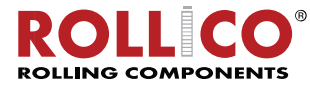


Welcome to where precision is.



# Ball Screws for Aerospace Applications





Oficjalny przedstawiciel Steinmeyer w Polsce  
[www.rollico.com](http://www.rollico.com)

Steinmeyer produces ball screws for aerospace applications to existing customer designs, or we design and develop our own solution in accordance with customer specifications. With a proven variety of products, 40+ years of experience in ball screw production, and EN 9100 (AS 9100) approved quality system, our expertise is second to none in the global market.

**Steinmeyer offers:**

- Production of ball screws to existing drawings (build to print), using all established design features (multi-liners, etc.), and from all commonly used materials
- Development of ball screws according to customer specifications (build to spec)
- Performing development and qualification tests including endurance, fatigue, ultimate load (compression or tension), buckling, environment (RTCA Do-160), complete with documentation. For some tests Steinmeyer works with an approved local test lab.
- In house test equipment for development or acceptance tests (including but not limited to efficiency tests at temperatures down to -60° C)
- Analytical design verifications FEM, FMEA, FMECA, MTBF, MTBUR etc.

### CERTIFICATES AND APPROVALS, TECHNOLOGY, QUALIFICATION

#### Certificates and Approvals

ISO 9001 / EN 9100:

Steinmeyer maintains a quality system audited according to ISO 9001 and EN 9100. This systems have been proved by third-party audits as well as by several aerospace and non-aerospace customers audits.

Non-Destructive Testing (NDT) and other special processes are outsourced to partners with the necessary qualifications, including NADCAP certificates. We control the quality procedures of our suppliers through process standards, which become part of the purchase orders.

#### Microhardness testing

Steinmeyer has a lab equipped to make metallurgical sections and test specimens for microhardness according to AMS / ASTM standards. We verify and validate heat treatment through sections which are tested for hardness profile and stored for future reference. Chemical composition of our materials is tested periodically by an outside lab to verify the accuracy of the certificates from our steel suppliers. In certain cases, we machine standard tensile strength specimens, which are then heat treated together with each lot of parts and tested for strength.

#### Grinder burn inspection

Nital etching of heat treated Cronidur® (AMS 5898) parts is not possible due to the chemical composition of this steel. Instead Steinmeyer uses Barkhausen noise analysis to test shafts and nuts made from Cronidur®. This allows reliable detection of stresses up to 50 microns deep in the surface of parts.

Steinmeyer offers a wide range of production processes which satisfy all demands including the established processes for thread production, such as grinding, whirling and rolling. Heat treatment is supplemented by NADCAP- or process audit certified suppliers for special processes.

Steinmeyer provides all thread production processes:

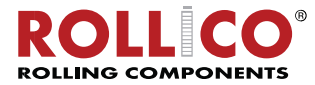
- Grinding on over 30 thread grinding machines from 400 mm to 6000 mm length between centers.
- Whirling – hard and soft, also possible for high tensile stainless steel like Cronidur® DIN 1.4108 (AMS5898)
- Rolling

CNC- turning and milling machines are available with turning length 4000 mm and open bore to 128 mm. Complete machining by 8-axis dual spindle machines is possible as well as 5-side milling of complex workpieces. Internal thread finishing is done by either grinding or hard turning.



#### Technology





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### Internal thread finishing

The finishing of the heat-treated nut is normally done by grinding. In this process there are some restrictions on the maximum length of the nut based on its lead angle and diameter. However, Steinmeyer has the possibility to produce such extra complex nuts by hard turning on optimized machines – with final tolerances equal to that achieved in grinding, or even better.

The profile measurements assure in all cases that the finished internal threads comply in every respect with the specifications – an important element for the documentation of the process chain.

### Qualification



Steinmeyer supports qualification by the customer or holds the adequate supporting documents. Therefore we perform several tests in-house or we work together with an accredited test laboratory. Acceptance tests are performed at our own test facility.

### Process capability

Series products must exactly match the products which passed the qualification tests. This is the quality basis for the aerospace industry. Each process has to be reproduced exactly the same – from material melting to assembly to service.

Steinmeyer controls all processes permanently.

### Aerospace ball screws

#### HSTA screw / regional airliner



#### Flap actuator screw / business jet



#### Flap actuator screw / regional airliner

