

Index of our Standard Products



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Spring load tester:	Manual testers 10,000 N up to 1000 N Motor driven testers 1000 N up to 150.000 N PC controlled testers 50 N up to 150.000 N
Torsion spring tester:	Manual testers 2 up to 1000 Ncm PC controlled testers 2 Ncm up to 150 Nm
Test and scrapping units:	Malteser drive 0,001 up to 200 N Indexing table 0,001 N up to 5000 N Hydraulic up to 5000 N
Spring coiler:	Comp. springcoiler 0,1 - 0,8 mm wire dia. Torsion springcoiler 0,2 - 4 mm wire dia.
Grinding machine:	Add to coilers and feedingsystems
Length gauges:	For various spring coilers
Packing machines:	Tray packing max. 3600 parts per hour Plastic sheet wrapping max. 3600 parts per hour Storage magazine
Loading devices:	For throughfeed grinding For cycled loading plates
Feeding technology:	Conveyors, drum feeders, bowl feeders, spring detanglers, automatic spring feeding systems
Swift for coils:	0,1 mm - 5 mm wire diameter Load of coils: 80 kg, 300 kg, 500 kg, 700 kg
Drum decoiler:	For various drumsizes
Strip material decoilers:	Weight of coils: 80 kg, 600 kg
Tempering furnace:	Different sizes
Spring fatigue tester:	FDS 1 app. 100 N at 15 mm stroke FDS 2 app. 1000 N at 50 mm stroke

Automatic assembly machines - customer specific solutions

Spring load tester WG-1



WG 1

Load range: 0-10 N
Resolution: 0,0001 N

The tester WG 1 has two guides with 4 bearings. Maximum test length is 120 mm. The movement of the testplates is manual with a lever and has an additional fine adjustment screw. Two length stops can be set up for batch test of springs. The tester has a 10 N load cell. The length display is on a digital vernier with data output and has a resolution of 0,01 mm. For compress springs the maximum length is 120 mm. The testplates have a diameter of 30 mm and are adjustable in parallelity. Maximum measured value memory is built in. Dataoutput RS 232

Options: test on rod, parallel data output.

Spring load tester WG-3/2



Picture: Load tester WG 3/2
available with specified load ranges:

	100 Newton	Resolution	200 Newton	Resolution
Loadrange 1:	0- 2 N	0,001 N	0- 2 N	0,002 N
Loadrange 2:	0- 20 N	0,01 N	0- 20 N	0,01 N
Loadrange 3:	0- 100 N	0,1 N	0- 200 N	0,1 N

Also available with other load cells for example 0 - 10 N, 0 - 50 N, 0 - 500 N

The tester **WG 3/2** has two guides with 4 bearings. The movement of the testplates is manual with a lever and has an additional fine adjustment screw. Two length stops can be set up for batch tests of springs. The tester has a RS 232 data output to give the load values to a PC or SPC system. The tester is available with a large variety of load cells: 10 N, 50 N, 100 N, 200 N, 500 N. The length display is on a digital vernier with data output and has a resolution of 0.01 mm. For compress springs the maximum length is 100 mm and for tension springs the maximum length is 150 mm. The testplates have a diameter of 45 mm and are adjustable in parallelity.

Spring load tester WG-3/3



Picture: Load tester WG 3/3
available with specified load ranges:

	100 Newton	Resolution	200 Newton	Resolution
Loadrange 1:	0- 2N	0,001 N	0- 2N	0,002 N
Loadrange 2:	0- 20N	0,01 N	0- 20N	0,01 N
Loadrange 3:	0- 100N	0,1 N	0- 200N	0,1 N

Also available with other load cells for example 0 - 10 N, 0 - 50 N, 0 - 500 N

The tester **WG 3/3** has two guides with 4 bearings. The movement of the testplates is manual with a lever and has an additional fine adjustment screw. Two length stops can be set up for batch tests of springs. The tester has a RS 232 data output to give the load values to a PC or SPC system. The tester is available with a large variety of load cells: 10 N, 50 N, 100 N, 200 N, 500 N. The length measurement is based on a optical ruler system which is displayed digital with a resolution of 0.01 mm. For compress springs the maximum length is 100mm and for tension springs the maximum length is 150mm. The testplates have a diameter of 45 mm and are adjustable in parallelity.

Spring load tester WG-4/2



Picture: Load tester WG 4/2
available with specified load ranges:

	100 Newton	Resolution	200 Newton	Resolution
Loadrange 1:	0- 2N	0,001 N	0- 2N	0,002 N
Loadrange 2:	0- 20N	0,01 N	0- 20N	0,01 N
Loadrange 3:	0- 100N	0,1 N	0- 200N	0,1 N

Also available with other load cells for example 500 N

The tester **WG 4/2** has two guides with 4 bearings. The movement of the testplates is manual with a lever and has an additional fine adjustment screw. Two length stops can be set up for batch tests of springs. The tester has a RS 232 data output to give the load values to a PC or SPC system. The tester is available with a large variety of load cells: 100 N, 200 N, 500 N. The length display is on a digital vernier with data output and has a resolution of 0.01 mm. For compress springs the maximum length is 250 mm and for tension springs the maximum length is 300 mm. The testplates have a diameter of 50 mm and are adjustable in parallelity.

Spring load tester WG-4/3



Picture: Load tester WG 4/3
available with specified load ranges:

	100 Newton	Resolution	200 Newton	Resolution
Loadrange 1:	0- 2N	0,001 N	0- 2N	0,002 N
Loadrange 2:	0- 20N	0,01 N	0- 20N	0,01 N
Loadrange 3:	0- 100N	0,1 N	0- 200N	0,1 N

Also available with other load cells for example 500 N

The tester **WG 4/3** has two guides with 4 bearings. The movement of the testplates is manual with a lever and has an additional fine adjustment screw. Two length stops can be set up for batch tests of springs. The tester has a RS 232 data output to give the load values to a PC or SPC system. The tester is available with a large variety of load cells: 100 N, 200 N, 500 N. The length measurement is based on a optical ruler system which is displayed digital with a resolution of 0.01 mm. For compress springs the maximum length is 250 mm and for tension springs the maximum length is 300 mm. The testplates have a diameter of 50 mm and are adjustable in parallelity.

Spring load tester WG-5/3



WG 5/3 Tester

Max. length comp.springs 635mm
 Max. length tension springs 550mm

Load ranges	1000 Newton	Resolution	2000 Newton	Resolution	5000 Newton	Resolution
range 1:	0 - 20 N	0,01 N	0 - 20 N	0,02 N	0 - 500 N	0,1 N
range 2:	0 - 200 N	0,1 N	0 - 200 N	0,1 N	0 -5000 N	1 N
range 3:	0 -1000 N	1 N	0 -2000 N	1 N	(other ranges on request)	

The tester is a desktop modell for checking compression and tension springs. Hooks for testing tension springs are available in different diameters. The movable upper testplate is guided by two columns. The movement is performed by tow precision ballscrews and a Handwheel. The upper testplate can be changed and replaced by a drilled testplate for testind long, slender spring on a rod. The testplate have a diameter of 95 mm. Testplate for testing on a rod can be manufactured on your demands. The length is measured by an incremental decoder with a resolution of 0.01 mm. For tension springs there is a possibility to preset the length for setup with a gauge. The tester has a RS 232 data-output for the load for connecting it to a PC.

Spring load tester-WG 27



WG 27 Tester

Max. Length comp.springs 635mm

Max.Length tension springs 550mm

Load ranges	1000 Newton	Resolution	2000 Newton	Resolution	5000 Newton	Resolution
range 1:	0 - 20 N	0,01 N	0 - 20 N	0,02 N	0 - 500 N	0,1 N
range 2:	0 - 200 N	0,1 N	0 - 200 N	0,1 N	0 -5000 N	1 N
range 3:	0 -1000 N	1 N	0 -2000 N	1 N	(other ranges on request)	

The tester **WG 27** has it´s own steel table and is developed for compress spring testing. Tension spring test hooks are available. The movable slide with the upper testplate is guided by two bearings. The motor drives two precision ball screws which move the upper testplate. The motor is controlled by a joystick and has two basic positions: fast for coarse positioning and slow that allows you to place the testplate on the testlength. The upper testplate can be replaced quickly by drilled plates for testing springs on a pin or a tension spring hook. The testplates have 95 mm diameter. Drilled upper plates can be produced by your demands. The length is measured by a incremental decoder and is displayed with a resolution of 0.01 mm. An output for a x-y writer is available optionally to make a load /length diagram. A data output in a RS 232 format is built in for the load.

Spring load tester WG-29



WG 29 Tester

Max.Lengthcomp.springs 770mm

Max.Length tension springs 670mm

Load ranges:	10 000 Newton	Resolution	20 000 Newton	Resolution
range 1:	0 - 1000	0.1 N	0 - 1000	0.1 N
range 2:	0 - 10 000	1 N	0 - 20 000	1 N

The tester **WG 29** has it´s own steel table and is developed for compress spring testing. Tension spring test hooks are available. The movable slide with the upper testplate is guided by two bearings. The motor drives two precision ball screws which move the upper testplate. The motor is controlled by a joystick and has two basic positions: fast for coarse positioning and slow that allows you to place the testplate on the testlength. The upper testplate can be replaced quickly by drilled plates for testing springs on a pin or a tension spring hook. The testplates have 250 mm diameter. Drilled upper plates can be produced by your demands. The length is measured by a incremental decoder and is displayed with a resolution of 0.01 mm. An output for a x-y writer is available optionally to make a load / length diagram. A data output in a RS 232 format is built in for the load.

Spring tester AFK-6



Fully automatic Springtester AFK 6 100 N or 200 N

Max. testlength compression springs:	100 mm
Max. testlength tension springs:	60 mm
Testplate diameter:	45 mm

Loadcells available:	100 Newton	Resolution	200 Newton	Resolution
Loadrange 1:	0 - 2 N	0,001 N	0 - 2 N	0,001 N
Loadrange 2:	0 - 20 N	0,01 N	0 - 20 N	0,01 N
Loadrange 3:	0 - 100 N	0,1 N	0 - 200 N	0,1 N
(other ranges on demand)				

All functions are controlled by the built in PC.

Database for spring specifications and required tests, statistic on colour monitor.

possible tests:

load at a length, length at a load, free length of spring, solid length at block, springrates, load- / or length differences, characteristic diagramm with specified testpoints. Individuell test procedures are programmable.

Options: CAQ - Software with archive for testsheets and SPC charts additionell

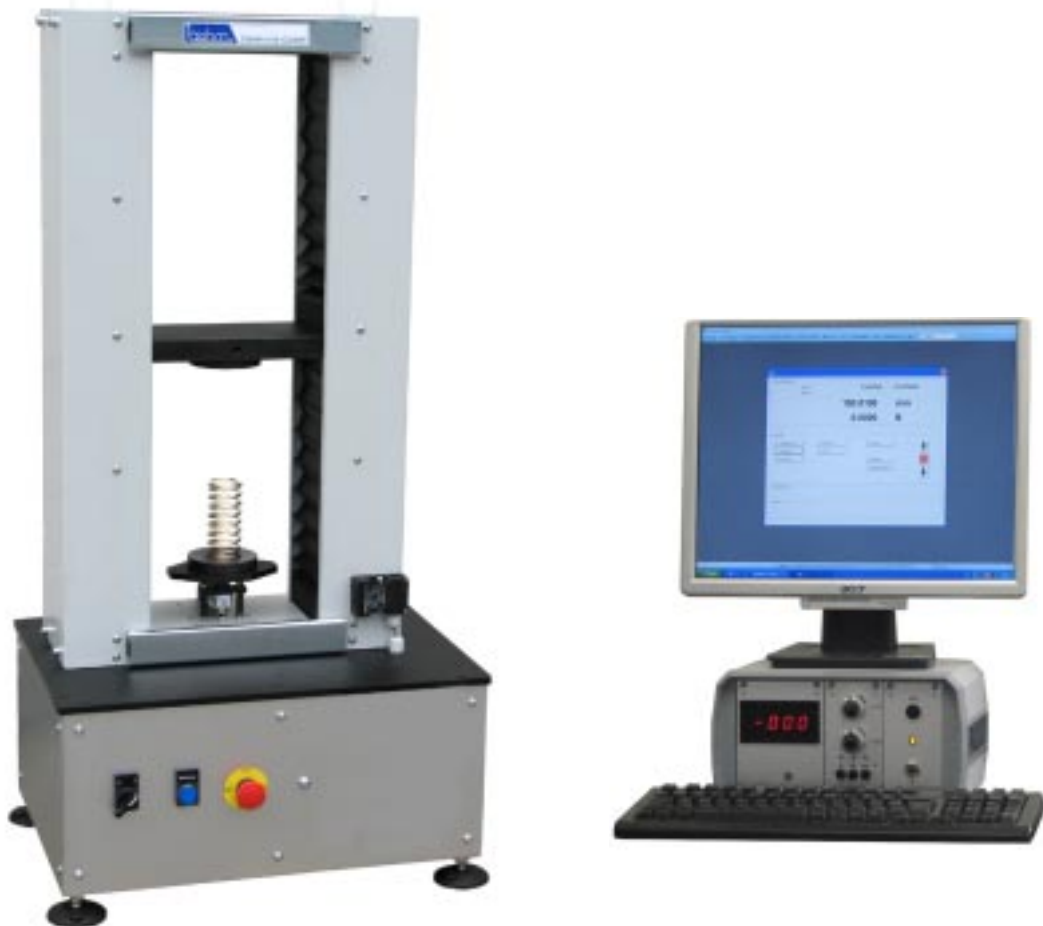
Tension spring hooks

Testplates for test on a pin for long, slender springs and pins on your specifications.

