

It's the small things  
in life that make the  
difference.

We are in the job  
of making a difference.



Do what  
you can  
do best.

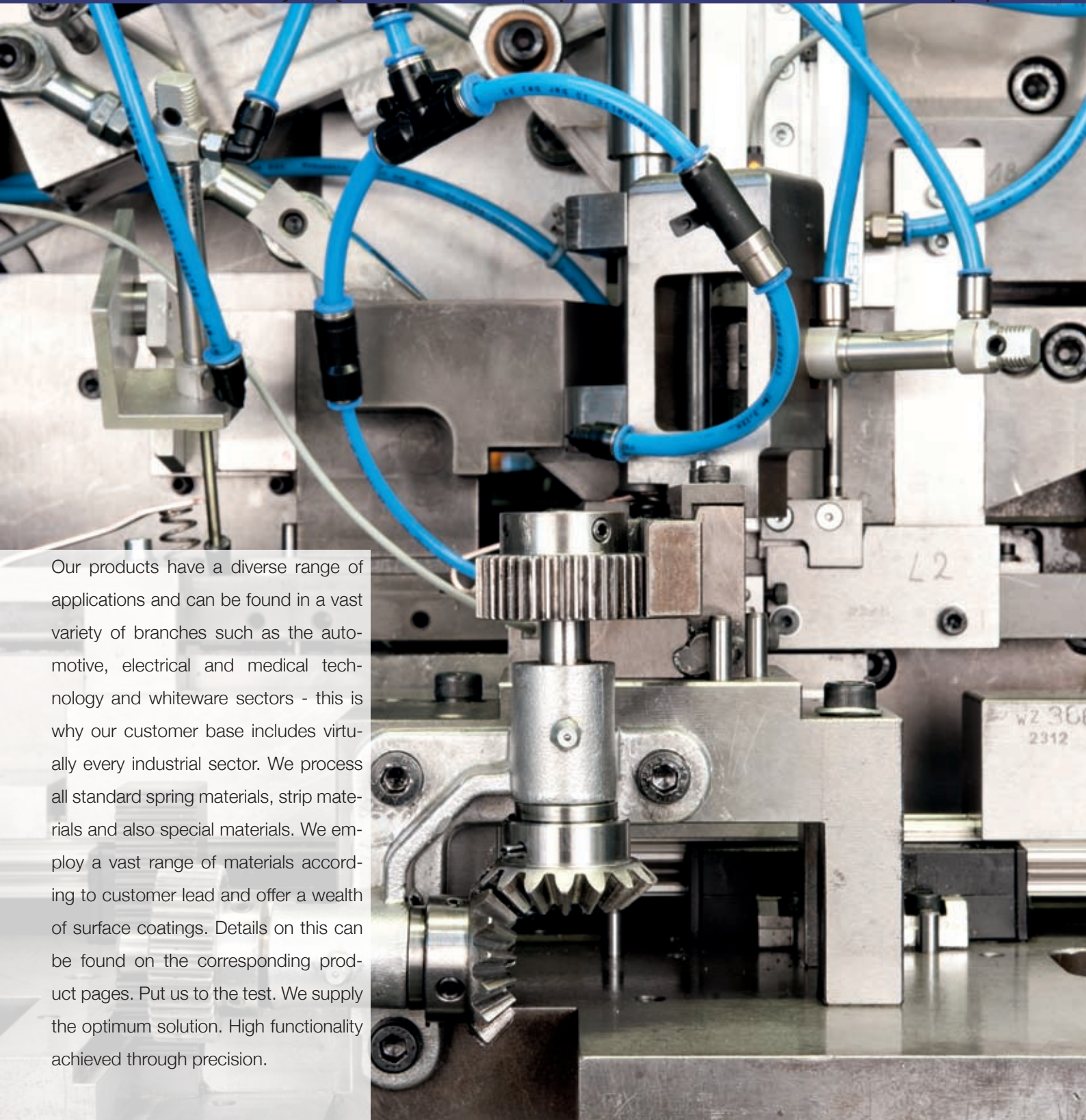
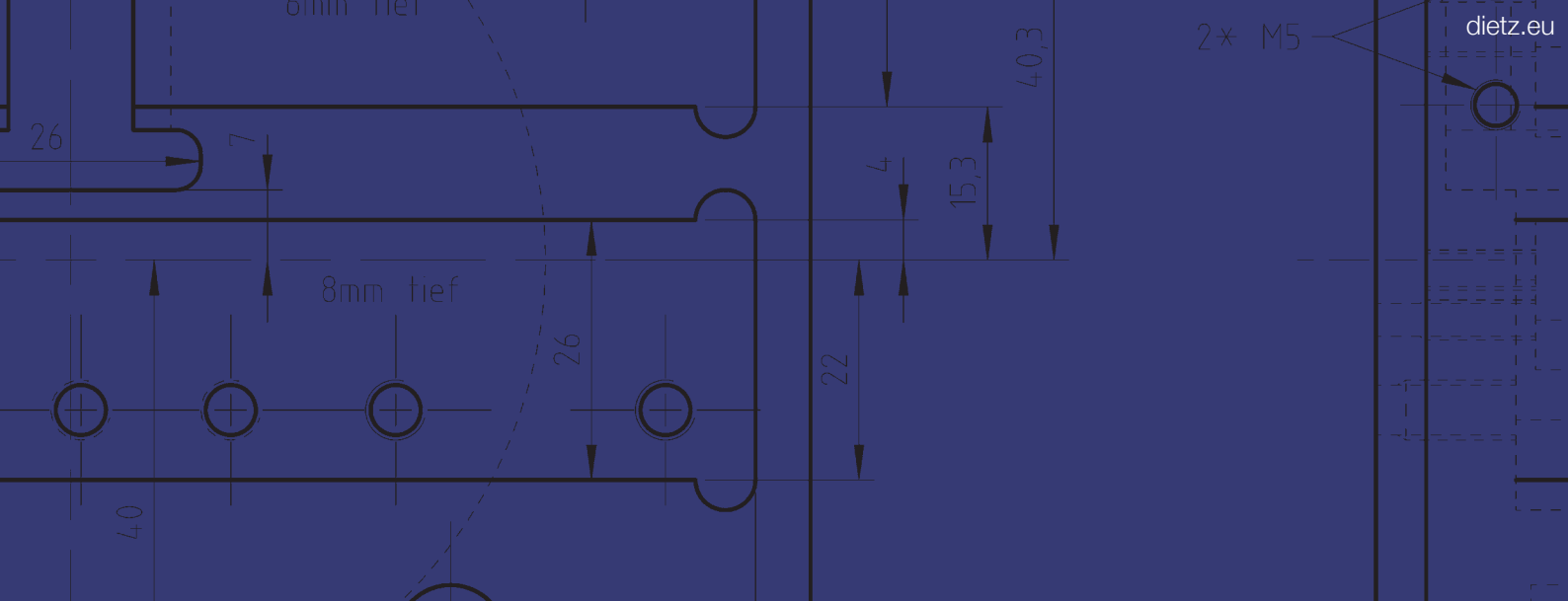


