

**starrag**

Engineering precisely what you value

# Tailor Made Tools

Starrag Duo-Lock™

Solutions for  
Aerospace  
Energy  
Transportation  
Industrial



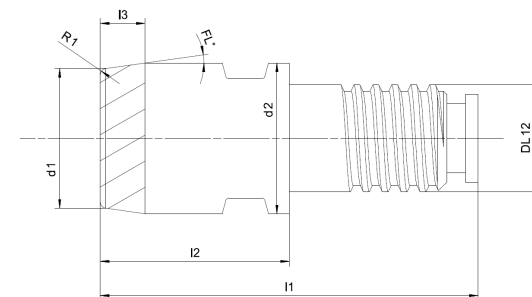
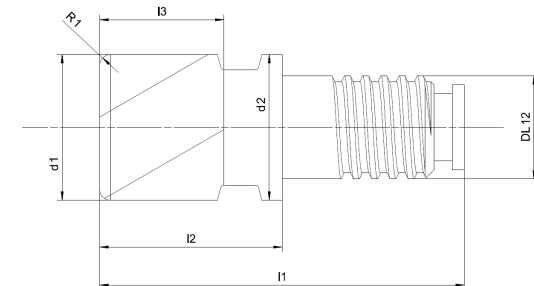
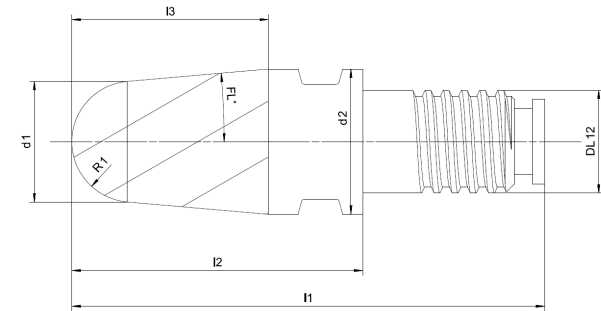
Rorschacherberg, 25/04/2017

## New products

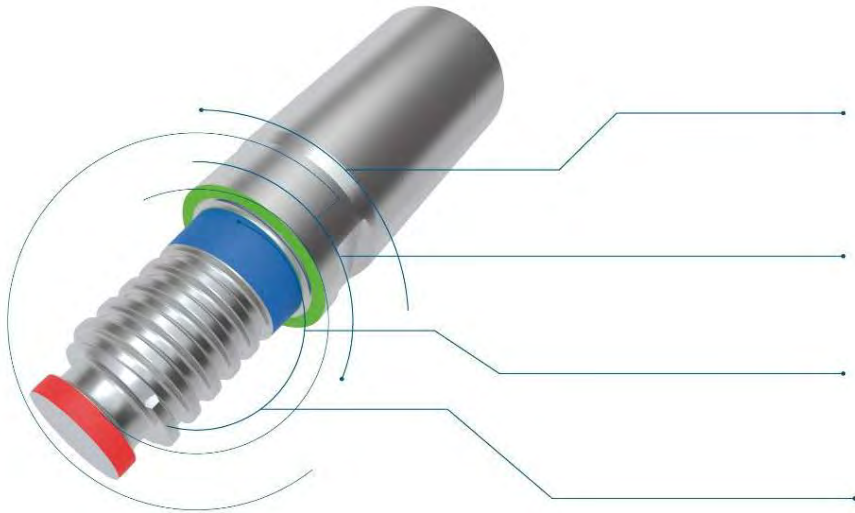
DUO-LOCK®

### ■ Screwable cutters

- Reduction of carbide costs
- High repeat accuracy
- Haimer Duo-Lock™ System
- Proven Starrag micro geometry
- Complete process development from one source
- Reduce cost per part through optimized tools
- Solutions for thin walled workpieces
- Better (improved) surface quality and longer tool life
- Pilot lots and small batches cost-effectively produced
- Short delivery times
- Diameter  $d2 = 10-32\text{mm}$



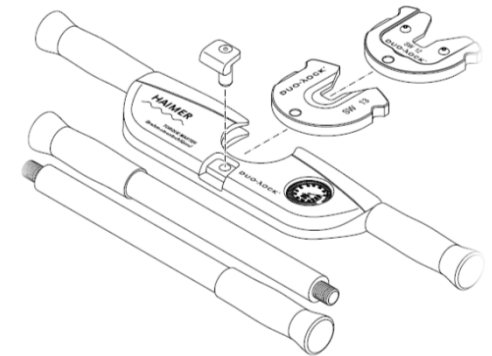
# Duo-Lock™ Interface



Double cone contact area, headcone for high accurate positioning and secure outrigger from machining forces.

Optimized distribution of strength throughout the whole thread.

Additional supporting area to take bending moments.

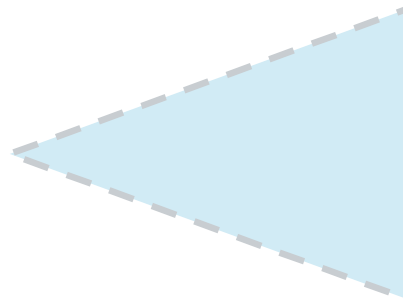


Interface runout accuracy  
5 µm

## Duo-Lock™ Interface

Length accuracy  $\pm 10 \mu\text{m}$   
*(pending on manufacturing process)*

Runout accuracy  $< 10 \mu\text{m}$   
*(Based on a short extension, pending on manufacturing process)*



The length accuracy allows a reduction of setup times

More precision and maximum tool life

## Duo-Lock™ Holders for maximum flexibility

- Interfaces HSK, SK, BT, CAT
- Central coolant hole
- Ultra short version
- Balanced G 2.5 / 25000 U/min.



- h5 shank tolerance
- Central coolant hole
- Safe-Lock™ shank (short version)
- Cylindrical version starting from 55mm to 250mm
- Conical version starting from 65mm to 250mm
- Overall length based on customer requirements
- Option for vibration dampening



Thank you for  
your attention!