Dataexport or import to existing CAQ systems in the standard software.

Laser printer or inc jet printer.

Spring tester AFP7 - S



Automatic spring tester AFP7-S for static tests

Max. distance of testplates for tension springs: 490 mm, for compression springs: 570 mm

Testplates dia. 95 mm or 150 mm

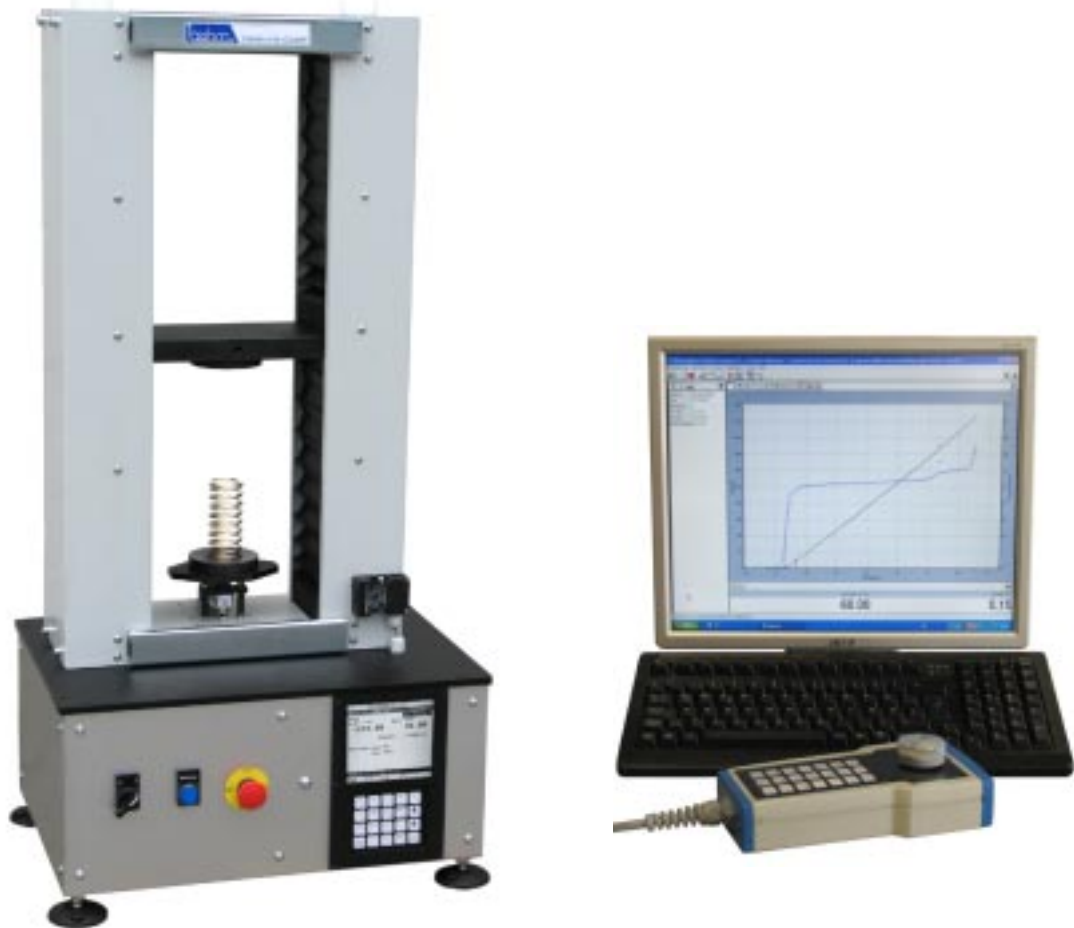
Technical data:

Loadranges	1000 Newton	Resolution	2000 Newton	Resolution	5000 Newton	Resolution
Loadrange 1:	0 - 20 N	0,01 N	0 - 20 N	0,02 N	0 - 500 N	0,1 N
Loadrange 2:	0 - 200 N	0,1 N	0 - 200 N	0,1 N	0 - 5000 N	1 N
Loadrange 3:	0 - 1000 N	1 N	0 - 2000 N	1 N		

(other load ranges on request)

- All functions are controlled by computer. Load at a length, length at a load, free length, solid length, rate and spring diagram can be tested with static values
- Database for specifications and way of test, statistic on colour screen
- Options: - SPC-Software with archive, - Testplates for test on pins, - Hooks for tension springs

Spring tester AFP7 - D



Automatic spring tester AFP7-D for dynamic or static tests

Max. distance of testplates for tension springs: 490 mm, for compression springs: 570 mm

Testplates dia. 95 mm or 150 mm

Technical data:

Loadranges 1000 Newton Resolution, 2000 Newton Resolution, 5000 Newton Resolution

Loadrange: 0 - 1000 N 0,01 N 0 - 2000 N 0,01 N 0 - 5000 N 0,1 N

(other load ranges on request)

Automatic Springtester for dynamic or static tests of compression or tension springs. The tester has a rigid load frame with two guide bars and two precision ball-screws. It can perform various test sequences either length regulated, load regulated or combined. Tests of free length, blocklength, load at length, length at load, rate, load/length and rate/length diagramm are possible.

The results can be archived or exported in ASCII format to other CAQ systems.

Spring tester AFK-8 K



Automatic spring tester AFK 8K

Technical Data:

Maximum testlength: 770 mm for compress springs, 670 mm for tension springs.

Loadranges	10 kN	Resolution	20 kN	Resolution
Loadrange 1:	0 - 1000 N	0,1 N	0 - 2000	0,1 N
Loadrange 2:	0 - 10 kN	1 N	0 - 20 kN	1 N
Testplates:	250 mm diameter (larger on demand).			

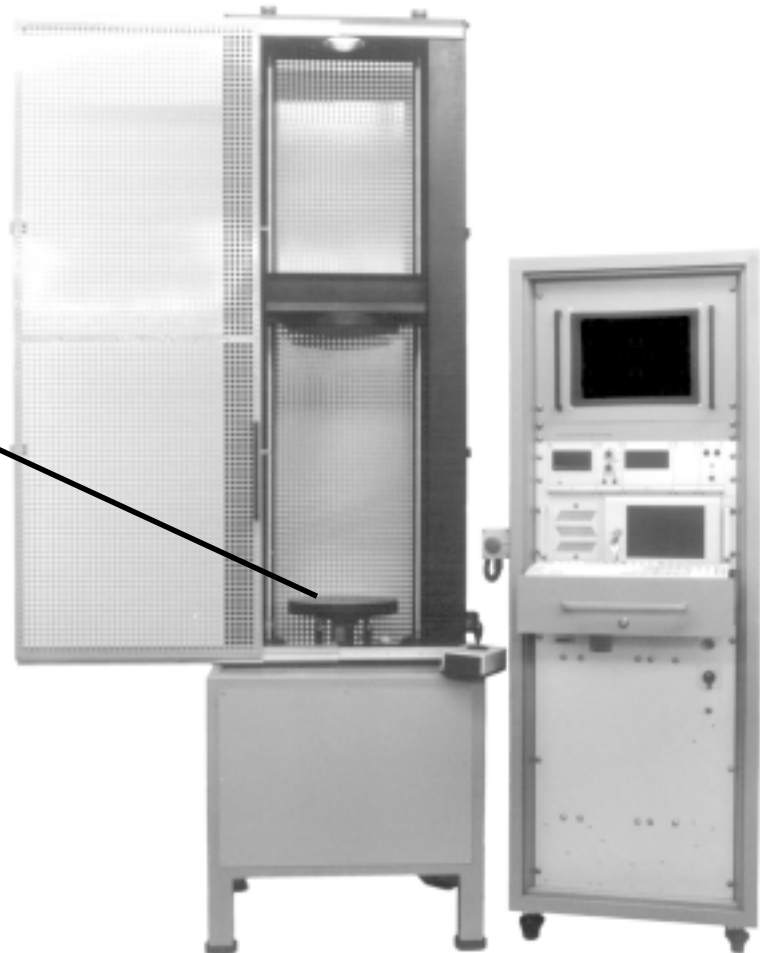
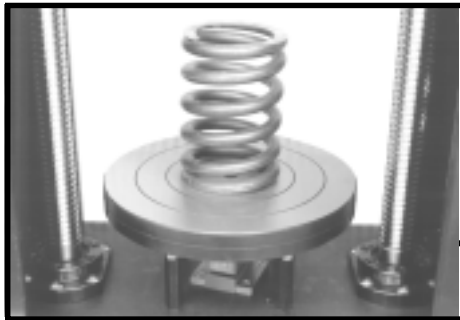
The automatic tester is delivered with PC, and standard-software for input/output statistic and machine capability. A database for over 20.000 springs specifications is integrated.

Optional a SPC-program with testsheet archive for X/R, X/S charts, input/output statistics, machine capability protocol and attributiv charts is available.

At a spring load at a length, length at a load, spring length, solid length, rate and spring diagramm can be tested.

Optional an interface for 2 Mitutoyo micrometers is available.

Spring tester AFK-8



Automatic spring tester AFK 8

Technical data:

Maximum testlength: 1350 mm for compress springs, 1250 mm for tension springs.

Loadranges	10 kN	Resolution	20 kN	Resolution	50 kN	Resolution
Loadrange 1:	0 -1000 N	0,1 N	0 - 2000	0,1 N	0 - 5000 N	1 N
Loadrange 2:	0 - 10 kN	1 N	0 - 20 kN	1 N	0 - 50 kN	10N

Testplates: 250 mm diameter (others on demand)

All functions are controlled by PC with VGA monitor and standard software for output statistics. Load at a length, length at a load, free length, solid length, rate and spring diagram can be tested with static values.

Database for specifications and way of test, statistic on colour screen

Options: - SPC-Software with archive for X/R, X/S charts, output statistics, machine devices, capability study, attributive test
- Interface for Mitutoyo micrometers

Spring tester AFK-11



Loadranges: 0 - 150 kN resolution 10 N
0 - 20 kN resolution 1 N

AFK 11 Automatic tester for static test of compression springs with servo motor.

Two precision ballscrews (diameter 63 mm) and two columns (diameter 60 mm) guarantee an precise and durably movement of the upper testplate, stroke 1300 mm with a resolution of 0.01 mm, testplate diameter 400 mm with ring marks to place the spring in center. The upper testplate has the possibility to check springs on a guide mandril with max. diameter of 120 mm or can be used without a hole. The lower testplate rests on 4 loadcells to get a very stable and repeatable result. The speed of the upper testplate is adjustable and performs tests of long springs with high speed. A loading table for a spring or guide mandril is placed in front of the lower testplate so that the spring or the mandril with spring can easily be placed on the testplate. Above the table optional a crane can be fitted to place the bigger springs on the loading table or mandril. The mandrils are fixed on their own baseplate. They are placed on the lower testplate and can be pulled out to load the spring.

Torsiontester TG-8



Picture: TG 8 Torsiontester

Torque ranges: Model up to 100 Ncm

Model up to 200 Ncm

	Ranges 100 Ncm		Resolution		200 Ncm		Resolution	
range 1:	100	Ncm	0.1	Ncm	200	Ncm	0.1	Ncm
range 2:	20	Ncm	0.01	Ncm	20	Ncm	0.01	Ncm
range 3:	2	Ncm	0.001	Ncm	2	Ncm	0.001	Ncm

Torsion tester **TG 8** for inspection of left and right coiled torsion springs. 3 1/2 digit torque display and 5 digit angle display. The angle is on display with 3600 steps per round what is a resolution of 0.1 degree. Maximum angle is 9999.9 degree. The tester has two stops for two test positions for batch tests. The tester has a RS 232 data output for the torque to connect with a statistic computer or SPC system PC based.

