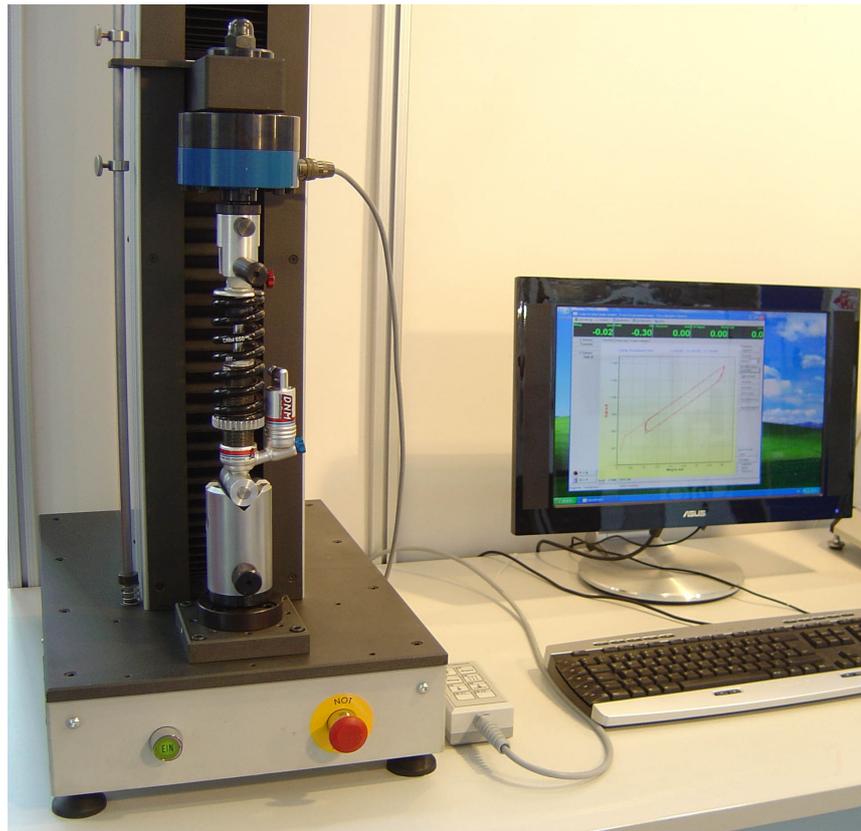
This type of machine often replaces manual machines because of its much better repeatability in an automatic test cycle.

Technical data

- Maximum load: 1000N
- Maximum travel: 250/500mm
- Maximum test speed: 500mm/min
- Options:
- X-Y table for automatically testing a set of components
- Protection around test space
- Touch pad for easy operation for simple production tests



Spring testing machine 81890 / 1kN with touch pad operation



Spring testing machine 81855

Still a compact, single column design, this machine is capable of higher loads up to 5000N and therefore perfectly fits for testing valve springs for cars.

The single column design allows as well a configuration with the load cell on the bottom plate of the machine and a guiding in the moving crosshead for testing of long springs which need a guiding thorn

Spring testing machine 81855 / 5000N testing motorbike shock absorber

Technical data

- Maximum load: 5000N
- Maximum travel: 500 / 800mm
- Maximum test speed: 500 / 1000mm/min
- Options:
- X-Y table for automatically testing a set of components
- Protection around test space



Spring testing machine 81855 / 1kN with compression plates 300mm for testing of cup springs



Spring testing machine 81874 / 25kN testing car springs

Spring testing machine 81870

Midrange series of testing machines from 10 to 50kN in two or four column design.

This machines are typically used for testing automotive springs including the measuring of excentricity of piercing points and envelope measurement.



Spring testing machine 81870 / 10kN with side load unit testing influence of side load to damping characteristics

Technical data

- Maximum load: 10 / 25 / 50kN
- Maximum travel: 800 / 1400 / 2000mm
- Maximum test speed: 500 up to 3000mm/min
- Options:
- Flex system for car springs (measuring side loads, load vector, excentricity of piercing points, bending moment)
- Side load unit (second load axis)
- Protection around test space



Spring testing machine 81830 / 250kN testing elastomer railway spring

Spring testing machine 81830

(former models CS 250 ST and CS 400 ST)

Testing machines for big springs with a load range from 100 to 600kN.

This machines are typically used for testing heavy springs used for railway, trucks or as vibration absorbing springs in buildings.

Usually this type of machines is build as hydraulic machines with a control system used as well for controlling industrial robots. By this the machine can control up to 3 axis simultaneously for example testin lateral deflection and loads of coil springs using an X-Y table.

Smaller types of the series (up to 200kN) are available as well as electromechanical machines with limited testing speed.

Technical data

- Maximum load: 100 / 250 / 400 / 600kN
- Maximum travel: 800 / 1400 / 2000mm
- Maximum test speed: 500 up to 2000mm/min
- Options:
- Flex system for railway springs (measuring side loads, side deflection, and side rate)
- Side load unit (second load axis)
- Protection around test space



Spring testing machine 81830 / 100kN with side load unit testing motor bearing



Spring testing machine 89860 / 600kN testing heavy leave spring

Spring testing machine 89800

(CS - III - ST)*

Testing machines for big coil springs and leaf springs load range from 250 to 600kN.

This machines are typically used for testing heavy springs used for railway and trucks.

All machines of this series are available are hydraulic machines with and available with a machine table in different designs meeting the customers requirement.

* CS - III - ST was former model name where III represents max. load in kN

Technical data

- Maximum ram force: 250 / 400 / 600kN, (infinitely variable, closed loop controlled)
- Maximum ram stroke: 500 / 800 / 100mm infinitely variable, closed loop controlled)
- Maximum test speed: 1000 up to 8000mm/ min (depending on hydraulic power pack)
- Height of working table above floor: minimum 300mm without optional tables, configurable to customer request
- Options:
- Flex system for railway springs (measuring side loads, side deflection, and side rate, see detailed specificfctaion)
- Machine table for leaf springs will roller carriers and measurement systems for arm lenght and optional scragging arm for single and two stage springs
- Chip crane for loading springs
- Protection around test space



Spring testing machine 89820 / 200kN testing coil spring



Flex system 250kN with 6 channel load measuring

Flex testsystem for coil springs

The CADIS Flex system is a measuring system which can be installed in all testing machines of the series 81870, 81830 and 89800.

In addition to the axial load measurement it allows the measurement of lateral loads, lateral deflection, lateral spring rate and bowing angle.

The system consists of an X-Y-table with servo controlled hydraulic actuators, load cells and length measuring systems in both axis. The table can be operated in a "locked" mode where it stays in the machine center to measure side loads or in a "floating" mode where it allows the spring to move in lateral direction to measure the deflection of the spring. Synchronized movement is possible in full closed loop control to apply a side load to the spring under any load angle. Operating modes can be combined within one test cycle.

For easier loading and unloading of the springs the system can be built in a version with longer travel in the Y-Axis so that the complete table can move out of the machine frame automatically to a loading position.

Technical data

- Maximum lateral force: 25 or 50kN, (infinitely variable, closed loop controlled), load measurement within +/- 1% from 2kN to max. force
- Maximum lateral stroke: +/-50mm in both axis (infinitely variable, closed loop controlled), measurement for lateral displacement within +/-1% from 1 to 50mm
- Repeatability for angle of lateral load and lateral displacement and for bowing angle +/-5° with lateral load at least 2kN or lateral deflection at least 1mm
- Maximum lateral speed: 500mm/min
- Height of working table of the machine is increased by 300mm
- Option: Y-Axis can be realized with longer travel of up to 700mm for machine series 81830