

ARNOLD-TV
presents

How does
multi-stage
cold-forming work?



Conform[®]

Cost-optimised multi-functional parts

- + ready for series production right from the start
- + an alternative to expensive turned parts
- + up to 80% cost saving
- + rapid prototyping
- + multifunctional applications
- + multiple in-house machining centres

➔ www.arnold-fastening.com



Complex cold-formed parts, tailored to the customer

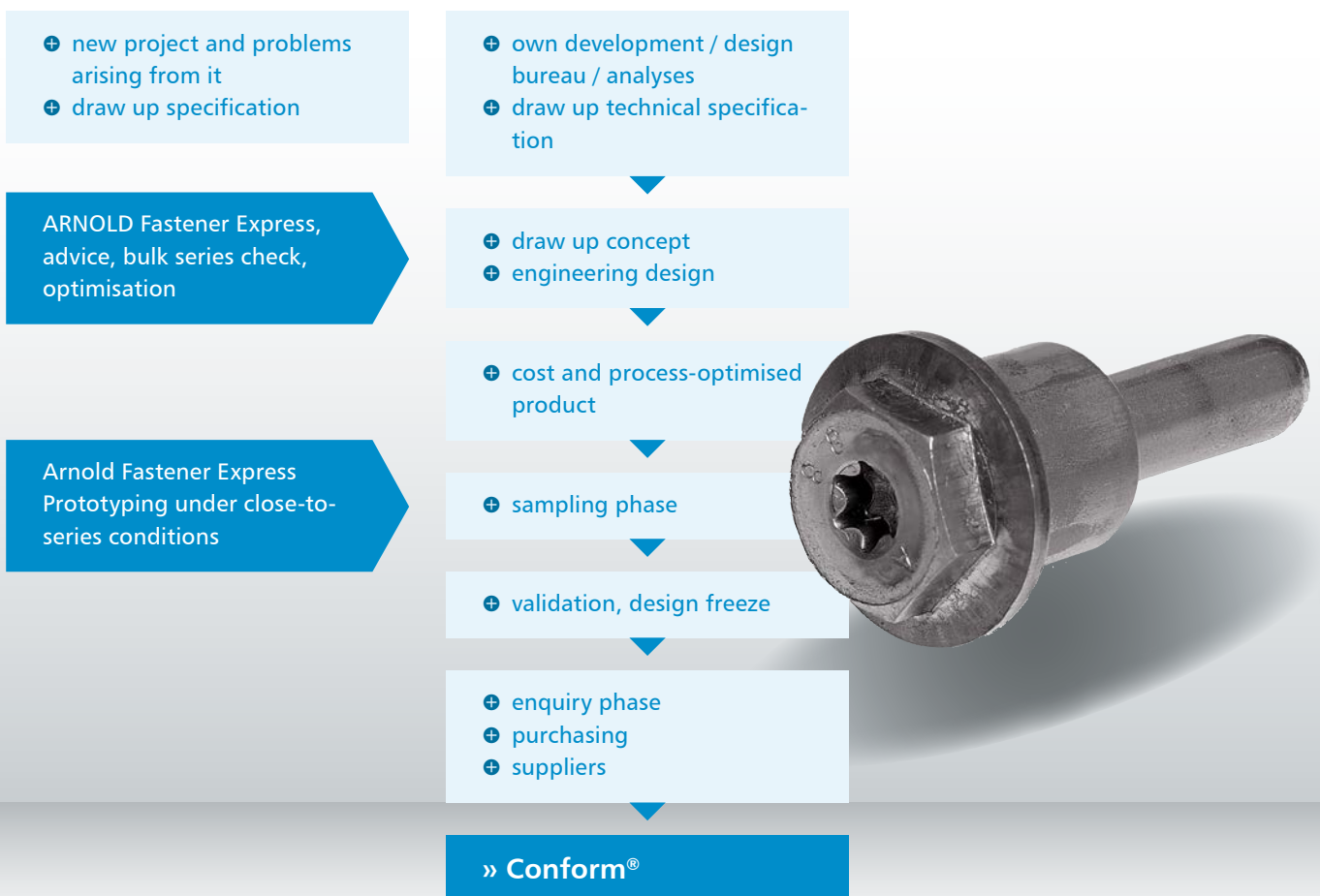
Conforms to our customers' needs Under the brand name of Conform®, we develop and produce complex cold-formed parts for multi-functional uses, often customer-specific, and always using our sophisticated development expertise and the most up-to-date plant and machinery. Because the metal is formed, our Conform® parts are much more economical than conventional precision and turned parts, which are machined.