Torsiontester TG-9



Picture: TG 9 Torsiontester

Torque ranges: Model up to 500 Ncm Model up to 1000 Ncm

	Ranges 500 Ncm		Resolution		1000 Ncm		Resolution	
range 1:	500	Ncm	1	Ncm	1000	Ncm	1	Ncm
range 2:	200	Ncm	0,1	Ncm	200	Ncm	0,1	Ncm
range 3:	20	Ncm	0,01	Ncm	20	Ncm	0,01	Ncm

Torsion tester **TG 9** for inspection of left and right coiled torsion springs. 3 1/2 digit torque display and 5 digit angle display. The angle is on display with 3600 steps per round what is a resolution of 0.1 degree. Maximum angle is 9999.9 degree. The tester has two stops for two test positions for batch tests. The tester has a RS 232 data output for the torque to connect with a statistic computer or SPC system PC based.

Torsiontester TG-11



Picture: TG 11 Torsiontester

Torque ranges: Model up to 150 Nm

Torquerange:	Resolution:
range 1: 0 - 19.99 Nm	0.01 Nm
range 2: 0 - 150.0 Nm	0.10 Nm

max. distance of plates 800 mm
max. diameter 600 mm

Torsion tester **TG 11** for inspection of left and right coiled torsion springs. 3 1/2 digit torque display and 5 digit angle display. The angle is on display with 3600 steps per round what is a resolution of 0.1 degree. Maximum angle is 9999.9 degree. The tester has two stops for two test positions for batch tests. The tester has a RS 232 data output for the torque to connect with a statistic computer or SPC system.

Torsiontester TG-18



Completely automatic torsiontester TG 18

Torque ranges: Model up to 100 Ncm, Model up to 200 Ncm

	Ranges 100 Ncm		Resolution		200 Ncm		Resolution	
range 1:	100	Ncm	0.1	Ncm	200	Ncm	0.1	Ncm
range 2:	20	Ncm	0.01	Ncm	20	Ncm	0.01	Ncm
range 3:	2	Ncm	0.001	Ncm	2	Ncm	0.001	Ncm

Angle measurement by incremental sensor, resolution 0.1°, max. angle 9999.9°

All functions are controlled by computer. Software contains a database for more than 10.000 types of springs, more than 200.000 testreports of input/output statistics or machine capability reports

Statistic output on laser printer and TFT color monitor

SPC-Software for process control

Torsiontester TG-19



Completely automatic torsiontester TG 19

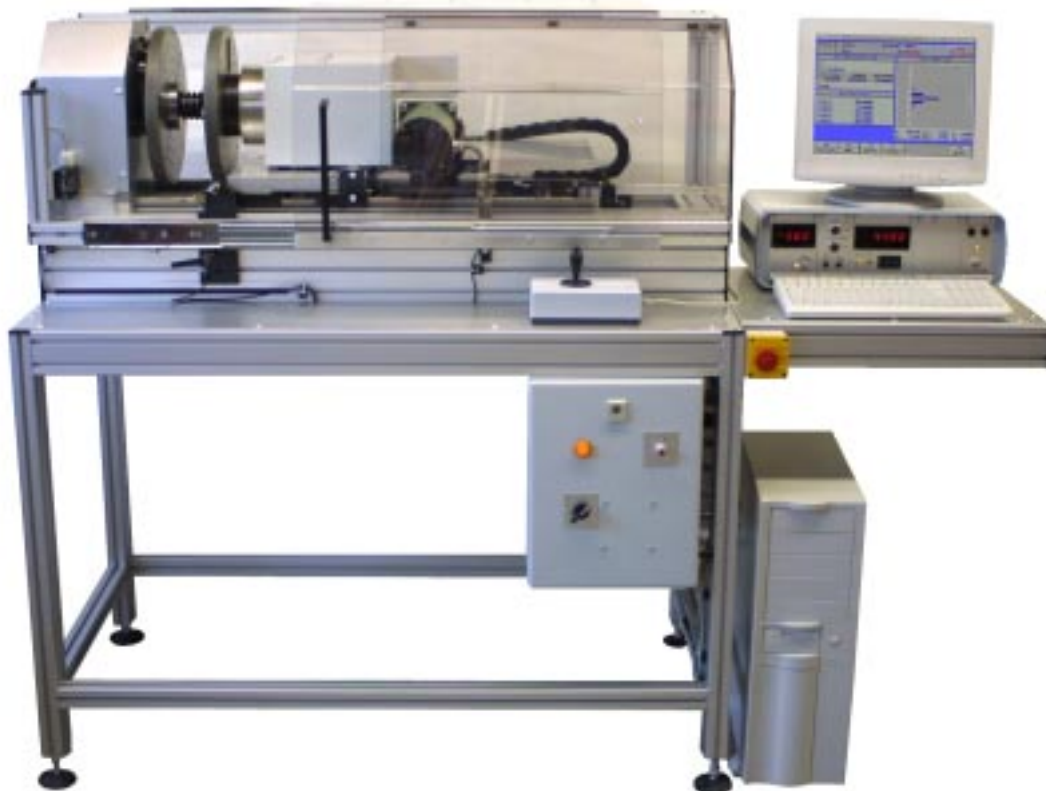
Torque ranges: Model up to 500 Ncm, Model up to 1000 Ncm

Ranges	500 Ncm	Resolution	1000 Ncm	Resolution
range 1:	500 Ncm	1 Ncm	1000 Ncm	1 Ncm
range 2:	200 Ncm	0,1 Ncm	200 Ncm	0,1 Ncm
range 3:	20 Ncm	0,01 Ncm	20 Ncm	0,01 Ncm

Angle measurement by incremental sensor, resolution 0.1°, max. angle 9999.9°

All functions are controlled by computer. Software contains a database for more then 10.000 types of springs, more then 200.000 testreports of input/output statistics or machine capability reports
Statistic output on laser printer and VGA color monitor
SPC-Software for process control

Torsiontester TG-21



Completely automatic torsiontester TG 21

Technical data:

Torque:	0 - 150	Nm
Torque ranges:	0 -19.99	Nm
	0 -150.0	Nm

Angle measurement by incremental sensor, resolution 0.1° , max. angle 9999.9°

Digital reading of tool distance

All functions are controlled by computer. Software contains a database for more than 10.000 types of springs, more than 200.000 test reports of input/output statistics or machine capability reports

Statistic output on laser printer (option) and TFT color monitor

SPC-Software for process control

Other torque ranges on demand

Automatic prestressing and testing machine SP-1



Technical data: max. setting load: 200 N, max. load range: 100 N,
 max. spring length: 80 mm, max. spring dia: 28 mm.
 max. speed: 4.000 parts per hour.

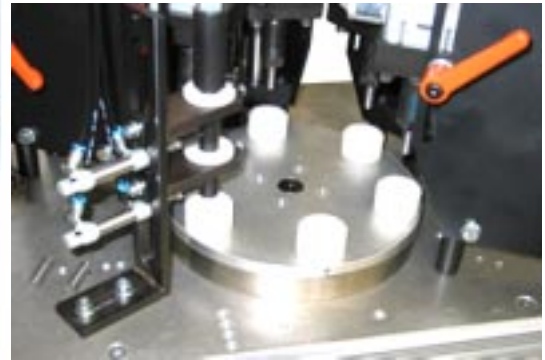
included load ranges: load range 1: 0-2 N resolution 0,001 N
 load range 2: 0-20 N resolution 0,01 N
 load range 3: 0-100 N resolution 0,1 N

Other load ranges available.

A prestressing machine with automatic feeder and load measuring for one spring length and three-way sorting for load ranges up to 100 N.

The vibratory feeder brings the springs in a vertical tube. A feed device even lets one spring pass the tube and feeds a round transport table which has six holes to hold the testing parts and gets moved step-by-step in clockwise direction. Having passed the feeder the springs are moved to the certain prestressing units followed by a measuring unit with an adjustable in-feed length. Having passed all the units the springs are sorted in three definable groups.

Automatic prestressing and testing machine SP-2



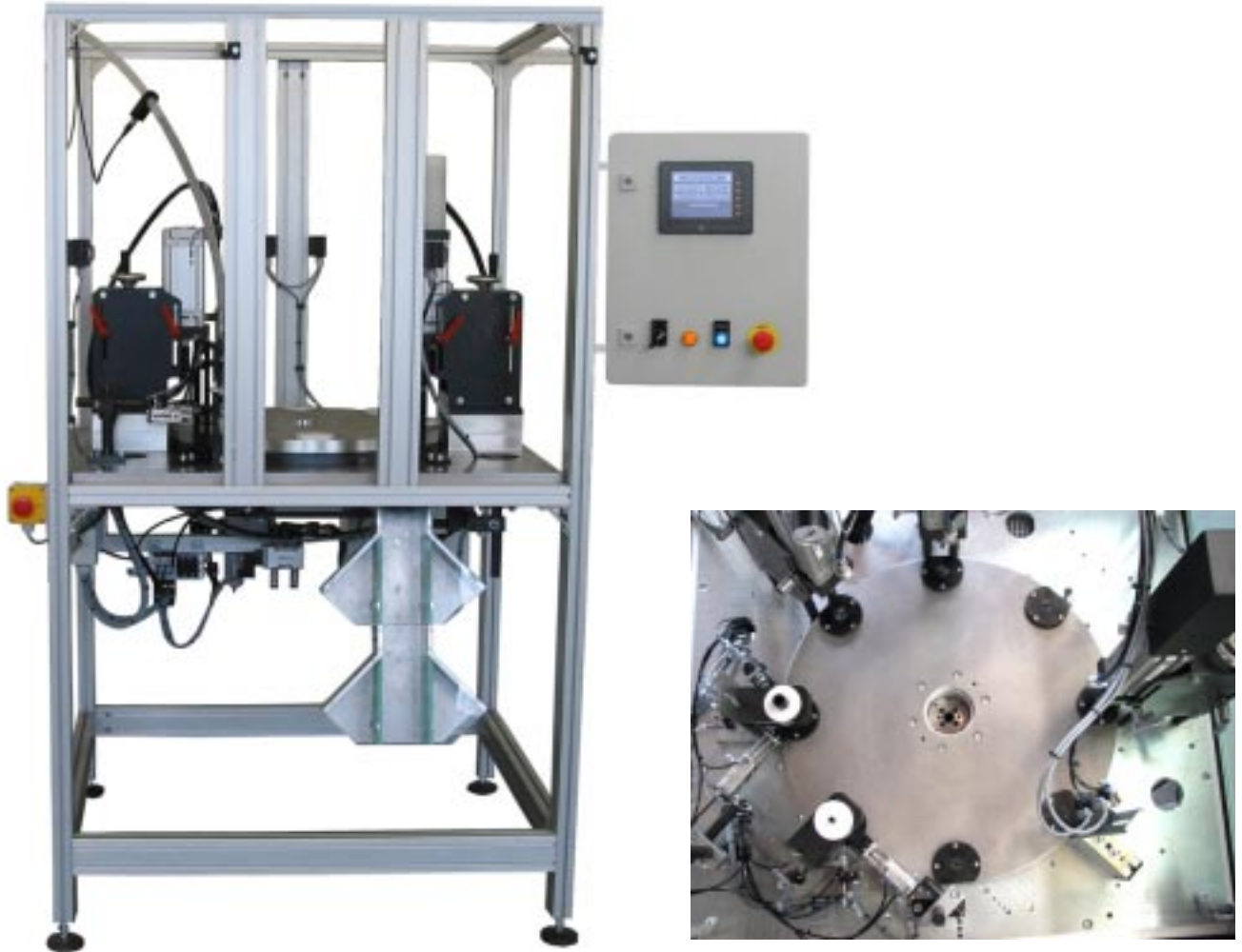
Technical data:	max. setting load: 2000N	max. load range: 1000N
	max. spring length: 80 mm,	max. spring dia: 28 mm.
	max. speed: 3.000 parts per hour.	
included load ranges:	load range 1: 0-20 N	resolution 0,01 N
	load range 2: 0-200 N	resolution 0,1 N
	load range 3: 0-1000 N	resolution 1 N

Other load ranges are available

Prestressing machine with automatic feeder or feeding by hand and load measuring for one spring length and three-way or five-way sorting with loads up to 1000 N. There are three prestressing units mountable. Measuring of L_0 and block is optionally available.

A vibratory feeder or manual feeding brings the springs in a vertical tube. A feed device even lets one spring pass the tube and feeds a round transport table which has eight holes to hold the testing parts and moves step-by-step in clockwise direction. Having passed the feeder the springs are moved to the certain prestressing units followed by a measuring unit with an adjustable in-feed length. Having passed all the units the springs are sorted in three or five definable groups.

Automatic prestressing and testing machine SP-5



Technical data:

	max. setting load: 5000 N,	max. load range: 5000 N
	max. spring length: 100 mm,	max. spring dia: 50 mm.
	max. speed: 2.500 parts per hour	
Loadcell 1000 N	load range 0 - 1000 N	resolution 0,01 N
Loadcell 5000 N	load range 0 - 5000 N	resolution 0,1 N

Other load ranges are available,

Prestressing machine with automatic feeder or feeding by hand and load measuring for one spring length and three-way or five-way sorting with loads up to 5000 N. There are three prestressing units mountable. Measuring of free-length and block is optionally available.