We have been working in the field of precision springs, wire and strip formed parts, assembly groups and installed items since 1928. That makes for a lot of experience.

At a time when there is little to choose between offers, and products are beginning to increasingly resemble each other, success is only assured for those prepared to take new paths to the customer and offer successful solutions to problems. We are a creative team that develops and implements innovative spring products.

With us you can not only rely on over 80 years of experience and all-important „know-how“, but also on specialists who know how to deal with customer requirements and problems. This is because our technicians work hand in hand with our customers.





Our products have a diverse range of applications and can be found in a vast variety of branches such as the automotive, electrical and medical technology and whiteware sectors - this is why our customer base includes virtually every industrial sector. We process all standard spring materials, strip materials and also special materials. We employ a vast range of materials according to customer lead and offer a wealth of surface coatings. Details on this can be found on the corresponding product pages. Put us to the test. We supply the optimum solution. High functionality achieved through precision.



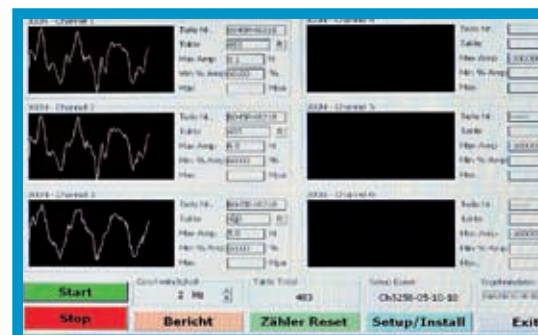
# There's no room for error in medical technology!



This is why we make ongoing investment in ensuring the quality of our product range.

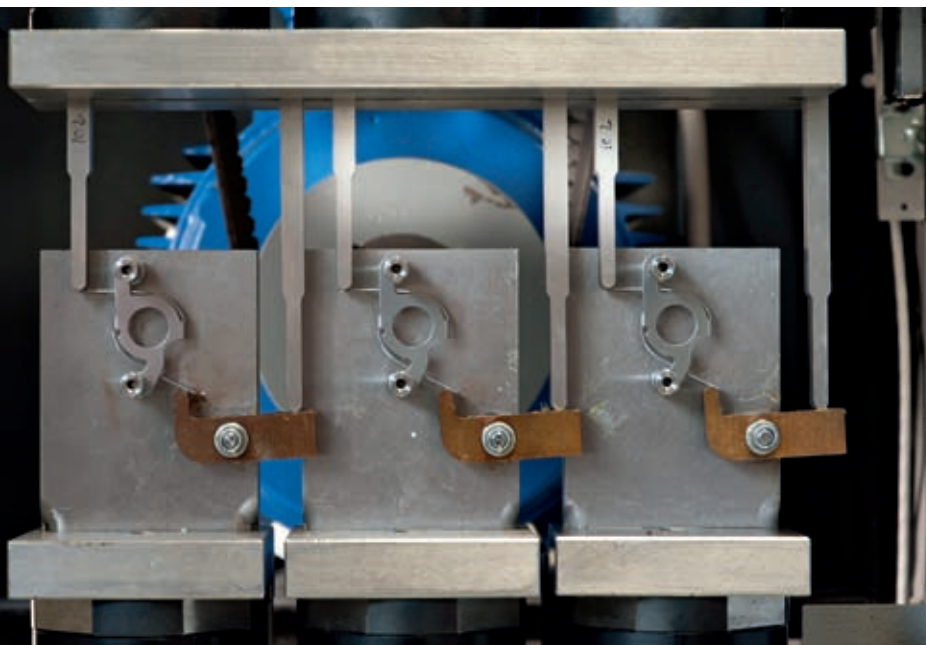
The deployment of ultramodern technology is indispensable to success. Here, we have always kept pace with developments and have always successfully risen to the challenges thrown down by the market place. Today we are a spring factory with an innovative product range - a highly efficient and competent partner in all areas of spring manufacture.