Ready quicker, so quicker to series production

Engineering designers and developers see the benefits of our "Arnold Fastener Express" engineering tool as early as the development and prototype stages. It is incorporated into the development process and by carrying out a series manufacture check at an early stage it supplies the required parameters for cost-efficient, optimised development and produc-

tion steps, and for functional prototypes in close-to-series production quality. It means that we can make, evaluate, and implement any modifications that may be required at an early stage of the product development process That saves time and development costs.

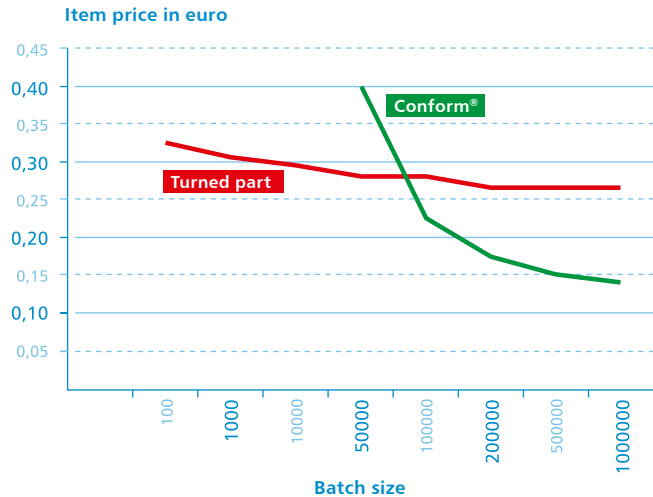
Innovative development process



You save up to 80%

With our innovative multi-stage forming you save up to 80% on bulk production runs compared with turned parts. Reasons for such enormous savings include the fact that less material is required for non-cutting forming. And multi-stage pressing delivers a much higher production output compared with conventional lathes.

Sample cost comparison between turned part and Conform[®]



Diverse product range

We produce our Conform[®] parts on the **latest plant and machinery**:

- + multi-stage presses with up to 7 forming stages
- + machines capable of complex internal and external machining
- + comprehensive post-production centres

This ensures that the areas of application and the design possibilities for Conform[®] products are almost unlimited. Our **comprehensive product range** includes:

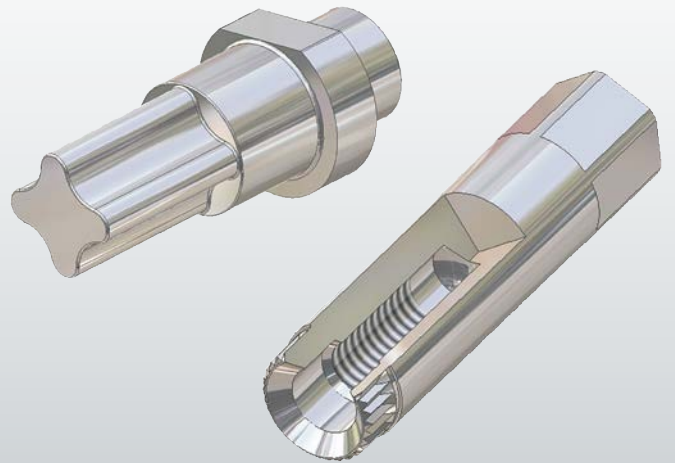
- + external tothing
- + form-rolled parts
- + hollow and semi-hollow parts
- + eccentric parts
- + bearing pins

Conform[®] production options include complicated external contours, blind and through-holes, and short, hard-to-convey parts, as well as products requiring centre-hole machining. We have our **own heat-treatment and surface treatment facilities** so that we can handle the entire manufacturing process in-house, in one continuous process.