A vibratory feeder or manual feeding brings the springs in a vertical tube. A feed device even lets one spring pass the tube and feeds a round transport table which has eight holes to hold the testing parts and moves step-by-step in clockwise direction. Having passed the feeder the springs are moved to the certain prestressing units followed by a measuring unit with an adjustable in-feed length. Having passed all the units the springs are sorted in three or five definable groups.

WG-7 A



Picture: WG 7A

The tension tester **WG 7A** was developed to check the load of tension springs on WAFIOS tension spring machines (ZO types ...). As soon as a spring is pulled to the test length on the coiler a contact triggers the load measurement. The load measurement is delayed by a predefineable delay to avoid test faults caused by vibrations of the spring. The tested value is stored and the sorting chute changes from "too low" position into the sorting position that depends on the defined tolerances and returns after a predefineable delay back to "too low" position. This is essential because if a spring is not placed correct on the hooks on the machine it falls always into the "to low" box. The tolerance borders can be set on number switches.

A machine stop is caused by:

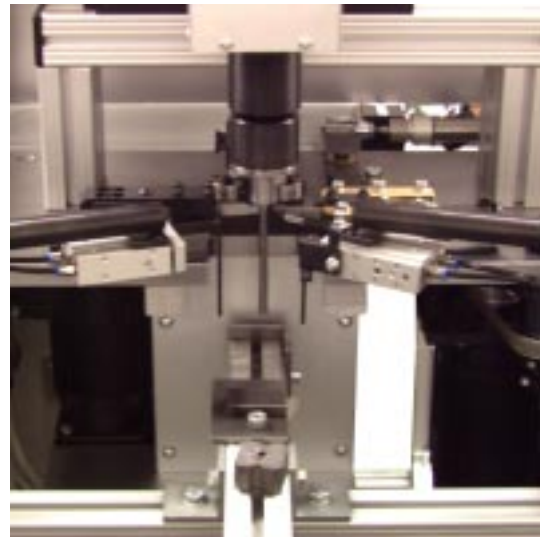
- number of good springs in the presetable good spring counter is reached

- the number of bad spring in serie is reached

- optional switch that controls the mechanical test of the spring and stops the machine immediately if there is a spring not tested.

The tester is available with different loadcells and load ranges.

Torsion Springcoiler WM-01



Torsion Spring Coiling Machine WM01

Automatic production of torsion springs

Electronically controlled spring coiling machine with four programmable drives

- * Alignment device
- * Freely programmable spring draw-in
- * Freely programmable coiling spindle
- * Modular motor control
- * Draw-in rollers with adjustable contact pressure
- * Cut-off device
- * Freely programmable pitch
- * Control computer for operation and programming

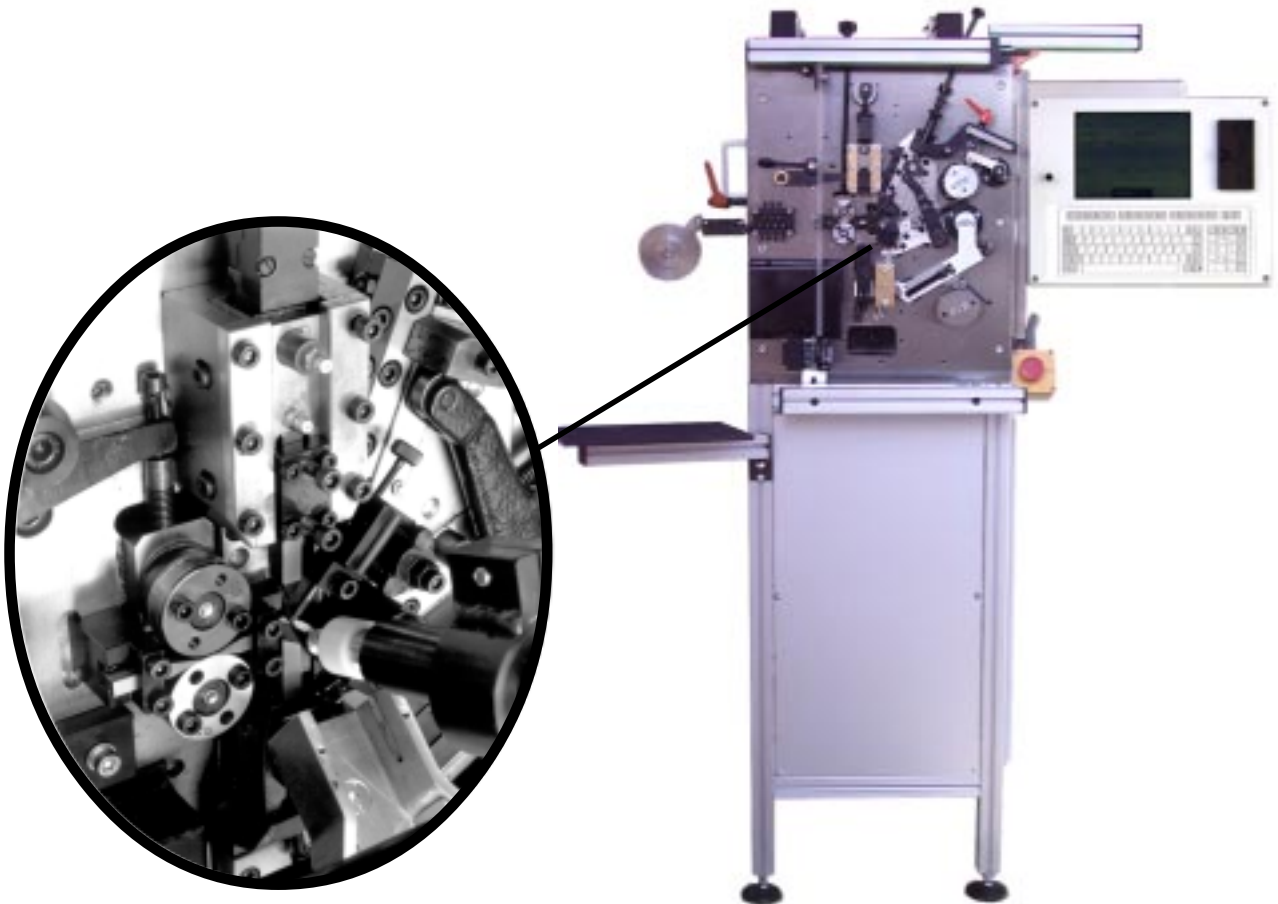
Spindle travel 150 mm, coiling mandrel diameter up to 30 mm, wire diameter 0.2 to 4.0 mm depending on strength, unlimited number of rotations of coiling spindle, maximum leg length 80 mm, pitch of coiling spindles freely programmable, angle position of legs freely programmable, unlimited draw-in length, output up to 120 pieces/minute depending on spring shape.

Operating data 400 V, power consumption 2.8 kW.

Additional devices:

- * Bending devices
- * Devices for cycled placement of torsion springs in components or workpiece carriers.
- * Customer-related devices

Springcoiler FWA-1/4



Design:

Compact, closed machine frame with integrated electronic motor drive and controls. PC for programming at movable lever. Mechanic part has the following functional groups:

- straightning unit
- wire feed rolls
- coiling plate for right coiled springs
- pitch
- diameter control with automatic mandrel motion
- wire cut

Technical Data:

Power supply	380 V	Wire feed	max. 30 m
Power consumption	2,8 kW	Speed of wirefeed	max. 113m/min.
Wire diameter	0,1 - 0,8 mm	Productionspeed	ca. 250 springs/ min.
Outside spring diameter	max. 16mm		
FWA 1 also with 3 axels possible			
(*) Lengthgauge MRS2 optional available		Temperature range	+10°C to +40°C

Grindingmachine FSA-1



To produce and grind springs in one operational step

For the automatic production of grinded compression springs, through feed grinding with CBN grinding wheels and step by step loading plate.

Grinding wheel diameter 225 mm

Cut speed until to 50 m/sec.

Loading plate diameter 250 mm

60 holes single-row, separation 6°

Wire diameter 0,3-1,0 mm

Spring De max. 10 mm

For larger diameters the loading plate has to be manufactured with a different pitch.

Spring L0 max. 50mm

Special model L0 max. 100 mm

Spring L0 min. 1,25 x spring dia

Grinding capacity max. 120 springs/min.

Grindingmachine FSA-3



To produce and grind springs in one operational step

For the automatic production of grinded compression springs, through feed or in feed grinding with CBN grinding wheels and step by step loading plate.

Grinding wheel diameter 400 mm

Cut speed until to 75 m/sec.

Loading plate diameter 420 mm

Wire diameter 0,8-2,5 mm

Spring De max. 40 mm

Spring L0 max. 200 mm

Spring L0 min. 1,25 x spring dia

Grinding capacity max. 35 springs/min.

FRM-43

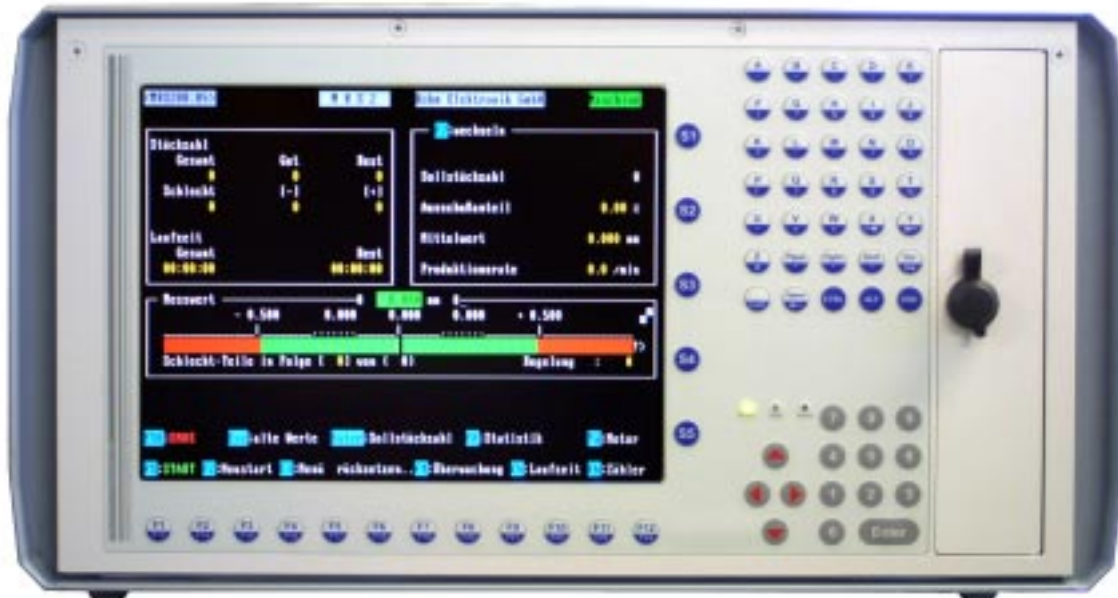


FRM 43

The length gauge of the type **FRM 43** is a gauge that can be added to several different springcoilers. It regulates the springlength over a pitchmotor in case of a length difference. The regulation is not done in increments as usual it is regulated continuously to the setup absolute length of the spring. With this regulation the production is controlled and brought to an optimum of accuracy. The gauge has a built in watchfunction that stops the coiler automatically in case of trouble. Different probes are available to optimize the measuring system: either a capacitive contactless probe with testplate diameters of 10, 20, 30, 40 and 50 mm can be used or an inductive contact probe. Both probes have identical geometry and a micrometer adjustment facility. The contact probe usually is used for special large springs.

The gauge has the possibility to store the testvalue so that the difference of the springlength to the idela value can be displaid. Three sizes of sorting chutes are availavle as well as an universal probeholder.

MRS-2



Length gauge with statistic display

Technical data

Size: 535 x 290 x 305 mm
 Power consumption : 130 VA 220/240 V 50 Hz
 Display: TFT- 12,1 inch
 Speed: 400 values / min can be tested

The display shows:

- last 25 values in continuous diagram
- all good values in histogram with 9 bars between tolerance borders
- absolute difference to specified length
- number of produced good parts
- number of remaining parts until end of job
- number of bad parts and bad parts in percent
- speed of production
- running time and expected remaining time of production
- statistic functions with print possibility

Sorting: The sorting chute is activated when a tolerance border is overrun.
 Tolerance borders and number of sorting classes are put in by keyboard.
 Length control: Length regulation by servo - motor (24 VDC).
 Production monitoring: Watching the number of successive bad parts.