Spring manufacture requires the highest level of precision to fulfil the requirements of complex structures and functionality. On account of rising quality demands we are constantly developing our materials and products further. Functionality is assured by employing constant quality tests. We can gladly make the results of this testing available to our



# QUALITY

customer. Our warehousing, short procurement routes and efficient production methods ensure short-notice availability. Leading edge machines, our own tool workshop, highly trained personnel, our apprenticeship workshop with an average of 15-20 apprentices and constant quality checks guarantee that our articles do not disappoint. Customised manufacture, meticulous execution and, above all, flexible delivery periods are our strengths that pay off for you, the customer. So, be discerning and put us to the test. We look forward to meeting the challenge!



# PRESSURE SPRINGS



2\* M6

6

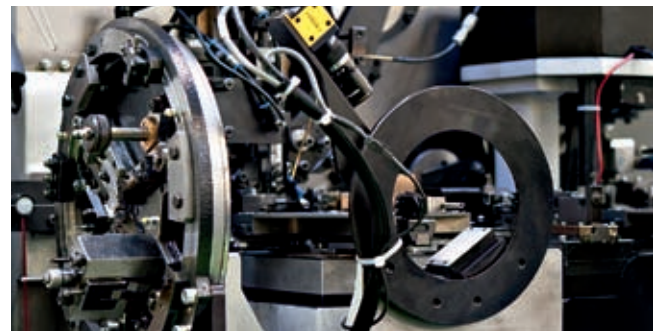
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We manufacture solely according to customer-specific specifications. Pressure springs are produced in a wide range of designs and shapes with ground ends in wire thickness spanning 0.30 to 3.00 mm and with ungrounded ends of 0.10 to 4.00 mm.

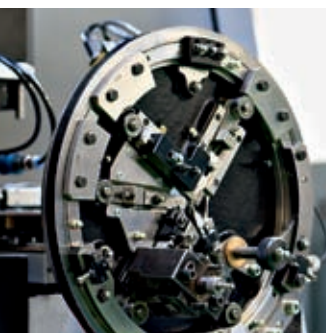
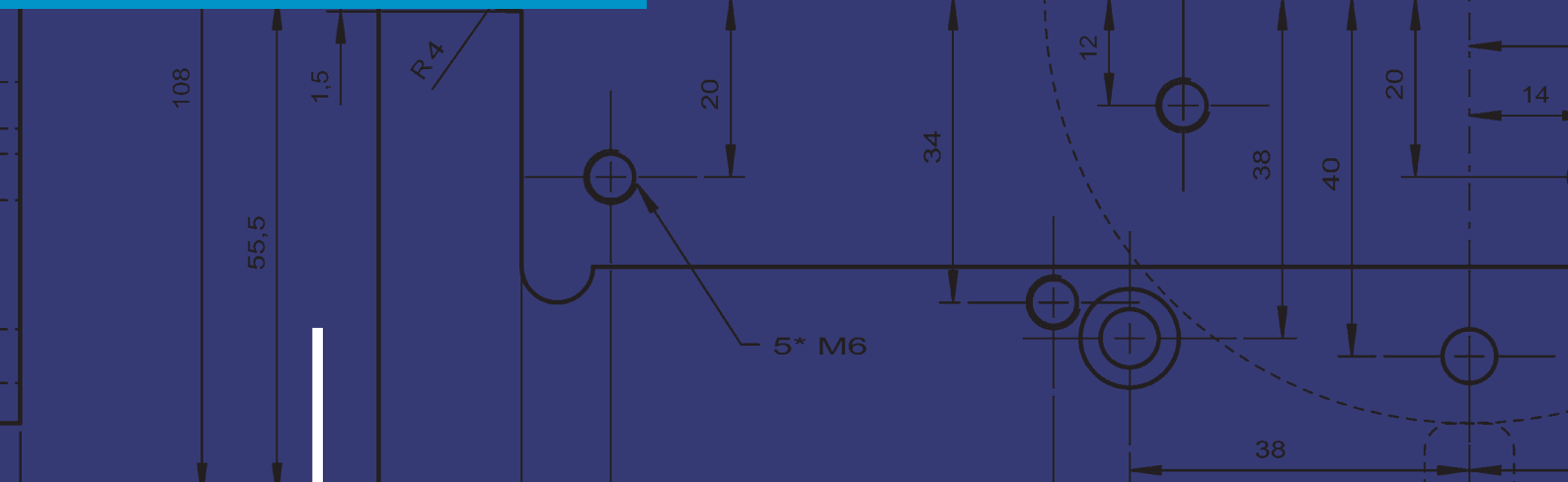
In pressure spring production even extremely narrow length and force tolerances are observed. Special materials that meet the highest demands can be integrated seamlessly into our production plans.