Conform® – Precision parts

We use the latest high-gloss polished and coated forming tools for the cold-forming process. This means we achieve very high accuracy. Some examples of Conform® precision parts:

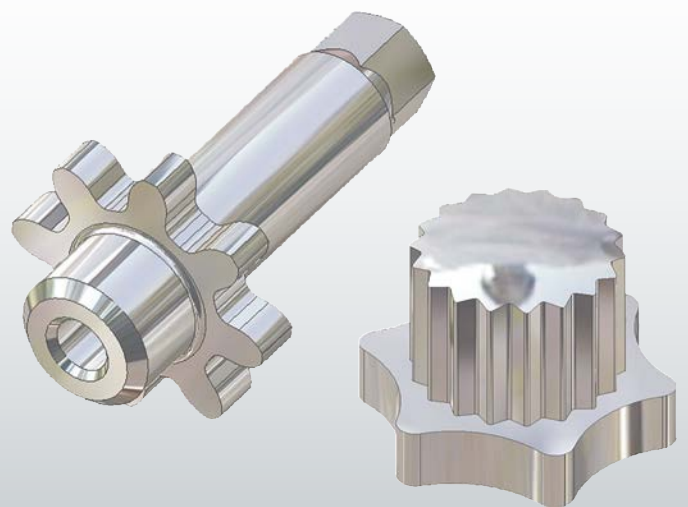
- + Drive shafts for small to medium-sized electric motors, e.g. for
 - + Windshield wipers
 - + Window winder
 - + Seat adjuster
- + Bearing bushes
- + Locking pins
- + ABS functional parts
- + ESP functional parts

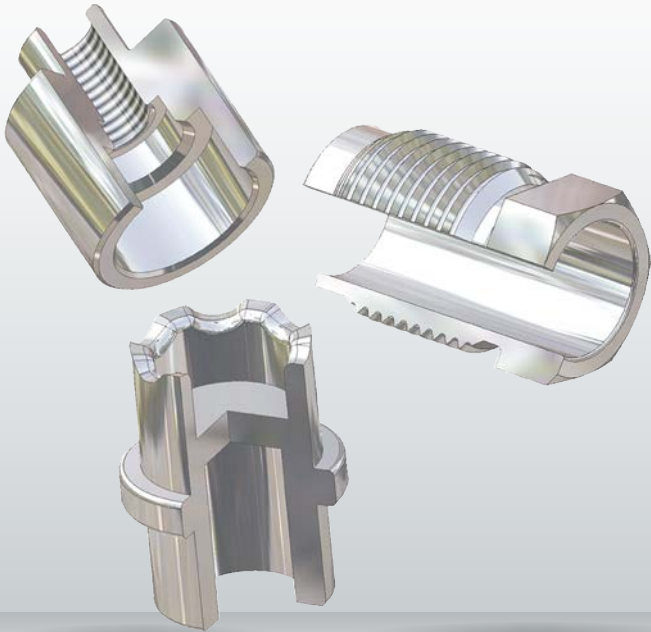


Conform® – toothed parts

Toothing is a frequent design element. They are complex in geometry, and their manufacture requires heavy machine use. Previously, toothed parts were mainly manufactured in a cutting process with a finishing process that followed the heat treatment stage. But we produce toothed parts in a cold-form process, thus providing the following benefits:

- + customer-specific external geometries
- + greater endurance strength
- + greater mechanical load resistance
- + press-smooth surfaces
- + high accuracy of shape and position
- + saving on materials





