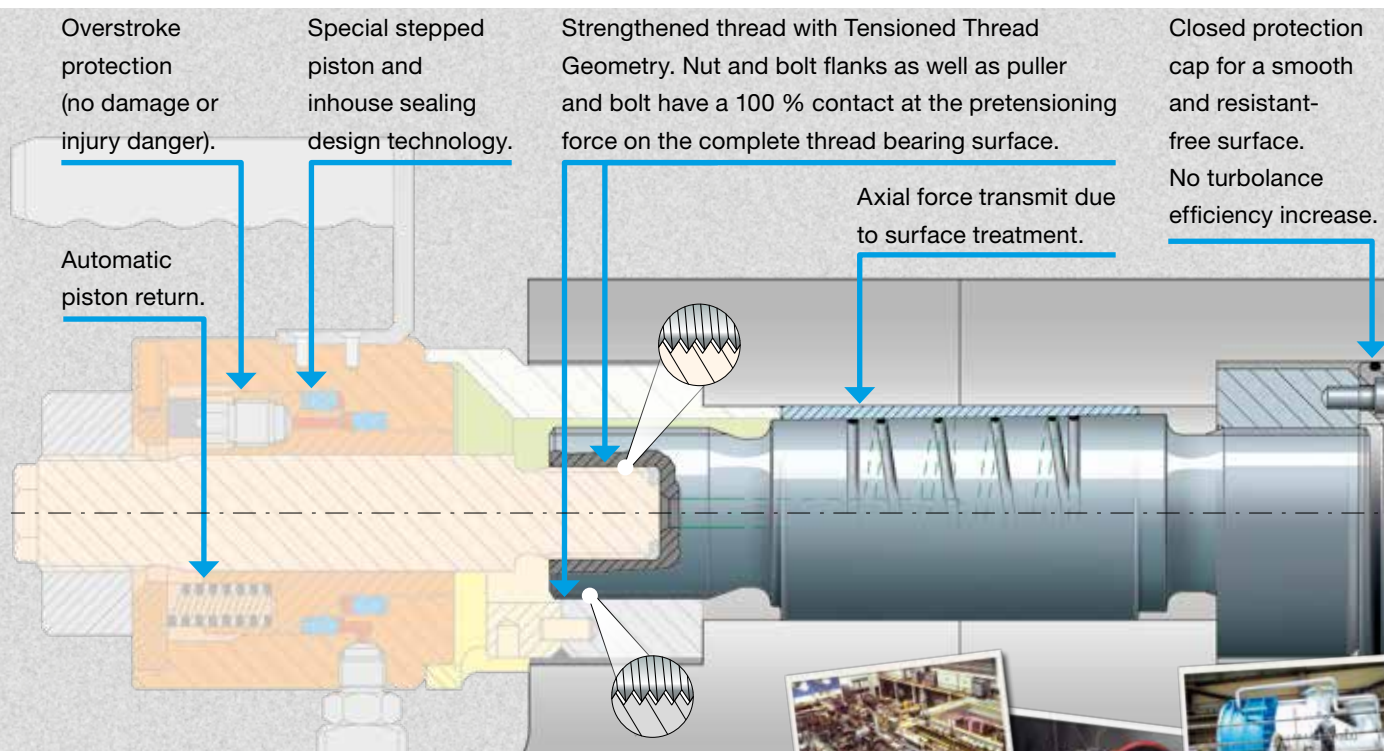


ExpaTen ETC

Perfect flange connection for
high speed turbines

RE-DESIGNED
for lifetime guarantee

SCHAAF **ExpaTen ETC** takes all of the leading design principles and advantages of ExpaTen and raises hydraulic coupling bolt design and performance levels to a new level. Designed for high speed drive applications, **ExpaTen ETC** offers maximum product safety, reliability and total performance. For all existing products on the market power bolt application troubles occurs either due to a structural thread failure of the extension/puller engagement with the bolt or because of a failure of the oil injection process during removal. The patented SCHAAF design technology completely eliminates these issues and offers a lifetime guarantee for the entire installation and removal process.



Advantages

The SCHAAF **ExpaTen ETC** offers you many advantages compared to conventional fixing devices and methods of mounting:

- Simple and quick installation and removal of **ExpaTen ETC** even after years of use – nearly unlimited times
- High torque transmission, completely free from backlash
- 100% positive locking and frictional connection all the time after mounting, no slipping between the flanges
- Special surface treatment for minimising micro movement and decreased dynamic axial forces
- Specially designed for connections with high speed drives
- No overlapping screws or nuts – no windage – higher turbine efficiency
- The smooth protection caps reducing noise, vibration and increasing efficiency
- Requires only one hydraulic pressure source for installations or removals



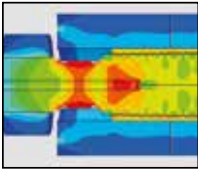
www.schaaf-gmbh.com

SCHAAF develops and produces world leading technology in the field of joining technique in all sectors of the industry.

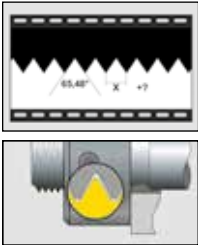


More advantages due to SCHAAF know how

ExpaTen ETC can be used in conjunction with other SCHAAF products for a complete package solution giving improved

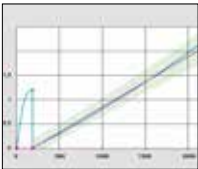


Due to the in-house design and development departments, constructed components are pre-tested for material fatigue in special applications. Thus, the optimum stability is simulated prior to the manufacture of connections in the development process. This procedure guarantees the maximum endurance of SCHAAF components in use. The FEA analysis also guarantees the continued product life time guarantee.

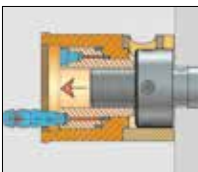


The patented idea of SCHAAF GmbH & Co. KG is to copy the profile of the highly pretensioned bolt thread in the nut area and to transfer it to the nut with the exact change of geometry. What is the result? The whole flank surface of the bolt has an equally exact contact with the nut with TTG thread. Therefore, there is no stress concentration as before in the first thread turns where nut and bolt touch. Instead, the pretensioning force distributes equally over the complete geometry. Highly stressed threads, which are mostly charged with additional dynamic load, receive a higher longevity, higher safety at same component size.

MDS – Controlling and monitoring of the axial hydraulic tensioning process of screws



The SCHAAF **Mounting-Documentation-System (MDS)** documents and monitors the tensioning process. Thus, an 100 % proof possibility about the connection quality is warranted. The monitoring happens due to the pressure-elongation/compression-characteristic-curve. All additional quality parametres can be individually declared and the system reacts to the tensioning demands or aborts, if necessary, automatically.



The SCHAAF **Bolt Tensioner (SSV)** and **Hydraulic Nut (HM)** provide pure axial tensioning without the need to tension the screws by turning, offering convincing benefits to all customer applications. Beside some standardised product lines, the design-on-demand CAD system offers quick implementation and adjustment to customer requirements. On the basis of axial tensioning, many patent-registered special solutions have been developed in past years.



SEAL-TEC

The manufacture of all seals happens inhouse and guarantees maximum load capacity and endurance. Selected and accurate treatment of material live up to the high quality standards of SCHAAF.



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