#### Wire materials:

- all standard spring wires as per EN10270
- Non-ferrous wires of copper, brass, bronze and beryllium
- Iron wires
- Special alloys such as:
  - Hasteloy
  - CuNi44
  - NbZr1
  - TaW2
- Switch spring wire
- Other materials on request



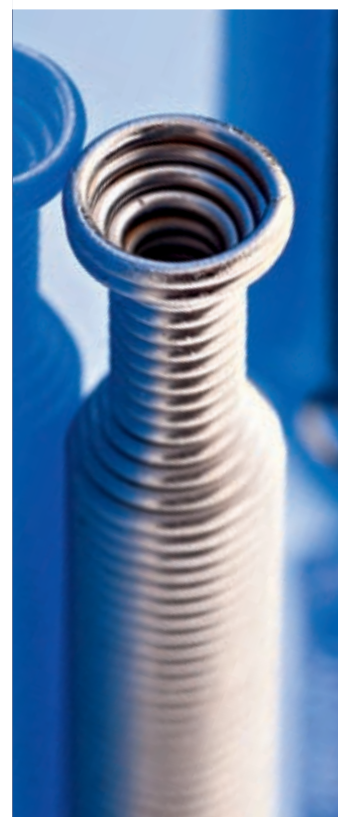
# TENSION SPRINGS



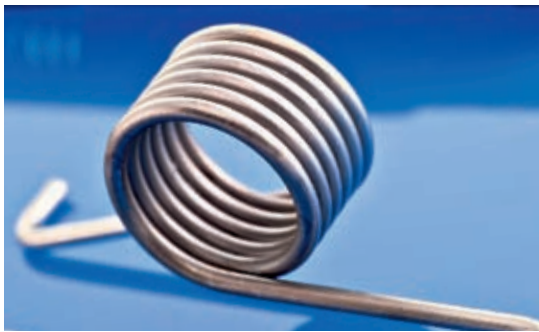
Trumpet junctions and installation aids for tension springs are finding growing application.

We have been involved in supplying these solutions for years now. We manufacture tension springs in general with German and English eyelets between 0.25 and 4.00 mm wire diameter.

We can also manufacture special eyelets and eyelet forms according to special requirements in wire diameters ranging from 0.10 to 4.00 mm.



