

## Direct screw fastenings for plastics in lightweight construction



Stuttgart/Ernsbach,  
02. February 2018.

The trend for replacing metals with increasingly higher performance and high-strength plastics continues, particularly in lightweight construction. Against this background, direct fastenings that are perfectly designed and matched to these high-performance plastics are gaining in importance.

The trend for replacing metals with increasingly higher performance and high-strength plastics continues, particularly in lightweight construction. Against this background, direct fastenings that are perfectly designed and matched to these high-performance plastics are gaining in importance.

With the REMFORM® screw, ARNOLD Umformtechnik GmbH & Co. KG in Forchtenberg has a joining solution that takes not only the concept of lightweight construction into account. It also shortens assembly times and minimises assembly risks. This is where the screw design and correct layout of the plastic component play a particularly important role.

In contrast to the conventional screw fastening of plastics, direct screw fastening using the REMFORM® screw significantly streamlines the manufacturing process.

The component can be injected with optimally designed core holes and the plastic screw can be used for assembly immediately afterwards, thus eliminating time-consuming handling steps.

### Asymmetric thread profile ensures secure connection

Thanks to the asymmetric thread profile, the REMFORM® screw ensures a reliably secure connection for direct screw fastening of plastics.

Compared to a conventional plastic screw, it has an optimised thread core which significantly increases the screw's breaking torque as well as increasing vibration resistance. This results in a more stable connection of the joining partners and, in the case of high-strength plastics, also enables a higher installation torque without the risk of a screw fracture.

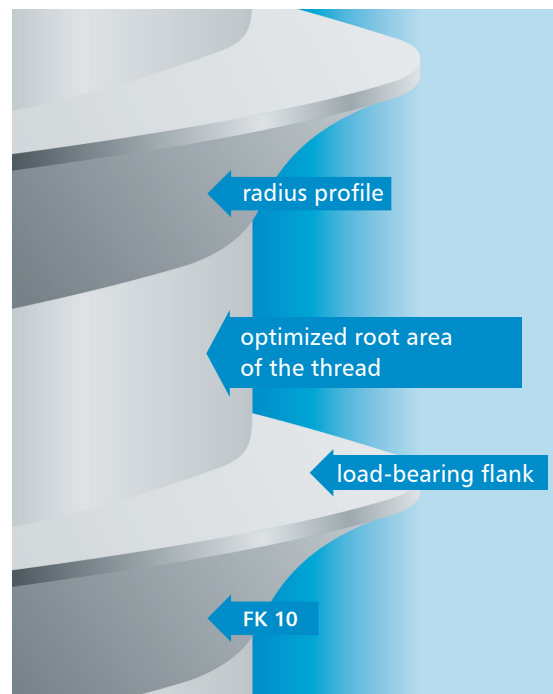
The radius profile of the thread flanks is a further improvement compared to the usual 30° flank. A targeted local input of heat into the plastic takes place as a result of the compressive stresses rapidly occurring during thread forming and the comparatively high speed. Due to the plastic's temperature-dependent visco-elastic properties, it is possible to specifically influence and exploit the flow behaviour and flow direction. With the higher volume of material, the radius profile displaces the plastic towards the load-bearing flank, without generating high stress concentrations.

### Direct screw fastenings for plastic have many advantages

The geometric and material properties of the Remform® also mean reliable repeat screw fastenings are possible. As a result, component repairs can be carried out reliably and without restrictions.

In addition to the technical advantages, the commercial advantages also play a major role. The Arnold forecasting tool, Fast Designer Plastics, is used to harmonise the mechanical requirements for the fastening with the selected plastic. The assembly process and the assembly pre-load forces are already predicted in the design process, and the core hole and screw are adjusted to meet the appropriate requirements. This reduces the need for cost-intensive testing.

■ Dipl.-Ing. Annedore Bose-Munde  
Editorial journalist for science and technology



The task of the REMFORM's steep load flank is to generate the necessary pre-load force while at the same time ensuring high assembly reliability. Image: Arnold Umformtechnik

## The radius profile displaces the plastic towards the load-bearing flank, without generating high stress concentrations

### ARNOLD UMFORMTECHNIK GmbH & Co. KG

Carl-Arnold-Strasse 25 · D-74670 Forchtenberg-Ernstbach  
Tel: +49 7947 821-0  
info@arnold-fastening.de · www.arnold-fastening.com

#### Editorial contact

Marietta Mack · marietta.mack@arnold-fastening.com  
Tel: +49 7947 821-201

Magdalini Wanke · magdalini.wanke@arnold-fastening.com  
Tel: +49 7947 821-533

ARNOLD - internationally the name stands for innovative fastening technology at the highest level. With a foundation of many years of expertise in the production of intelligent fastening systems and very complex extruded parts, over a number of years the ARNOLD GROUP has developed into a comprehensive supplier and development partner for complex fastening systems. With over 1,100 employees throughout the world, ARNOLD supplies engineering, fasteners and functional parts, together with feeder systems and processing technology, all from a single source – efficient, sustained and international. Since 1994 Arnold has been part of the Würth Group.