



SPECIALIST MANUFACTURER OF DISC SPRINGS

ISO TS 16949:2002 certified

The world of Disc Springs



Adolf Schnorr GmbH + Co. KG in Sindelfingen



Schnorr is a modern medium sized undertaking situated near Stuttgart who supply solutions to diverse problems in the field of Disc Springs, connection technology and screwed joints.

Production utilising innovative techniques and an up to date quality system to ensure an on time, reliable, and progressively higher quality supply of Disc Springs, Safety Washers and Load Washers.

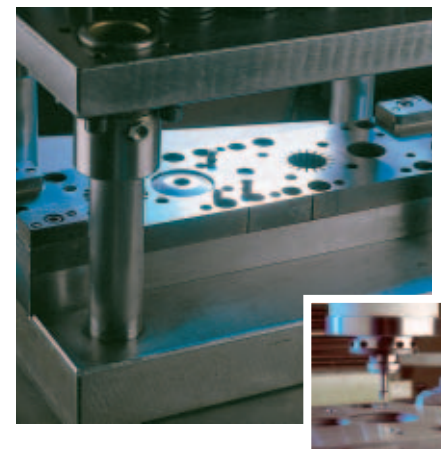
The commitment and great experience of our engineers guarantees the best possible solution to your Disc Spring problems.

Also we offer our full cooperation on new developments.

Technical advice has long been a tradition at Schnorr. We constantly seek to develop this using the most modern equipment.

Personal contact with our customers is of special value, whether this is just a conversation or a visit to us - we are always here for you.

We want to be your partner, rely on our experience!



CAD Design

A CAD system increased our design and development capacity for tooling and various production schemes.

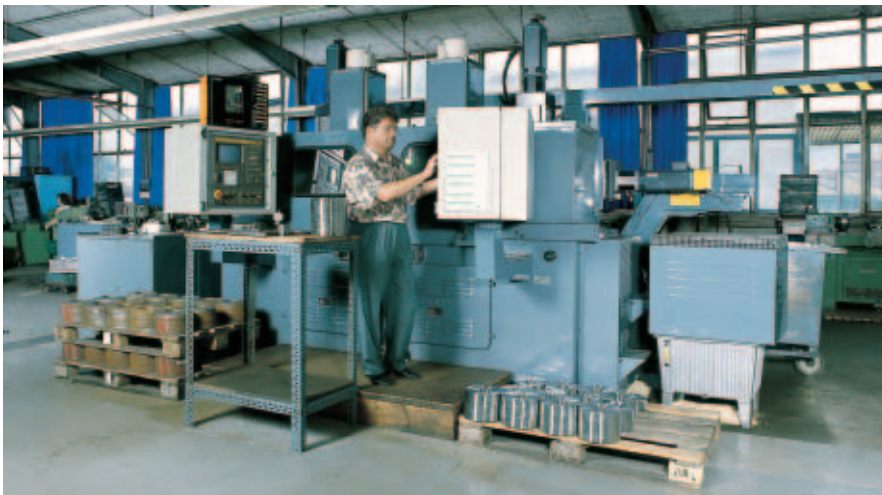


Tooling Manufacture

The craft and precision of our tool makers is legendary. Technical know-how is obvious in the many tools we make.

Presses

Eccentric and toggle-joint presses, together with automatic presses up to 2500 kN capacity are installed to manufacture from coiled strip or steel plate. Skillfully arranged feed and the precise working force combine to optimise production quality. The stamping of material up to 8.0 mm thick is no problem to us. Fine blanking presses are installed for the effective production of special parts.



Quality Control

Through the implementation of SPC we can ensure a product of constantly higher quality.