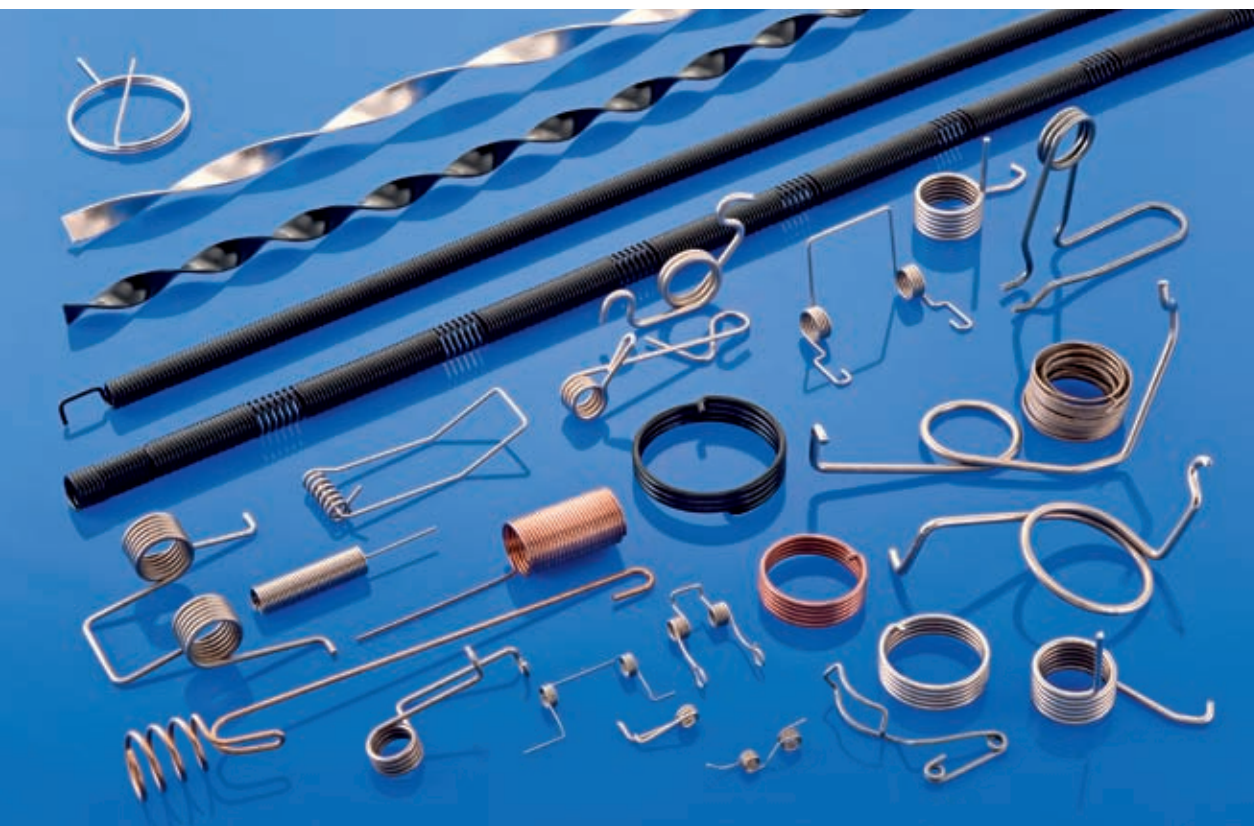
# TORSION SPRINGS



## Wire coatings:

- galvanised
- ZnAl-coated
- red drawn
- Nickel coated
- Nickel polished
- phosphated
- brassed
- silver-plated

We work closely with the customer to manufacture torsion and leg springs according to stipulations based on drawings, samples or sketch. We also look after development of the spring up to production-readiness. We produce torsion springs from a wire diameter of between 0.20 and 4.00 mm with and without torque testing.



# WASHER SPRINGS



Washer springs are ideal in areas of limited space but which require high forces.

Apart from the weight and cost savings, the prolonged service life is a significant feature.

We manufacture both single-turn as well as multi-turn designs with waved and straight surfaces. Washer springs are developed for the specific purpose in close coordination with the customer. We gladly provide support in dimensioning, recalculation and production. We input our technical competence to find a suitable solution with the customer.



# WIRE FORMED PARTS



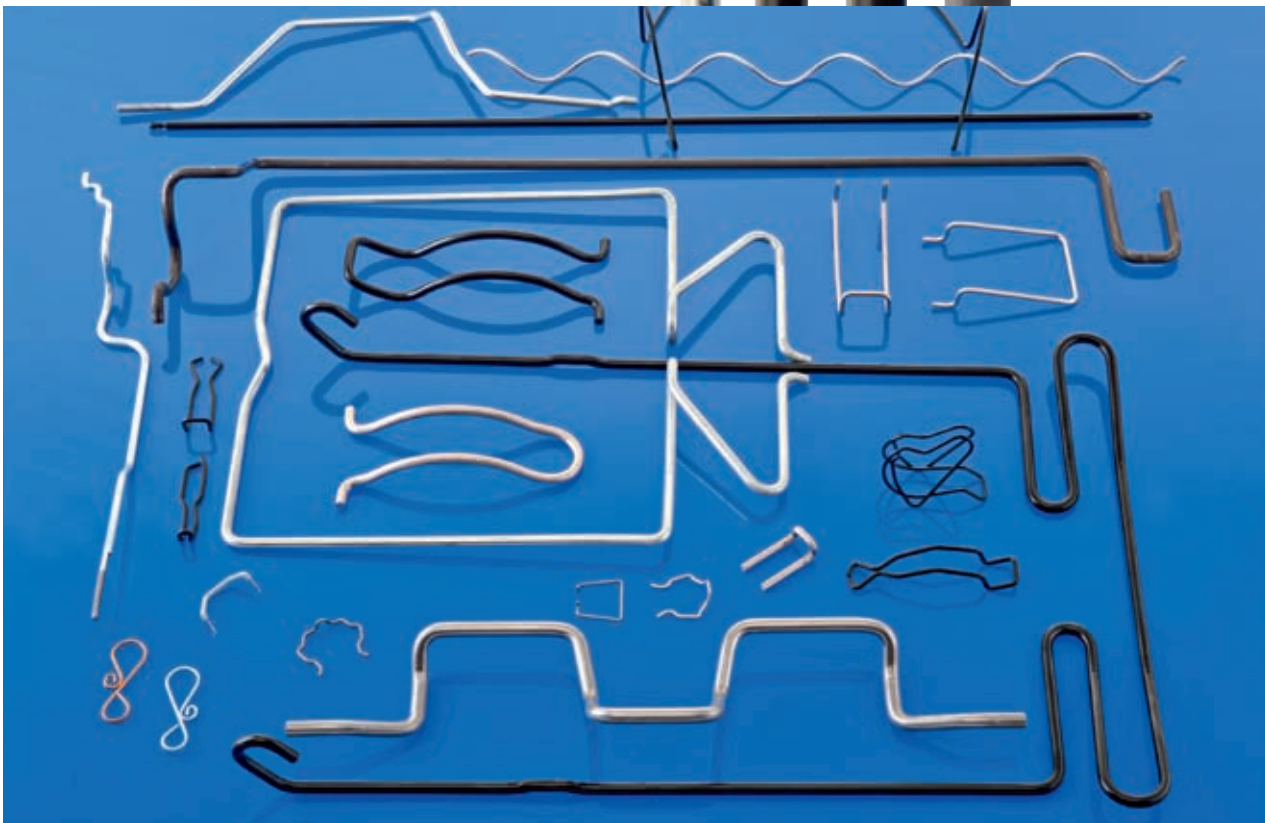
Our ultramodern machines plus our own tool workshop enables three-dimensional wire formed parts of a extensive range of shapes and specific finish. The processing spectrum comprises: bevelling, embossing, thread turning, thread rolling, turning and milling. For wire formed parts both CNC bending and form-based bending are possible manufacturing solutions.