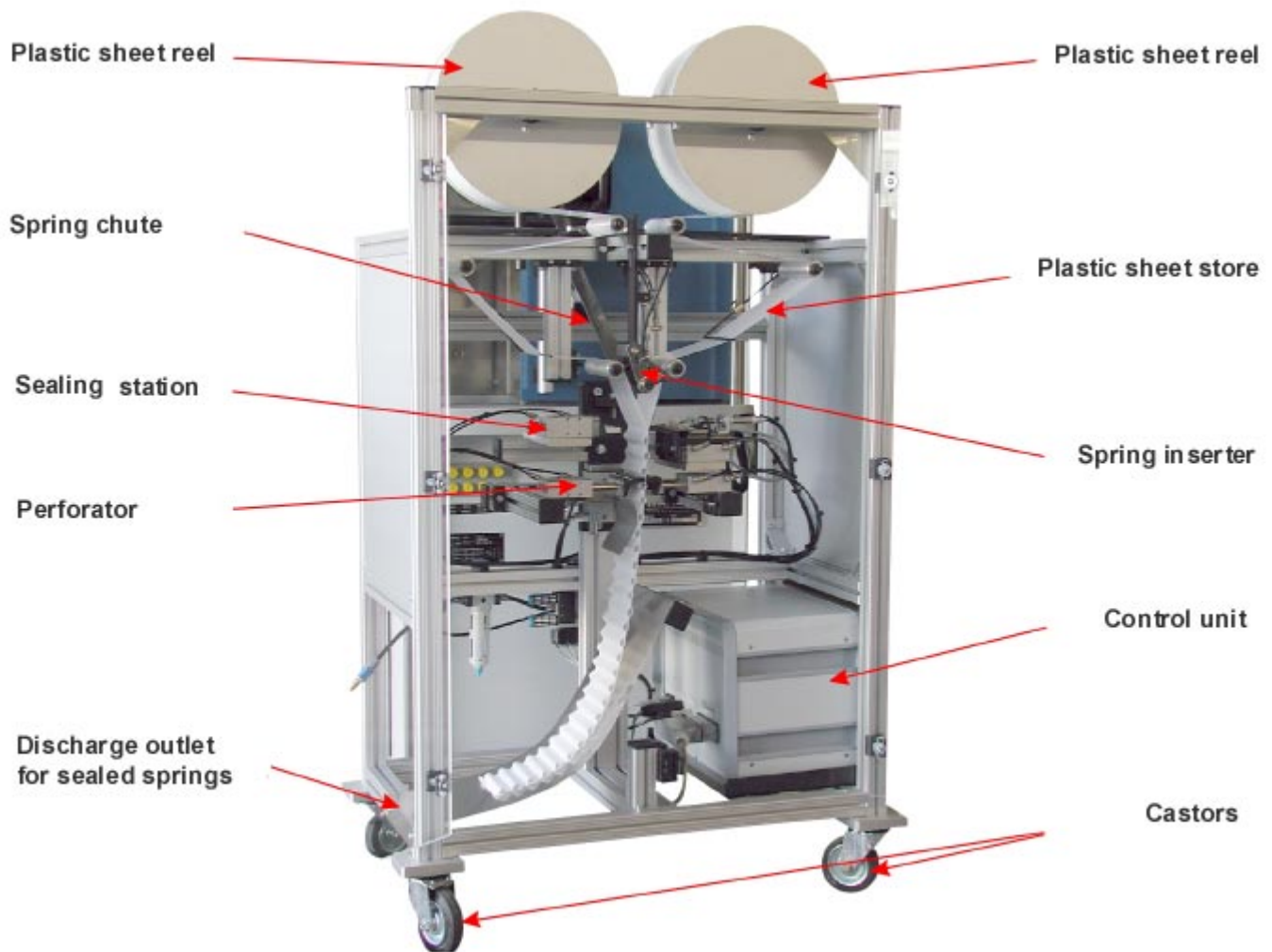
Output control MAK-1



Automatic machine output control with piezoelement:

Springs, bendingparts and similar parts fall down from the machine onto the sensor containing a microphone. Because of the drop onto the sensor the piezo generates an electric pulse. The sensitivity can be regulated on the frontpanel. The machine is stopped when there is no part falling onto the sensor while a predefineable time of 5 to 60 seconds. Each part falling out of the machine refreshes the time.

Plastic sheet wrapping machine FV-1



Plastic sheet wrapping machine FV-1

Seals individual springs in plastic sheet

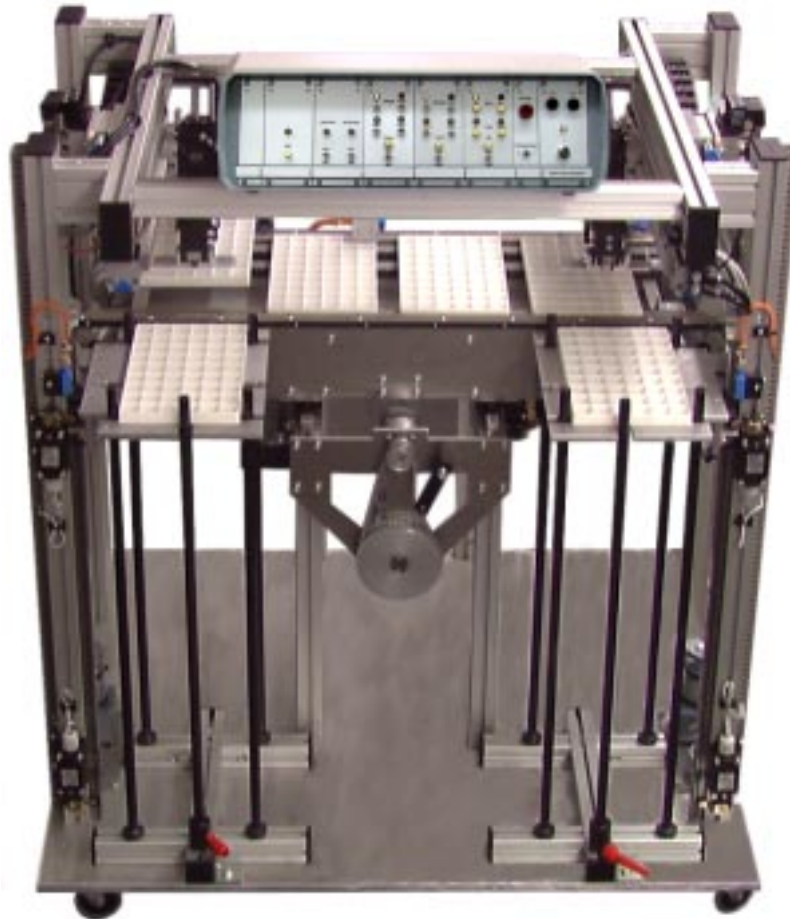
The springs are produced in cycles by a spring coiling machine and transferred to the wrapping machine. They are individually sealed between two plastic sheets in a transverse position and conveyed downwards in cycles.

The sealed springs can be wound into spools between two flanges, e.g. with a BAH-800 continuous coiling machine.

Wrapping machine dimensions: W x D x H: 800 x 550 x 1500

Capacity: Up to approx. 3600 springs per hour, depending on spring type.

Tray packing WP-1



Functional description:

The empty honeycomb packing cases are put in manual as pile in the equipment. A gripper takes one empty packing case off the pile and places it on a transport belt. Every comb of the honeycomb packing case is filled with a part. At the end of the transport strip a gripper piles up the filled honeycomb packing cases. Then the filled cases can be taken away manual as a pile.

Dimensions of the feeding device:

Width: 1100 mm
Depth: 1000 mm
Height: 1300 mm

Dimension of the honeycomb packing case:

max 300 x 200 mm

Cycle time of feeding:

max. 60 cycles / min.

Height of the piles:

max. 580 mm

Tray packing WP-2



Functional description:

The empty honeycomb packing cases are put in manual as pile in the equipment. A gripper takes one empty packing case off the pile and places it on a transport belt. Every comb of the honeycomb packing case is filled with a part. At the end of the transport strip a gripper piles up the filled honeycomb packing cases. Then the filled cases can be taken away manual as a pile.

Dimensions of the feeding device:

Width: 2270 mm
Depth: 1400 mm
Height: 1750 mm

Dimension of the honeycomb packing case:

max 600 x 400 mm

Cycle time of feeding:

max. 60 cycles / min.

Height of the piles:

max. 1000 mm

Small article storage magazine



Small article storage magazine

Box dimensions width 210 mm, depth 340 mm, height 150 mm, (other dimensions possible).

In this storage magazine 8 boxes are placed which are filled one after the other by a production machine.

The amount of filling can be defined by variable time or number of pieces.

The advantages:

Longer production intervals without manual change of boxes enhance the efficiency of production. The distributor is moveable, the boxes are fix so that you are independent of the weight of the full boxes.

In each box the desired number of parts can be produced.

In case of problems in the production or bad produced parts not the whole production lot has to be checked; only the effected boxes.

The storage magazine is mounted on wheels and is mobile, so that it can be placed at each production machine when neccessary.

Hose Packing



Hose packing

Because many springs have the bad characteristic to tangle there is the necessity to deliver the springs to customers, so that single springs can be taken off. For several types of springs it is enough to fill a hose as store. Therefore a system to fill hoses with springs was developed.

Function:

A vibrating bowl or a drum feeder separates the springs. The separated springs are feed in a 50 m long hose, that is rolled up. This hose is fixed on a vibrator, so that the springs move in the hose until the hose is completely full. Then the filling process is automatically stopped to change the hose pack.

The filling speed (depends on spring type) is 20 - 80 spring per minute.

Hoselength: 50 m

The hose diameter depends on the spring diameter.

Spring - Magazine

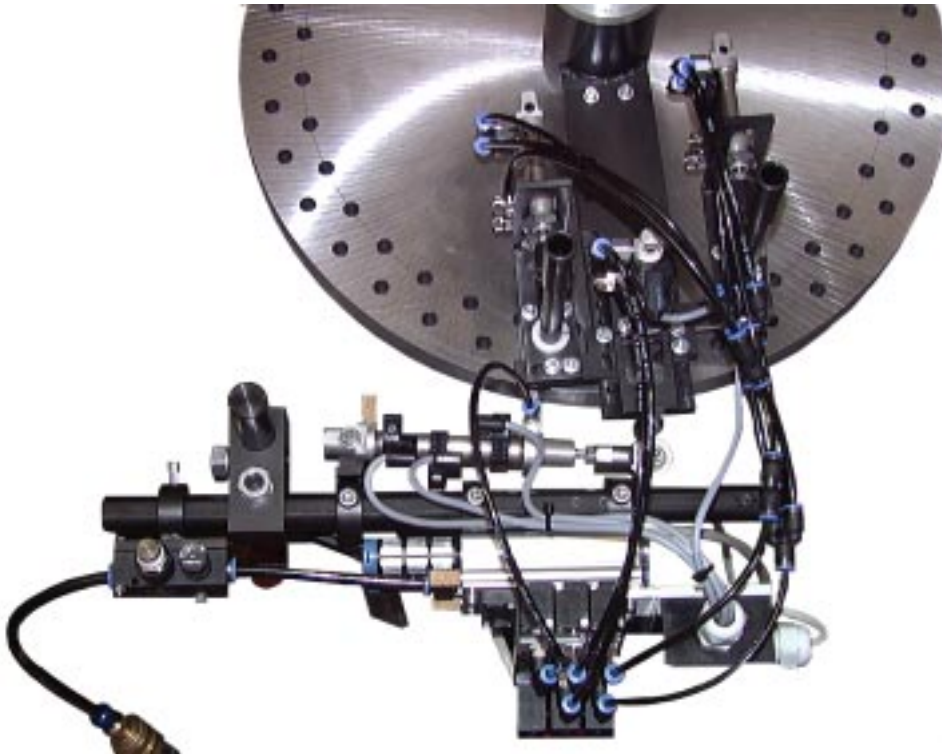


Springs in magazine

This system is specially designed for springs which are very hard to detangle by standard detangler systems. The method to pick out parts from a bulk is not only expensive, it contains danger to damage or change the

behavior of the springs. It can not be economic to use 10 seconds to pick out a spring of a tangled bulk of springs while it is coiled within a second. Therefore this system was developed for spring users because quality and efficiency are the key to success.

Loading Device FES-S



Loading device for loading plates in throughfeed grinding FES-S

* 1 or 2-row filling of loading plates possible.

* Spring dimensions from approx. Da 2.0 mm to Da 28 mm are possible.

* Outputs of up to 6,000 pieces/hour are possible depending on spring design.

The springs are fed into the vertical tubes located over the holes of the separating unit with a feed hose. During the pulling movement of the loading station, the springs are separated and filled into the holes of the loading plate. After each filling the loading device is pulled back by a return cylinder and the loading process is repeated. Controller with interface to grinding machine
The automatic feeding of the springs to the loading device can be carried out with various devices depending on the spring geometry.