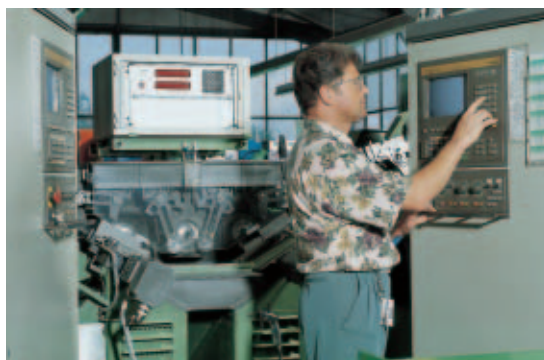
- Supervision of manufacture at all phases
- Reaction to smallest changes
- Modern electronic digital measurement
- Dimensional data transfer and certification by computer...

This will be completed through:

- Raw material and production inspection
- Hardness and grain structure tests
- Surface inspection (roughness, coating thickness, crack detection, corrosion resistance...)

Turning

- is our strength!
We are well established to carry out turning on CNC chucking automatics up to 250.0 mm diameter and general turning up to 1000.0 mm diameter. Computer controlled collett automatics are supplied by fully automatic work piece handling. Show us your problem - we will turn almost anything.





Hardening

Where the inner structure of the material depends on many years' experience and flair, we have both!

In our modern through hardening equipment we normally handle the intermediate stage in oil as well as in the salt bath.

With our automatic computer controlled transport system for hardening we can control the time/temperature precisely.

Scragging

After heat treatment all disc springs are flattened at least once.

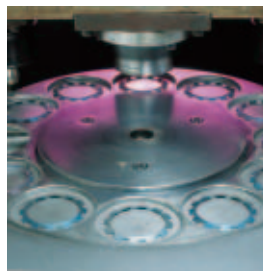
This guarantees the overall height under load will not exceed the allowable deviation.

For this purpose hydraulic presses are mainly used.

Surface Treatment

Phosphating and browning are our standard surface finish. Here also we work with automated equipment. Obviously we can supply any required surface treatment.

With electroplated treated springs there is always the risk of hydrogen embrittlement. We will be pleased to offer alternative



Laboratory

In the area of research and development our co-workers pursue the quality philosophy. Load testing with test certificate is carried out using the most modern equipment to record the results.

Environmental Protection

We are committed to this philosophy. The most modern effluent handling technology, environmentally friendly materials and packaging materials are our contribution to environmental



Standard Production

Maximum load at minimum space - this sentence sums up the relevant properties of Original SCHNORR Disc Springs.

As a matter of fact the Disc Spring is unbeatable where high load with relatively small deflection is required and only limited installation space is available.

These characteristics have made Disc Springs acceptable in all branches of technology for a multitude of applications.

Original SCHNORR Safety Washers and Load Washers to DIN 6796 have guaranteed the security of screwed connections for many years.

We supply Safety Washers for screws up to M36, for larger threads special manufacture is possible.

Our standard production consists

of Original SCHNORR Disc Springs to DIN 2093 and works standards from 6.0 mm to 250.0 mm outside diameter.

A large part of our production consists of special sizes from 3.0

mm to 1000.0 mm diameter. For special requirements we manufacture in heat resistant and corrosion resistant steel as well as other materials suitable for Disc Springs.



Ball bearings

run without play and noise when preloaded with Original SCHNORR "K" Disc Springs for ball bearings. These are available in both plain and slotted versions up to 360.0 mm diameter.

Special Manufacturing

Would you have thought that Disc Springs have so many possibilities?

Here we show you in a few examples how the simple conical pressed form of the Disc Spring may be developed.

Through suitable shaping of inner or outer diameter the spring may be accommodated to a multitude of requirements and in addition take charge of e.g. transmitting a torque or centering and securing connected parts.

Because of modern techniques in tool manufacture and the corresponding improvements in machine tools we can today make compli-

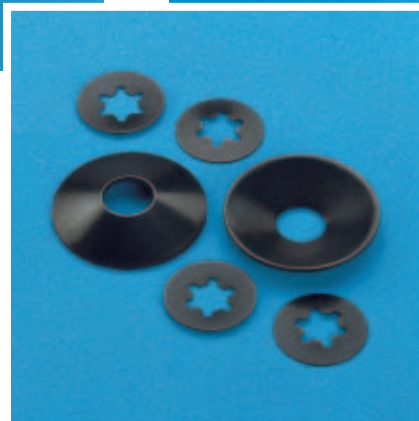
cated parts without difficulty.