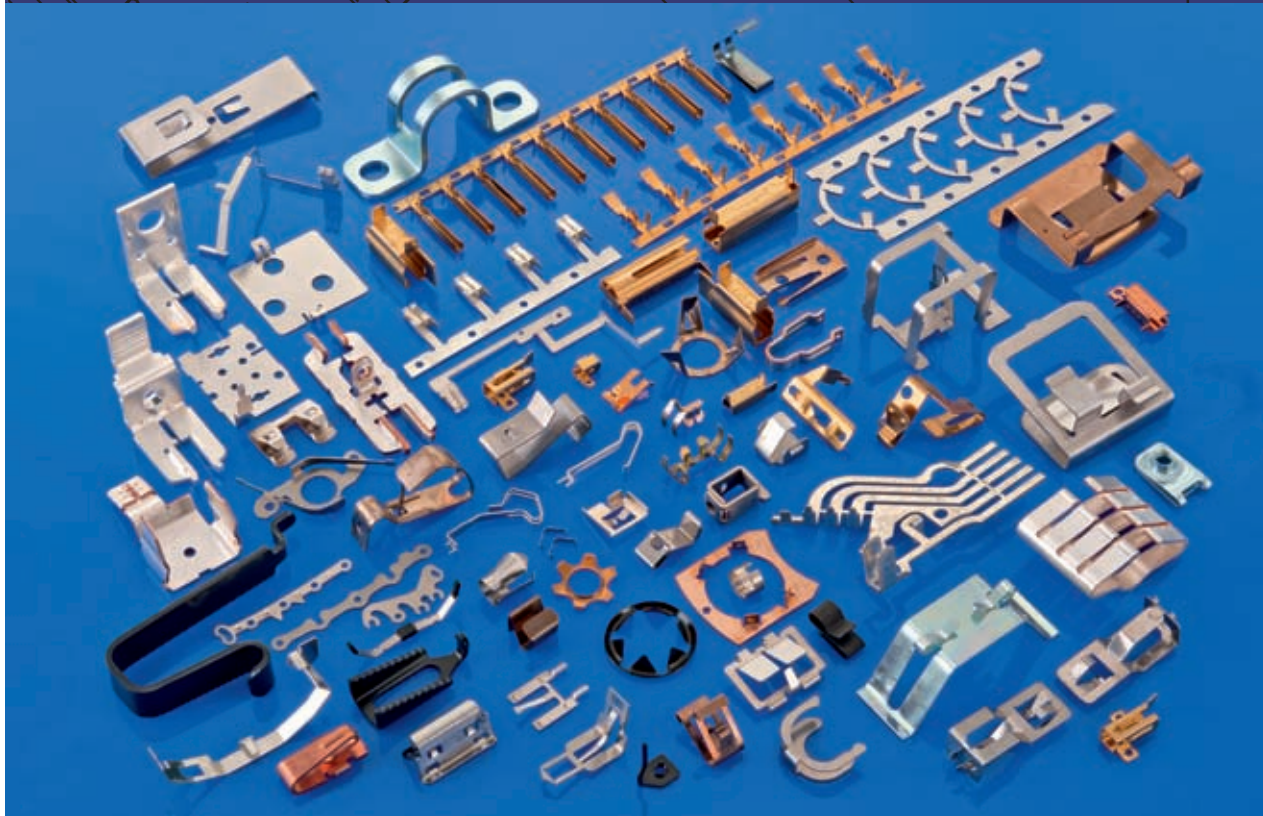
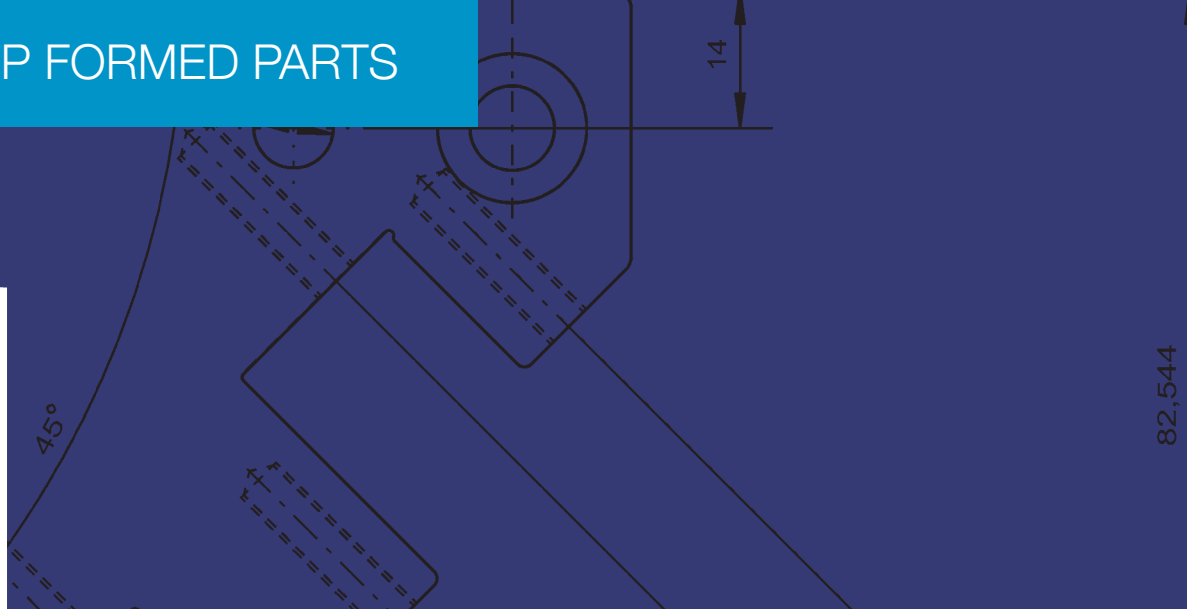
We process a wire thickness of between 0.20 and 10.00 mm. Tool-based from 0.50 to 12.00 mm.