* Round feed pots with mechanical baffle plates for springs that cannot be untangled, e.g. WF 200; WF300; WF450;

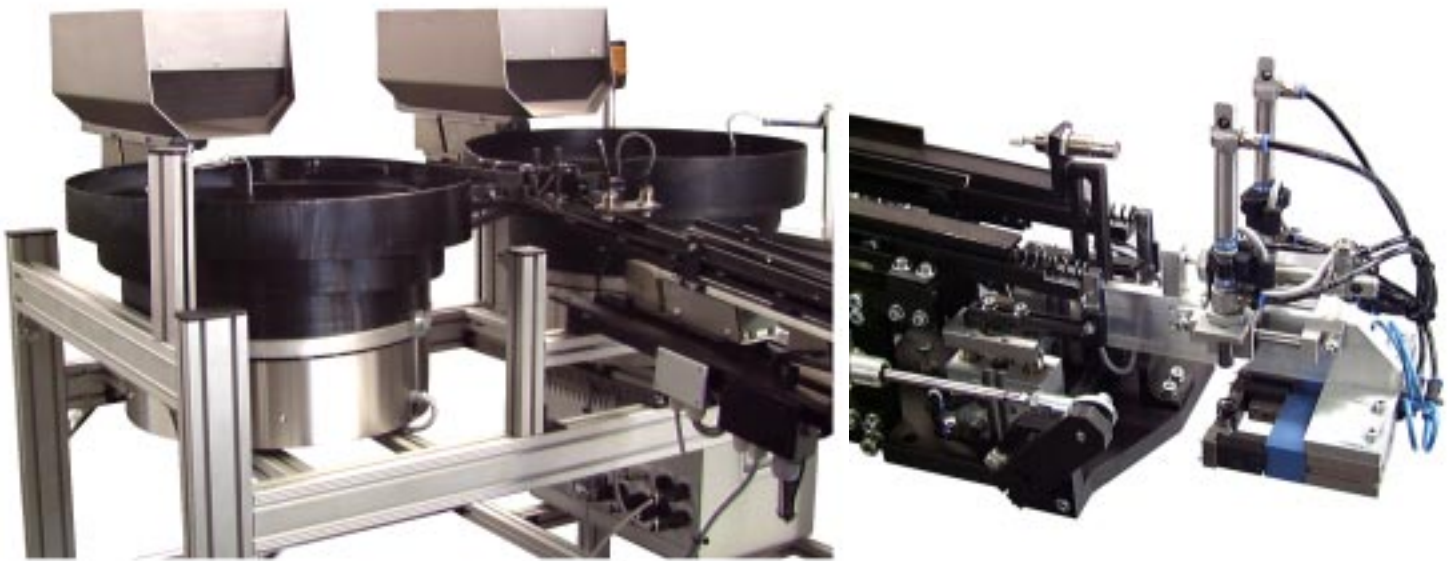
* Round feed pots with electronic sorting probe; quick conversion to other spring dimensions is possible e.g. WF 200; WF300; WF450;

* Automatic spring feed system, with sorting probe and additional untangling

* FEW1 up to spring diameter of 7 mm; FEW2 up to spring diameter of 12 mm;

* Drum feeder for springs that need not be untangled (small space requirement) TF 300, TF 450

Loading Device FES-T



Loading device for cycled loading plates FES-T

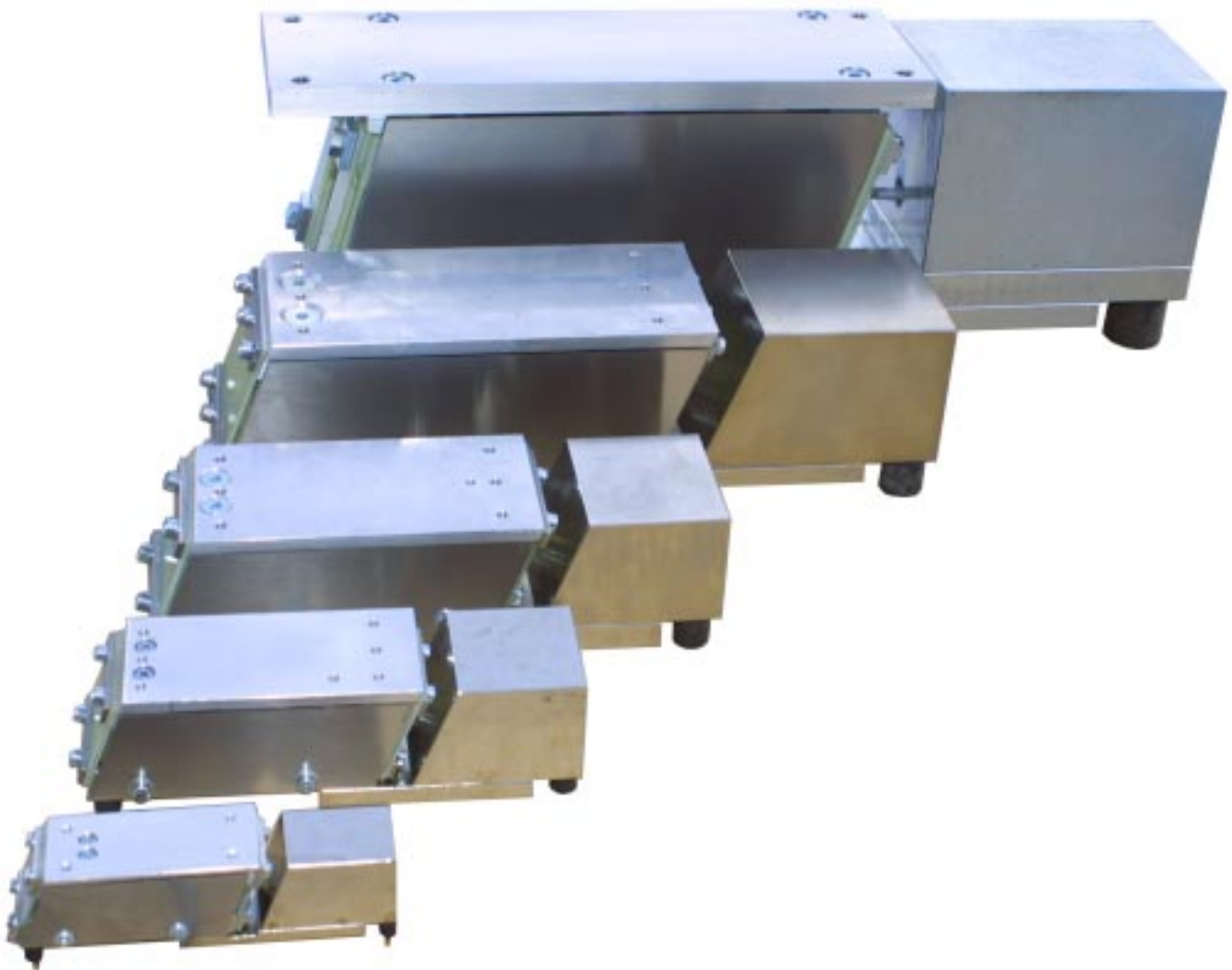
The springs are filled into two bunkers as bulk goods. The correct dose for filling up the round feed pots is achieved with the bunkers. In the feed pots the springs are sorted with a vibration drive and adjustable baffle plates, and transported to the loading device with a longitudinal conveyor (buffer section). At the end of the buffer section the springs are filled into the loading plates in 2 rows with gripper jaws and press-in cylinders.

- * Pot WF 300: Spring dimensions from approx. Da 6,0 mm to Da 15 mm are possible.
- * Pot WF 450: Spring dimensions from approx. Da 12 mm to Da 28 mm are possible.
- * Outputs up to 5.000 pieces/hour are possible depending on spring design.
- * Springs must be inserted in loading plates.
- * Feeding and loading device at same working height, resulting in simple system operation.
- * Control for entire process and interface to grinding machine.

Additional device Electronic sorting probe for springs that are entangled.

This enables quick conversion to other spring dimensions, and permits sorting of springs that cannot be easily fed in without mechanical problems.

Axial conveyor LFA 1 - 5



Conveyor for feeding parts in one direction

All five available sizes have an adjustable vibrating system to adapt the system to feeding-rail of different weights without changing parts.

The conveyors LFA 1 - LFA 4 are usable with an inverter or any motor phase control at mains power 230V, 50Hz.

The conveyor LFA 5 has to be supplied with 25 Hz.

Bowlfeeder driving units WFL



Vibratory drives

WFL 150 diameter 150 mm

WFL 200 diameter 200 mm

WFL 300 diameter 300 mm

WFL 450 diameter 450 mm

power 230V / 50 Hz

WFL 450 diameter 450 mm

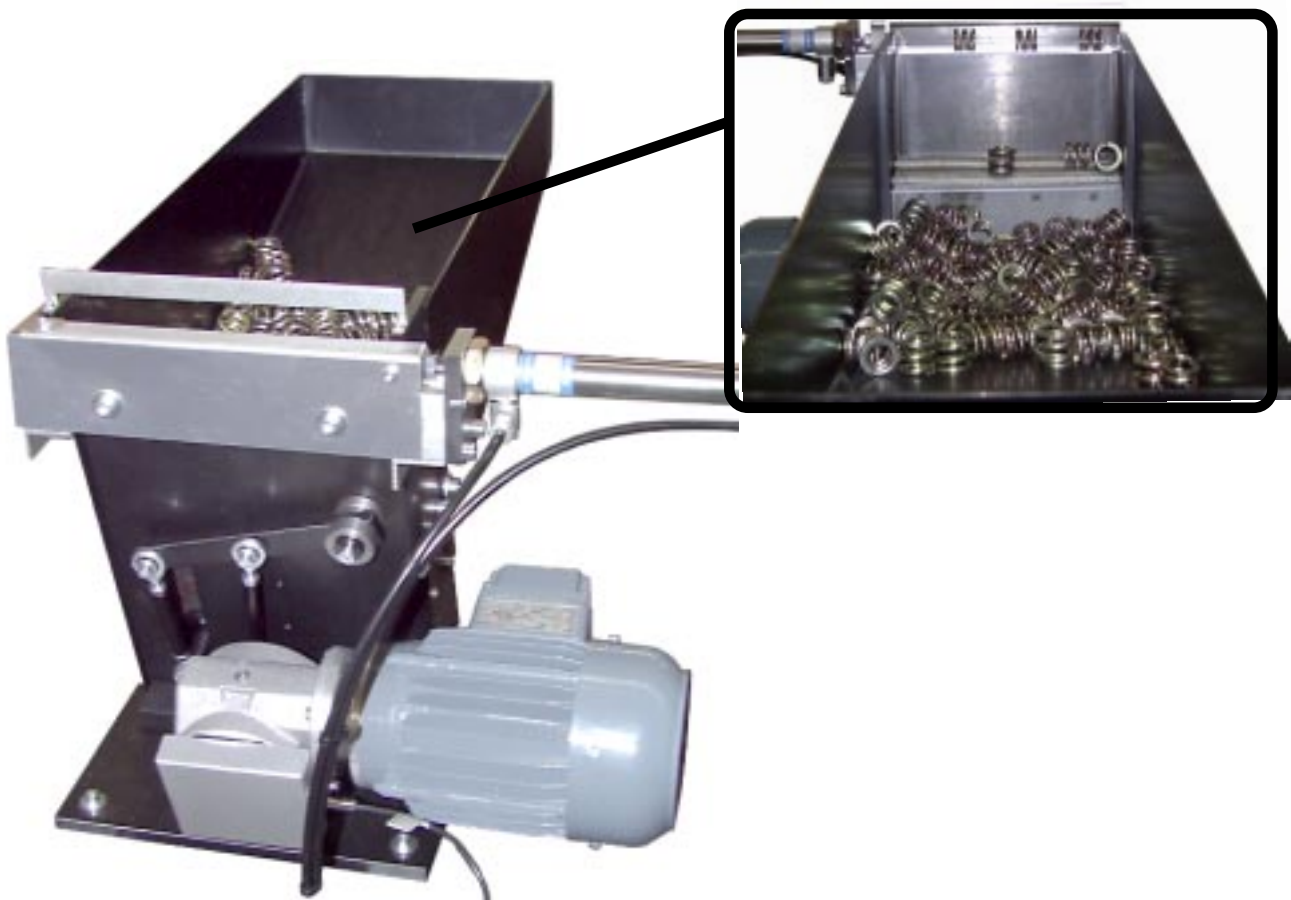
WFL 600 diameter 600 mm

power G230V, 50 Hz / 25Hz

The advantages of these vibratory drives:

Very low height. Squarely groundplate. The placement of rubber fixingpoints. With these rubber fixations the drives can compensate a higher weight of parts in the bowl. These rubber fixations have fine threads to adjust the height of the vibratory drive or bowl to other components

Step-by-step conveyor



The step-by-step conveyor is best use for separation of small springs and round parts. Moving steps bring the parts in one direction for feeding automatic feeding devices of grinding, automatic prestressing and testing machines or mounting devices.

