



RIFAST® STH

FOR APPLICATIONS WITH
THICKNESSES BETWEEN
0.6 AND 2.0 MM

WATERTIGHT FIT PLATFORM – Technical Product Sheet

RIFAST® STH SELF PIERCING HAT NUT

The new self piercing and scalable hat nut solution for fully automated mechanical joining in metal applications

› THE RIFAST® SYSTEMS ADVANTAGE

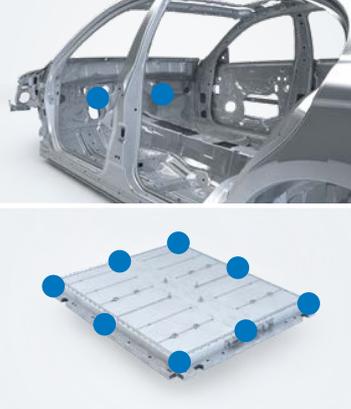
Systems expertise from designing, manufacturing clinch fasteners and automation equipment to consultation and realization in serial production

With over 25 years of expertise as a full system provider RIFAST® is the partner for developing economical solutions for reliable integration of mechanically joined clinch fasteners. The systems approach of clinch fasteners through automation equipment for in-die and off-line operations guarantees the optimal joint connection. The mechanical joining with the RIFAST® staking die designed to the customer component ensures consistent performance values in addition to eliminating thermal influences and distortions observed during welding.

› THE RIFAST® SELF PIERCING HAT NUT ADVANTAGE

Compact, lightweight, self piercing and watertight

With its compact and lightweight design, the RIFAST® hat nut is the newest innovation for watertight mechanical joining ensuring covering of the male fastener. Both in steel and aluminum applications, the self piercing nut enables clinching without a pre-pierced hole, which reduces process time while ensuring a flat supporting surface (no protrusion on component underside after joining process) for the part to be fastened. The deep drawn lightweight hat ensure watertight conditions (IPX7) for the screw's thread end. The watertightness performance can be validated at the RIFAST® application lab with a dedicated testing device by applying 1,000 mm water column on the installed hat nut for a defined time window (30 minutes = IPX7, 1 or 2 hours = IPX8). The RIFAST® STH is the optimal hat nut solution for material thicknesses from 0.6mm to 2.0mm.



Examples of applications
RIFAST® STH
e.g. BIW, battery systems

TECHNICAL DATA

Strength Grade	10 (DIN EN ISO 898-2)
Surface Coating	OEM-approved coatings
Hat Variants	Coated deep drawn steel, stainless steel
Tensile Strength	150 - 600 N/mm ²
Component Material	Aluminum alloys, Steels
Automation Equipment	Press, C-frame (automatic or manual)
Thread Size	M6, other sizes available upon request
Application Thickness (mm)	0.6 - 2.0
Push-Out (kN)* in 1.25 mm, 1.5 mm and 2.0 mm	2.3 (in 1.25 mm DC04 or in 1.5 mm AlMg4.5Mn), 2.8 (in 2.0 mm AlMg4.5Mn), 3.0 (in 2.0 mm DC04)
Torque-Out (Nm)* in 1.25 mm, 1.5 mm and 2.0 mm	18

* Performance values for reference, based on metal sheets in aluminum alloy AlMg4.5Mn or steel DC04 at the RIFAST® application lab

Performance values for push-out and torque-out are dependent on the component material, the application thickness and in combination with RIFAST® staking die. Performance values for other component materials and application thickness can be validated through RIFAST® Application Engineering.

MECHANICAL JOINING PROCESS AND CROSS-SECTION

POSITIONING

The component is positioned above the RIFAST® staking die. The RIFAST® STH with fixed hat is placed in the insertion position.

PIERCING & RIVETING

During the insertion operation, the punch applies pressure to the RIFAST® STH. The nut pierces the hole in the component while the hat is joined watertight to the nut body.

FINAL STEP

The tool opens and the finished component can be removed

Cross section of a RIFAST® STH M6 clinched in an aluminum alloy AlMg4.5Mn with wall thickness 2.0 mm