## Coatings

Part surfaces e.g.:

- oils
- hardening
- vibratory grinding
- galvanising
- chrome-plating
- phosphating
- silver-plating
- gold-plating
- tin-plating
- nickel-plating
- copper-plating
- brass-plating
- painting
- blasting
- PTFE-coating
- Delta Tone/Delta Seal
- zinc flake coating
- Gleitmo-coatings
- degreasing
- we can obviously meet special wishes





Our new manufacturing hall boasts 30 ultramodern automatic stamping and bending machines. For the development of your requirement profile you can call on our experienced technicians at an early stage. Our own tool making facilities gives us the technical competence to manufacture individual stamping and bending tools.

Complex shaping and installed parts can be manufactured from a strip thickness of between 0.10 and 3.00 mm with a strip width up to 100 mm, the strip thickness depending on the material.

#### Strip materials:

- all standard spring strip steels:
- carbon steels
- stainless steels
- cold rolled steel
- slit strip

#### non-ferrous metals of

- brass
- copper
- bronze
- beryllium
- Special alloys such as K55 or K75

#### Coatings

##### Strips:

- tin-plating
- galvanised
- silver-plating
- gold-plating
- painted
- special coatings on request
- Naturally also partial coatings



# ASSEMBLY GROUPS



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+0,02  
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Complete assembly groups are manufactured on ultramodern machines by means of stamping, shaping, clinching, welding, screw-connecting, riveting or fitting. From prototype manufacture, in part with laser generation, to fully automatic installation and quality inspection - all from one source. Difficult shapes and installed parts can be manufactured from a strip thickness of between 0.10 and 3.00 mm with a strip width of up to 100 mm, the strip thickness depending on the material.



Catch cases assembly group with 100% testing

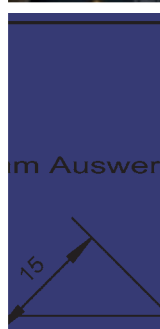


Every conceivable special packing form from blister to PE packaging is tailored exactly to the corresponding product.

Hose packaging ensures an interrupted feed down to the last spring. We are in the position to supply even conical springs hose-packed. We would gladly input our know-how and help in adapting specific removal mechanisms. It avoids down-time on highly complex assembly plant caused by springs becoming tangled.



# LASER-GENERATED PROTOTYPES



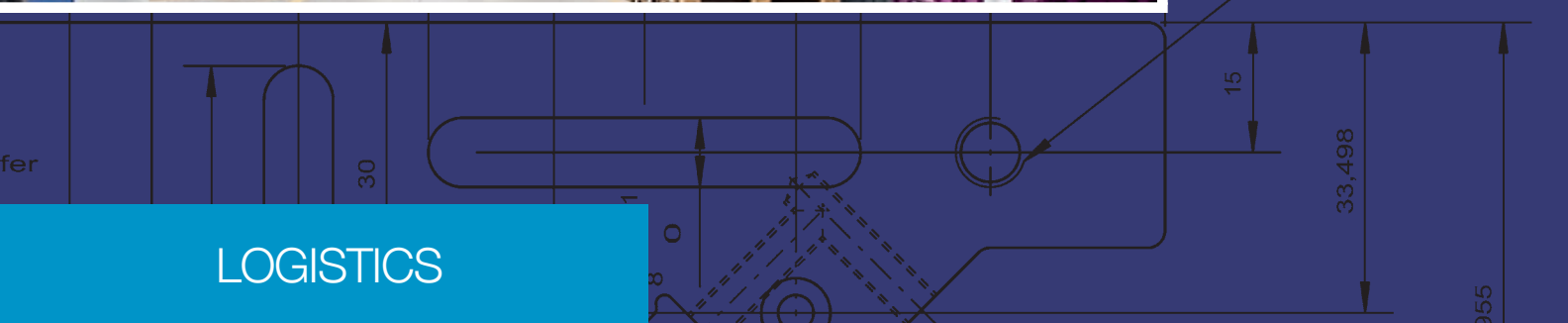
Laser generation involves building up components in layers from metal powder in standard materials (e.g. steel 1.2709 or 1.4543).

The basis for the laser control are 3D/CAD data. Thin layers of powder are applied to a basic body and then melted into the desired contour by laser. These process stages are continued in a revolving pattern until the workpiece geometry is complete. Excess powder is recycled and can be employed fully for other production processes.