The speed of the moving steps is infinitely variable by an inverter. The transport of the parts above the steps can be done by a linear conveyor or any conveyor belt. Depending on the size the conveyor can feed up to 5.000 parts per hour.

Electrical connection: 230V, 600VA

Drum Feeder TF



This drum feeder is for detangling and separation of springs or other round parts. From a bulk of goods the single parts are positioned in a longitudinal plane and afterwards transported to an automatic feeding station of a spring grinder, scragg and testing machine or a mounting station in a production line. The turning speed of the drum and the feeding speed of the integrated conveyor can be regulated at the control unit.

There are 3 different sizes of drums.

TF 300, outside dia. of drum 300 mm. TF 450, outside dia. of drum 450 mm. TF 650 outside dia. of drum 650 mm.

Vibrator Bowl FZ



In a vibrator bowl are springs which move by vibrations on spirals to the exit on top. To avoid that more than one spring is transported to the exit there is an adjustable chicane integrated. The feeding speed can be regulated electronically. Because springs have the bad behavior to tangle they may pass the chicane. To avoid that tangled springs reach the exit there is a sensor. This sensor detects single springs or tangled springs. That the sensor can detect single or double springs with small wire diameter as well the sensor must have an adjustable distance to the springs. To adjust easily the distance to the spring a micrometer screw is fixed at the end of the sensor. To find the correct distance a lightband composed of ten LED segments is used as tuning aid. The correct distance to let only pass one single spring can be adjusted by the distance to the spring and the zero signal of the sensor.

When two hooked springs pass the sensor the electrical output of the sensor rises and an indicator light flashes. At the same time a pneumatic valve is opened and an airblast blows the tangled springs off the feeding system and back into the vibrator bowl. Only single springs reach the exit of the vibrator bowl.

A ringsensor can indicate whether springs should be feed in the following stock tube or whether it is full. As soon as the storage tube is full a yellow lamp flashes to indicate „storage full“ and the vibrator bowl is switched off. When the ringsensor detects no spring the feeder is switched on to continue filling the storage tube.

The feeder requires 220 V 50 Hz and compressed air with 6 bar pressure.

There are 3 different sizes of bowls:

FZ-2 vibrator dia 200 mm, springs de 2 mm to 6 mm

FZ-3 vibrator dia 300 mm, springs de 4 mm to 12 mm

FZ-4 vibrator dia 450 mm, springs de 10 mm to 25 mm

Spring Detangler FEW-1 / 2



Possibilities of use:

FEW 1, Springs with diameter 2 mm - 7 mm, free length max 35 mm.

FEW 2, Springs with diameter 5 mm - 12 mm, free length max 35 mm.

With the integrated detangler springs which were up to now impossible to process automatically can be feed in spring grinders, scragg and testing machines or automatic mounting stations in a production line.

With this spring detangler and feeder you have the possibility to change over to a different spring-type without changing parts. You have only to adjust the tangle sensor and the separator that it fits for the required diameter of spring.

It can be used with cylindrical, conical and barrel shape compression springs.

To handle other shapes or dimensions of parts please contact us. Possibly simple changes of the system can enable the detangling of these parts as well.

Description of function:

The springs are filled into the vibrator feeder bowl manual or over a storage bunker. The vibration moves the springs over the feeding spirals to an adjustable chicane at the top of the bowl which presorts the springs. Afterwards the springs pass a sensor which detects tangled springs. Tangled springs are rejected by an airblast and fall back into the bowl where they are detangled and supplied again over the spirals to the sensor. Detangled springs leave the detangler and can be filled in a tube or can be transported over linear conveyors to the following machine.

Storage hoppers



Provision of parts for feed systems of bulk goods of all kinds

Storage hoppers with electromagnetic drive

Capacities:

VB-20	Up to 20 litres, max. 10 kg
VB-40	Up to 40 litres, max. 25 kg
VB-80	Up to 80 litres, max. 50 kg

The bulk goods are tipped into the storage container. A control unit adjusts the desired conveying rate by means of an electromagnetic drive system. The storage hopper can be automatically switched on or off by a contents level monitor in the feed system.

Additional equipment:

- Control unit
- Contents level monitors for feed systems
- Base frame for the storage hopper

Detangler EW-1



With the detangler EW 1 it is possible to detangle parts which could not be detangled before.

- for cylindrical or conical compression springs

outside diameter: appr. 2 mm - 10 mm

length: appr. 35 mm

diameter of wire: 0,3 mm - 1,0 mm

Please contact us if you have other parts or send us some samples for a test.

Max. filling capacity 0,1 l dependent on form and size of the spring.

Operation cycle:

The springs are filled manual into the detangler. The rotation of the wheel in the detangler make an air cushion. This air cushion blows the detangled springs on top into a container. There the springs can be taken away.

For an optimal dentangling of the different springs the rotation speed of the detangler wheel can be varied with a speed regulator.

Conveyor belt



Conveyor belt with storage hopper

The springs are filled in as bulk material. The springs move proportioned to the conveyor belt and move to the top.

Beltwide	240 mm
Belthigh	2000 mm
Storage hopper high	900 mm
Capacity	approx. 80 litres, max 80 kg

AGH-1/B



AGH 1/B

Technical data:

power supply	230V or 400 V
power consumption	0,7 kW
wire diameter	0,7 - 3 mm
inner diameter of drum or ring	170 - 490 mm
max. height of drum or ring	150 mm
max. load of ring or drum	80 kg
max. speed	100 rpm
diameter of table	600 or 800 mm

On the swift **AGH 1/B** the wire can be placed horizontal on rings or drums. The swift is designed for continuous wirefeed as well as for intermittent wirefeed. Because of the electronic controlled motor with tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

AGH-1/B 150kg



AGH 1/B 150 kg

Technical data:

power supply	230V or 400 V
power consumption	0,7 kW
wire diameter	0,7 - 3mm
linner diameter of drum or ring	170 - 690mm
max. height of drum or ring	150mm
max. load of ring or drum	150 kg
max. speed	100 rpm
diameter of table	800 mm

On the swift AGH 1/B 150 kg the wire can be placed horizontal on rings or drums. The swift is designed for continuous wirefeed as well as for intermittant wirefeed. Because of the electronic controlled motor with tensioncontrol the swift guarantees low and to the wire diameter adaptable tensionforces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

AGH-1/Z



AGH 1/Z

Technical data:

power supply	230 V or 400 V
power consumption	0,7 kW
wire diameter	up to 1 mm
inner diameter of drum or ring	170 - 490 mm
max. height of drum or ring	150 mm
max. load of ring or drum	80 kg
max. speed	100 rpm
diameter of table	600 or 800 mm

On the swift **AGH 1/Z** the wire can be placed horizontal on rings or drums. The swift is especially designed for thin wires and features continuous as well as for intermittent wirefeed. Because of the electronic controlled motor with tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher speed in production of springs can be reached because of the high speed of the swift.

AGH-2



AGH 2

Technical data:

power supply	230 V or 400 V
power consumption	app. 1,5 KW
wire diameter	app. 0,4 - 1,6 mm
diameter of table	app. 1000 mm
max. weight	350 kg
max. speed	80 rpm
wire accumulator	3,5 m
guiding wheels	240 mm or 500 mm

On the swift **AGH2** the wire can be placed horizontal on rings or drums. The swift is designed for continuous wirefeed as well as for intermittent wirefeed. Because of the electronic controlled motor with tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

AGH-3



AGH 3

Technical data:

power supply	230 V or 400 V
power consumption	app. 1 KW
wire diameter	app. 1 - 3 mm
max. outside dia. of spool	app. 750 mm
min. inner dia. of spool	app. 150 mm
max. height of spool	app. 240 mm
diameter of table	app. 800 mm
max. weight	400 kg
max. speed	90 rpm

On the swift **AGH3** the wire can be placed horizontal on rings or drums. The swift is designed for continuous wirefeed as well as for intermittent wirefeed. Because of the electronic controlled motor with tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

AGH-3/BZ



AGH 3/BZ

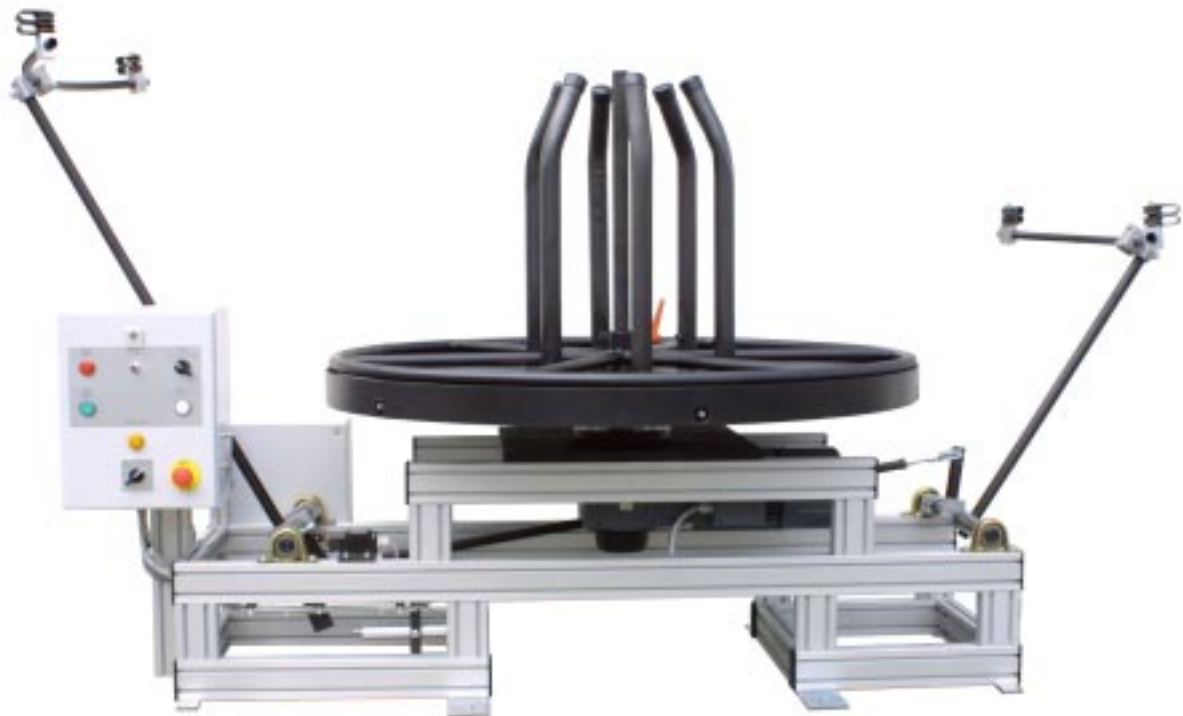
Technical data:

power supply	230 V or 400 V
power consumption	app. 1 KW
wire diameter	app. 0,1 - 3,0 mm
max. outside dia. of spool	app. 750 mm
min. inner dia. of spool	app. 150 mm
max. height of spool	app. 240 mm
diameter of table	app. 800 mm
max. weight	300 kg
max. speed	90 rpm

On the swift **AGH 3/BZ** the wire can be placed horizontal on rings or drums. The swift is designed for continuous wirefeed as well as for intermittant wirefeed. Because of the electronic controlled motor with tensioncontrol the swift guarantees low and to the wire diameter adaptable tensionforces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

Two different wire leading systems are switchable so that smallest wire diameters can be used.

AGH-7



AGH7

Technical data:

power supply	230 V or 400 V
power consumption	app. 1,5 KW
wire diameter	app. 1,0 - 5,0 mm
max. outside dia. of spool	app. 1150 mm
min. inner dia. of spool	app. 300 mm
max. inner dia. of spool	app. 1000 mm
max. height of spool	app. 600 mm
usable dia. of table	app. 1200 mm
max. weight	~700 kg
max. speed	80 rpm
wirefeed at spool dia. of 800 mm	190m/min.