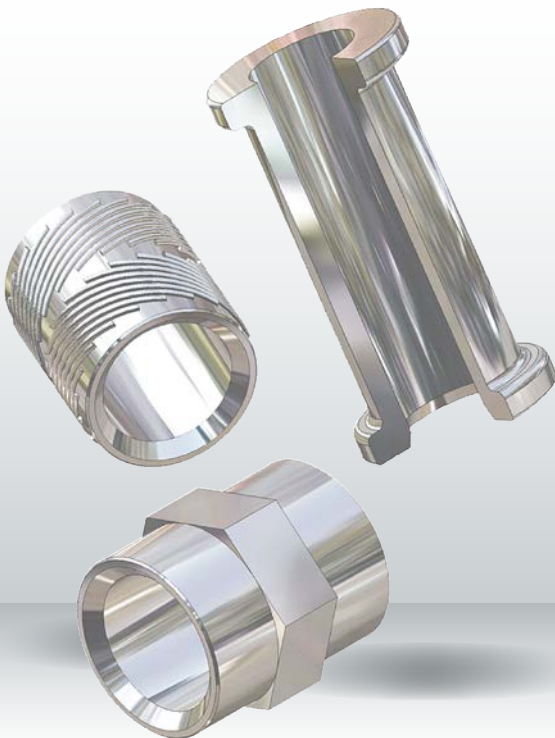
Conform[®] – hollow parts and nuts

Manufacture by machining is battling against the rising cost of materials and long machining times. That's why many companies are finding our forming process for hollow parts of increasing interest. We have other forming options for machine-finishing in-house. Our cold-forming process is distinctive - including for thin-walled hollow parts because of:

- ⊕ **rolled (chip-free manufacture) external**
- ⊕ **threads suitable surfaces for maximum corrosion requirements**

Some examples of Conform[®] hollow parts and nuts:

- ⊕ **Sensor housing**
- ⊕ **Union nuts for hydraulic, brake and fuel lines**
- ⊕ **Clinch nuts**



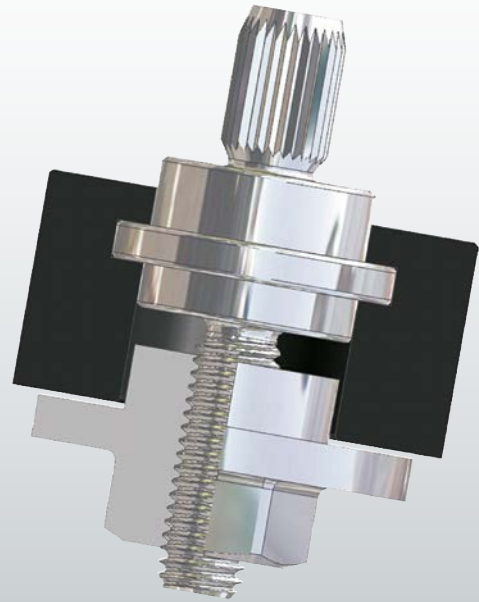
Conform[®] – bushes

Lightweight structures in the automobile industry demand savings in materials and weight, while using materials and components with high load capacities. Plastic-moulded bushes take account of this development. They reinforce the plastic, make weak points for load-bearing functional elements and receive the pre-load forces of screw fastenings. The use of aluminium bushes saves even more weight, providing sophisticated solutions when combined with TAPTITE 2000[®] thread-rolling screws. Conform[®] bushes indicate high accuracy in length and diameter.

Conform® – components

With Conform® components our customers can reduce their procurement and assembly costs: We handle the preceding processes thus enabling slimmer procedures at our customers' own production facilities. So that we can meet the wide variety of component needs for our customers, we work within a network of certified partners. Some examples of components made to customer specifications:

- + cold-formed parts in steel
- + cold-formed parts in aluminium
- + rubber decoupling elements
- + plastic injection-mouldings
- + stampings
- + metal bending parts
- + non-detachable washers or sealing rings