Depending on the component in question the process can take a few hours or several days. The desired hardness up to HRC 54 ( $1900 \text{ N/mm}^2$ ) is achieved by subsequent heat treatment.

The advantages are obvious. Firstly, there is enormous time savings to be had - no time is lost in making and testing tools. Secondly, there is the gain in flexibility. Laser-generated parts are fully functional, possess identical spring properties as the later production product. Modifications to the production data of variants can be integrated in the original process and can be incorporated very rapidly following sampling.



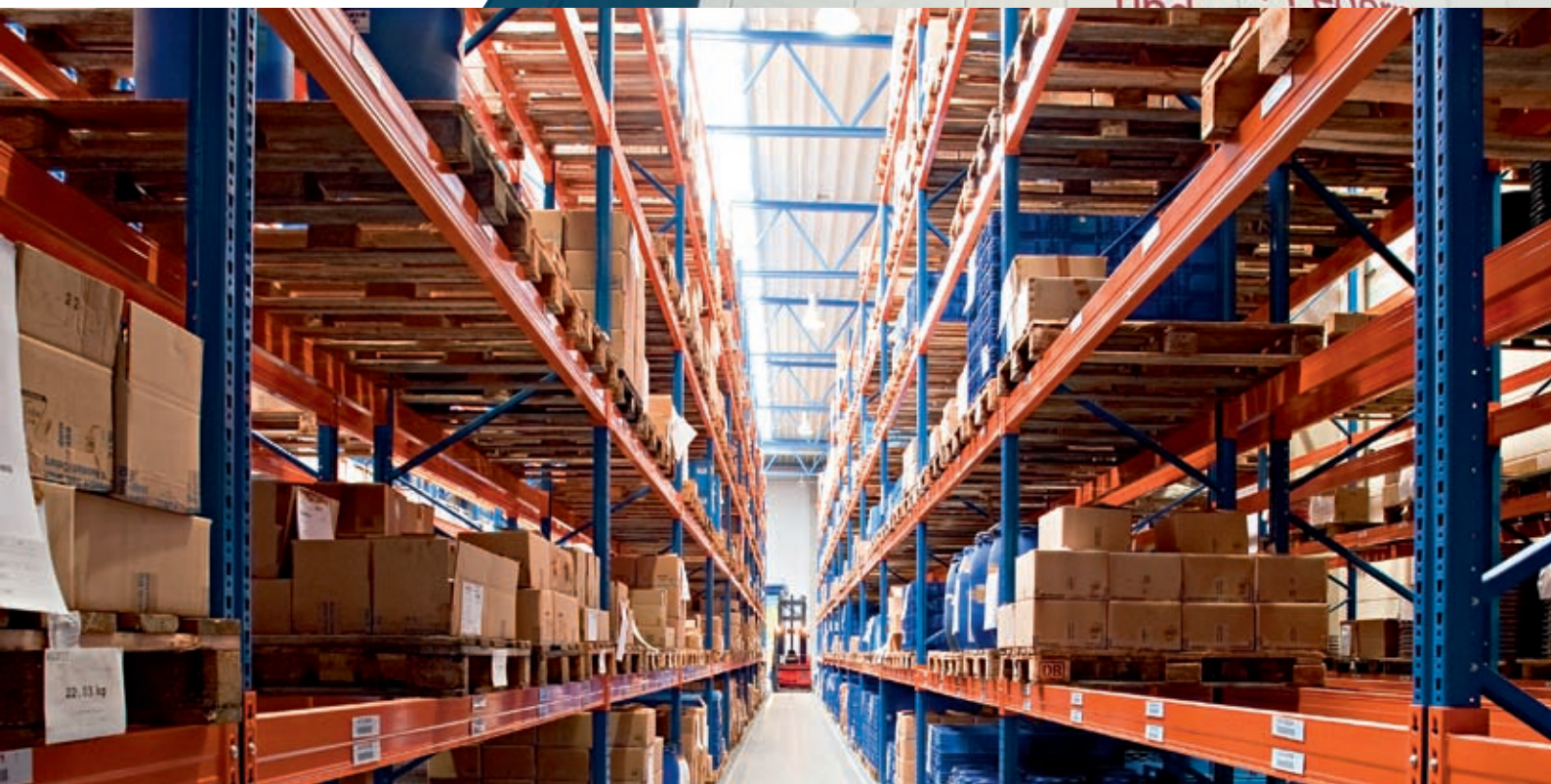


## LOGISTICS

The highest level of supply availability and the lowest possible processing time for our customer is our goal. We pursue this goal by means of our database-aided warehousing system - both in raw material as well as in finished part storage.

We react extremely flexibly to your logistic demands and always strive to establish even more streamlined structures and processes.

Irrespective of whether you prefer just-in-time, just-in-sequence, Kanban solutions, remote calls or consignment stock - we would be glad to provide the optimum solution for your needs.



# Become — a — partner.

For some of our customers we are - compared with their size - perhaps just a „small“ partner. For others we can occasionally be the larger. However, in the partnership we imagine, size is unimportant. What's important are just the goals and the success that we can achieve together. We strive towards a partnership in which both parties are fair and honest in their attempts to achieve a goal. Success. We offer you our hand in partnership. Perhaps it could be the beginning of a long and successful cooperation.

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