On the swift **AGH7** the wire can be placed horizontal on rings or drums. The swift is designed for continuous wirefeed as well as for intermittent wirefeed. Because of the electronic controlled motor with tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

AGH-1/S



AGH 1/S

Technical data:

power supply	230 V or 400 V
power consumption	0,7 kW
wire diameter	1 - 2,5 mm
inner diameter of drum or ring	170 - 490 mm
max. height of drum or ring	100 mm
max. load of ring or drum	60 kg
max. speed	200 rpm
diameter of table	600 mm

On the swift **AGH 1/S** the wire can be placed vertical on rings or drums. The swift is designed for continuous wirefeed as well as for intermittent wirefeed. Because of the electronic controlled motor with tensioncontrol the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wirefeed of the coiler. With these advantages you can reach a high accuracy in wirefeed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

Drum Swift AGH-SP1

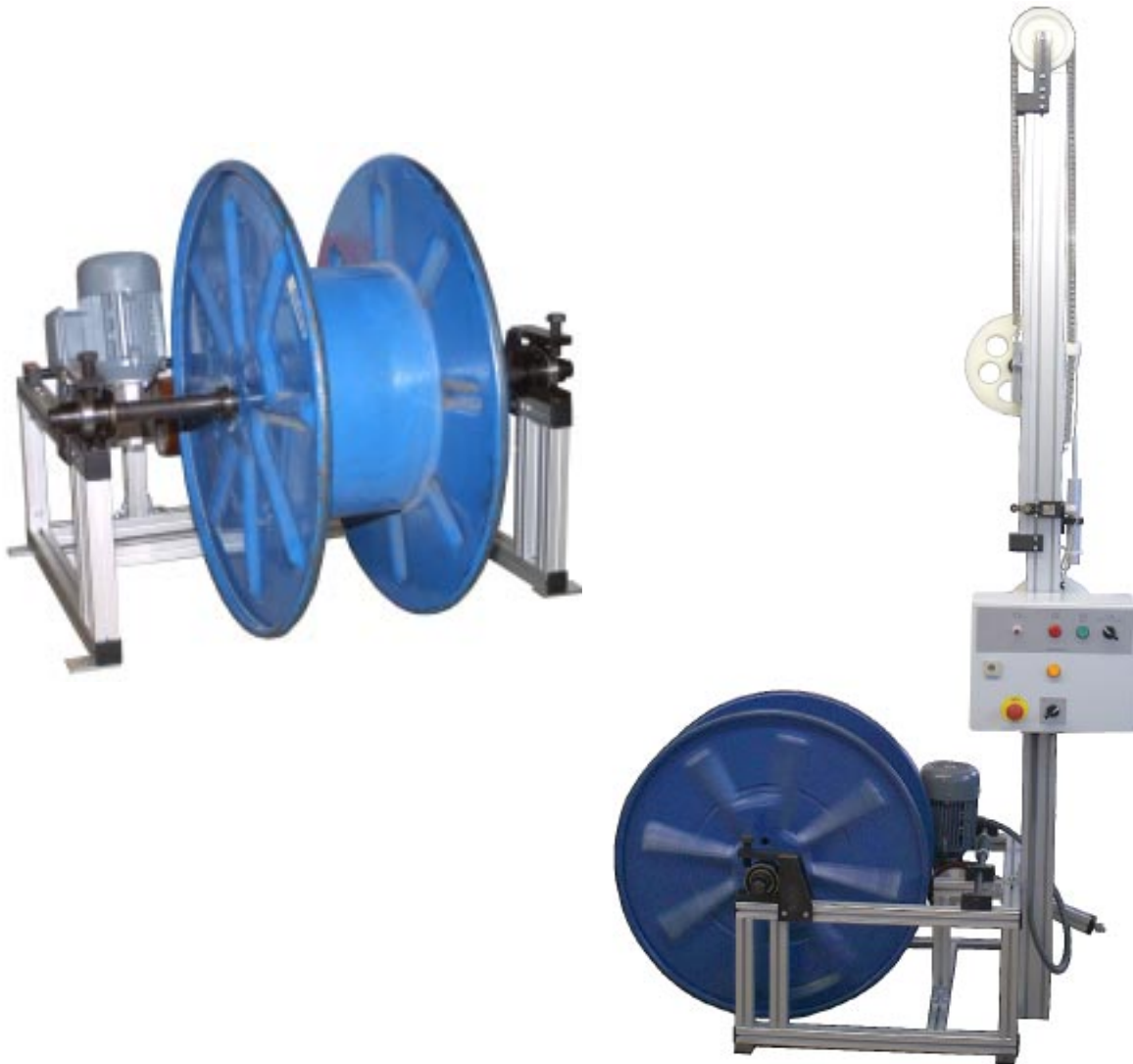


Drum swift for Sandvik and similar wiredrums

Technical data:	voltage:	230 V or 400 V
	power consumption:	0,7 kVA
	max. speed:	65 rpm
	max. drum diameter:	760 x 310, 410 or 510 mm
	max. load of drum	300 kg
	wire diameter:	0,5 -1,5 mm

The swift is best usable in a production with a continuous wire feed to the machine. Because of the motor powered with wire tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wire feed of the coiler. With these advantages you can reach a high accuracy in wire feed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

Drum Swift AGH-SP3



Drum swift for Sandvik and similar wiredrums

Technical data:	voltage:	230 V or 400 V
	power consumption:	1,1 kVA
	max. speed:	80 rpm
	max. drum diameter:	760 x 510 mm
	max. load of drum	500 kg
	wire diameter	0,5 -1,5 mm

The swift is best usable in a production with a continuous wire feed to the machine. Because of the motor powered with wire tension control the swift guarantees low and to the wire diameter adaptable tension forces. Beside this there are no additional radial forces on the wire feed of the coiler. With these advantages you can reach a high accuracy in wire feed which improves the quality especially on a critical production. Higher production speed of springs can be reached because of the high speed of the swift.

Flatmaterial Swift



Flatmaterial Swift

Technical Data:	power supply	230 V
	power consumption	0,7 KW
	flatmaterial ring inner dia.	app. 170 - 490 mm
	flatmaterial ring outside dia.	app. 550 mm at bundleholder dia. 600 mm app. 750 mm at bundleholder dia. 800 mm
	max. ring weight	80 kg

This swift is controlled absolutely without any contact of the material to the swift. The material that has to be feeded to the machine runs between two sensors where it changes the electrostatic field. If more material is needed by the machine the flat material is pulled up and the distance to pole A is reduced. The swift begins to dewheel the material. The speed of the swift is proportional to the materials' distance to pole B. As closer the material is to pole A as faster the swift dewheels the material to feed the machine. With a regulator the speed can be adapted to the input of the machine. If the machine stops the speed gets reduced till the swift stands. The point between the two poles where the speed is zero can be adjusted at the swift.

Flatmaterial Swift BAH-800



Technical Data:	power supply	230 V
	power consumption	0,7 KW
	flatmaterial ring inner dia.	app. 150 - 600 mm
	max. height of ring	80 mm
	diameter of table	app. 840 mm swivelling for loading
	max. ring weight	80 kg
	speed	app. 0 - 10 rpm

This swift is controlled absolutely without any contact of the material to the swift. The material that has to be feeded to the machine runs between two sensors where it changes the electrostatic field. If more material is needed by the machine the flat material is pulled up and the distance to pole A is reduced. The swift begins to dewheel the material. The speed of the swift is proportional to the materials' distance to pole B. As closer the material is to pole A as faster the swift dewheels the material to feed the machine. With a regulator the speed can be adapted to the input of the machine. If the machine stops the speed gets reduced till the swift stands. The point between the two poles where the speed is zero can be adjusted at the swift.

Flatmaterial Swift BAH-1200



Technical Data:	power supply	400 V
	power consumption	1,1 KW
	flatmaterial ring inner dia.	app. 200 - 720 mm
	max. height of ring	150 mm
	diameter of table	app. 1200 mm
	max. ring weight	600 kg
	speed	app. 10 - 50 rpm

This swift is controlled absolutely without any contact of the material to the swift. The material that has to be feeded to the machine runs between two sensors where it changes the electrostatic field. If more material is needed by the machine the flat material is pulled up and the distance to pole A is reduced. The swift begins to dewheel the material. The speed of the swift is proportional to the materials' distance to pole B. As closer the material is to pole A as faster the swift dewheels the material to feed the machine. With a regulator the speed can be adapted to the input of the machine. If the machine stops the speed gets reduced till the swift stands. The point between the two poles where the speed is zero can be adjusted at the swift.

Tempering furnace ROTA-1



Pulse controlled tempering furnace for ROTA 1 springs

Method of operation:

The springs are individually inserted into metal tubes 160 Pieces and passed through the heating chamber in pulsed movements. The advancing and removal processes are performed by compressed air.

Connected load: 3 x 400 V, approx. 1,5 KW

Maximum tempering temperature, approx. 300°C

Maximum pulse rate, approx. 50 units per min.

Electronic temperature regulation by temperature preselection facility.

Electronic control permits fully automatic operation with signal transfer for interlinked operating mode.

Tempering furnace ROTA-2



Pulse controlled tempering furnace for ROTA 2 springs

Method of operation:

The springs are individually inserted into metal tubes 120/240 Pieces and passed through the heating chamber in pulsed movements. The advancing and removal processes are performed by compressed air.

Connected load: 3 x 400 V, approx. 2,5 KW

Maximum tempering temperature, approx. 300°C

Maximum pulse rate, approx. 50 units per min.

Electronic temperature regulation by temperature preselection facility.

Electronic control permits fully automatic operation with signal transfer for interlinked operating mode.

Spring fatigue tester FDS-1



Technical data:

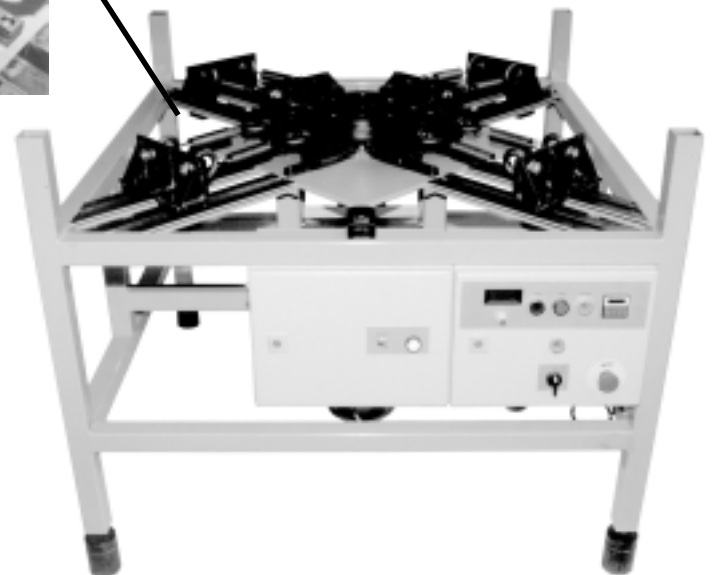
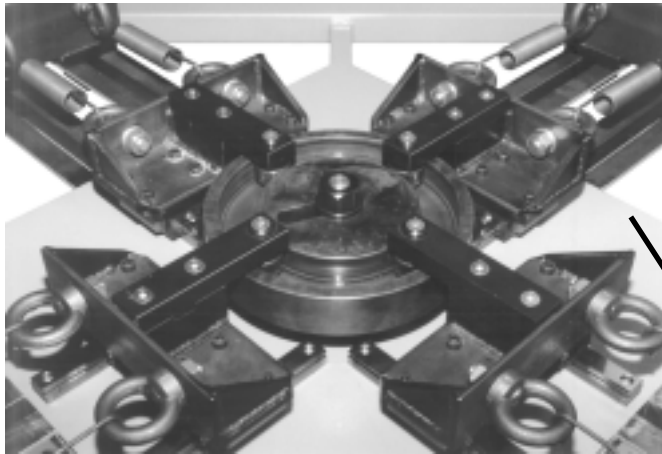
max. height of stroke : 120 mm
Motor torque: 150 Ncm
Reduction: 1 : 12
max. cycles: 10.000.000
Speed: max. 12 rps

The fatigue tester tests a spring under similar working conditions.

The tester has 6 stations in which springs can be tested. The springs are compressed and relaxed with the predefined speed and testlength. If one spring breaks the tester is stopped and the number of cycles is shown on the counter-display.
The maximum number of cycles can be predefined.

Price depends on the technical details of the spring.

Spring fatigue tester FDS-2



Technical data:

Spring type:	Compress and tension springs
max. stroke:	50 mm
max. cycles:	10.000.000
max. speed:	0 - 600 1/min
dimensions:	800 x 800 x 1200 mm
max. load:	1000 N with 4 springs and stroke 50 mm
max. load:	1000 N with 8 springs and stroke 25 mm
dimensions of spring:	max. dia. 60 mm, max. length L0 150 mm

With the fatigue tester the fatigue durability of a spring can be tested.

The tester has 4 positions for springs where 2 springs can be inserted which are stressed until the maximum cycles are reached or the spring got a fatigue fracture. With a presettable counter the maximum cycles are programmed. When one spring is damaged the tester stops

and on the counter the reached number of cycles is displayed.

Other dimensions on demand.

DS-7



DS 7

- digital control unit with 8 or 12 outputs for cyclic processes
- high flexibility through free definable decades for start and end of output
- number of outputs can be extended to 16
- each output has 24 V and feeds 0.5 A
- outputs can be switched in manual mode
- single cycles are possible
- the control unit has inputs for start signal, stop signal and reset