Also for your special requirements we will find an answer!

The pictures on pages 6 and 7 show just a few examples of parts we have made in the last few years for the automobile industry, electrical equipment, aerospace, precision engineering and the construction industry.

We thank all the companies which with their confidence in our capabilities have enabled us to present such a varied range of Special Manufacture today.

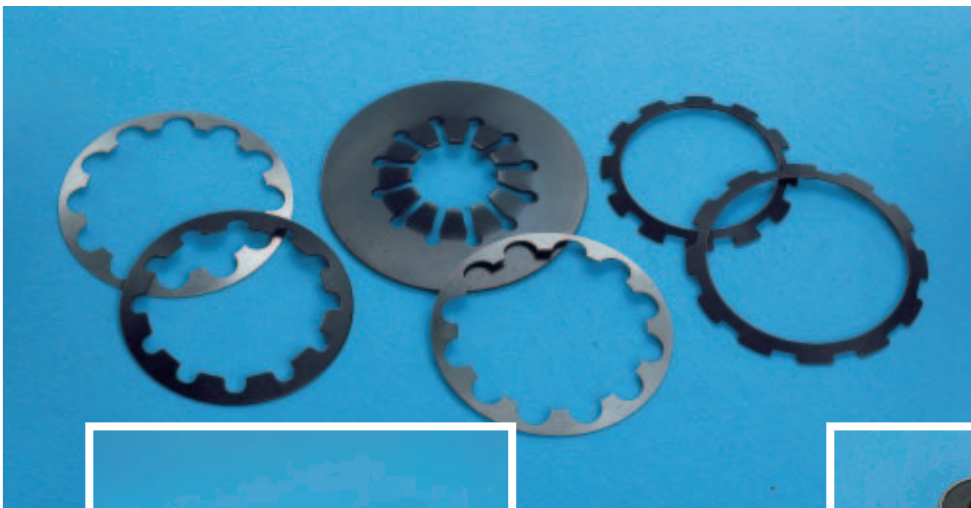
When will you refer your problem





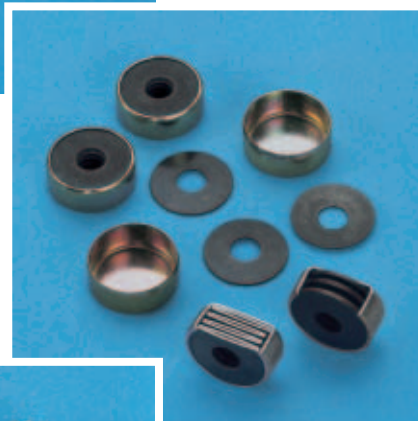
Star Shaped Springs

are also Disc Springs! In this form the Disc Spring is suitable for very low forces which cannot be achieved with "normal" Disc Springs.



Slots on the inner or outer diameter

give a "softer" spring characteristic i.e. the spring load remains constant over a limited deflection or alters very little. This characteristic is of great value in many applications and Disc Springs are the only type of



Combinations

There are numerous possibilities for the combination of single springs.

Almost any required load deflection characteristic, within wide limits, can be achieved.

We can deliver completely assembled and tested Disc Spring stacks to your requirements, including all fitting parts.



Foreign Agents

SCHNORR is represented world-wide!
Our agents supply customers, in over 30 countries worldwide. A specialized staff has helped them to make new markets accessible and to improve our service quality steadily. Here you find the necessary know-how as well as SCHNORR specific knowledge.

Almost all our foreign agents maintain well-assorted stocks of DIN sizes and to works standards, made from standard materials with conventional finish. So a high availability is guaranteed worldwide.

Adolf Schnorr GmbH + Co. KG

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