Conform® – multifunctional fasteners

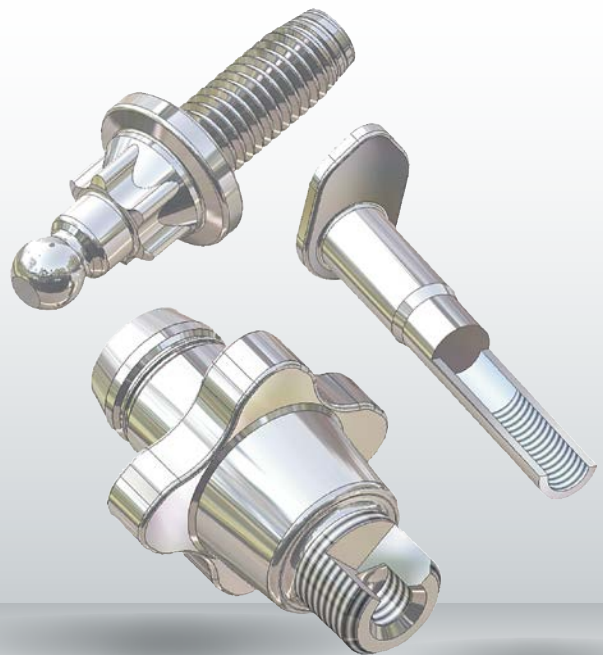
Time and again, our systematic research and development work results in multi-functional fasteners that, because of their shape, are able to combine two or more functions. Some examples of multi-functional combinations:

joining

- + and sealing
- + and decoupling

joining

- + and bearing
- + and drive
- + with articulated joint receptacle
- + with shear-off element



Send us your enquiry for a component

By fax to: +49 (0)7947 821-111.
 We look forward to hearing about your needs.

Your contact details

Name

Company

Email

Telephone

Part reference

Drawing no.

Material

Annual quantity (pieces)

Approx. run-time (years)

Deadline for initial sample

Deadline for SOP

The component ...

- is a new project for us
- is for an existing project
- has previously been manufactured using a different technology
- is already manufactured by cold-forming

I would like ...

- technical advice on economical part design
- a non-binding quote
- a quotation for prototypes

Technical information about the component

Please give a description of your application and the component's function, or attach a description. We would also appreciate receiving a sketch, drawings, or documents to help us to understand your application. You can also send a sample part separately by post. The address is stated on the back page of this brochure.

I am sending you the following attachments:

- Description
- Sketch
- Installation drawing
- Enquiry drawing
- other documents, viz.

Other requirements of the component, not stated above:

Essential dimensions, tolerances, variations in shape and position, surfaces or batches?

The ARNOLD GROUP

Wherever customers need us.

The ARNOLD GROUP

ARNOLD – this name is internationally renowned for efficient and sustainable fastening systems on the highest level. With a foundation of many years of expertise in the production of intelligent fastening systems and very complex extruded parts, the ARNOLD GROUP has developed over a number of years into a comprehensive supplier and development partner for complex fastening systems. With our positioning of “BlueFastening Systems” this development process will continue under a united and harmonized structure. Engineering, fasteners, and functional parts, together with feeding and processing systems, all from a single source – efficient, sustainable and international.



ARNOLD FASTENING SYSTEMS
Rochester Hills
USA



ARNOLD UMFORMTECHNIK
Ernsbach
Germany



ARNOLD UMFORMTECHNIK
Dörzbach
Germany



ARNOLD FASTENERS SHENYANG
Shenyang
China

ARNOLD FASTENING SYSTEMS Inc.
1873 Rochester Industrial Ct.,
Rochester Hills, MI 48309-3336
USA
T +1 248 997-2000
F +1 248 475-9470

ARNOLD UMFORMTECHNIK GmbH & Co. KG
Carl-Arnold-Straße 25
74670 Forchtenberg-Ernsbach
Germany
T +49 7947 821-0
F +49 7947 821-111

ARNOLD UMFORMTECHNIK GmbH & Co. KG
Max-Planck-Straße 19
74677 Dörzbach
Germany
T +49 7947 821-0
F +49 7947 821-111

ARNOLD FASTENERS (SHENYANG) Co., Ltd.
No. 119-2 Jianshe Road
110122 Shenyang
China
T +86 24887 90633
F +86 24887 90999