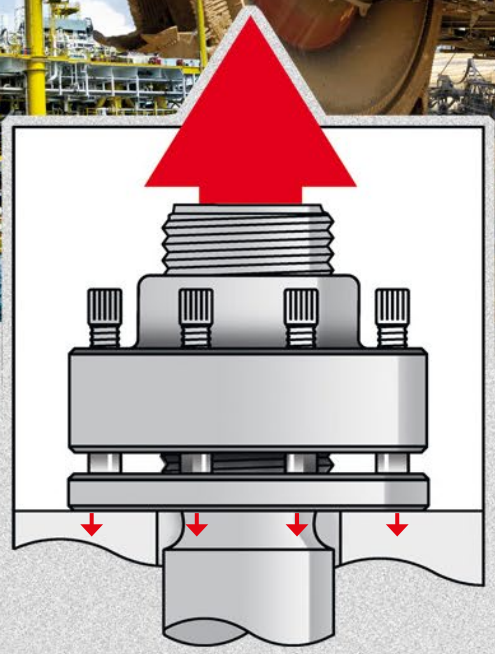
SCHAAF®

Multiple Stud Nut

Axial Bolt Tensioning using torque



MSN – mechanical axial pretensioning of a bolt with bolts.

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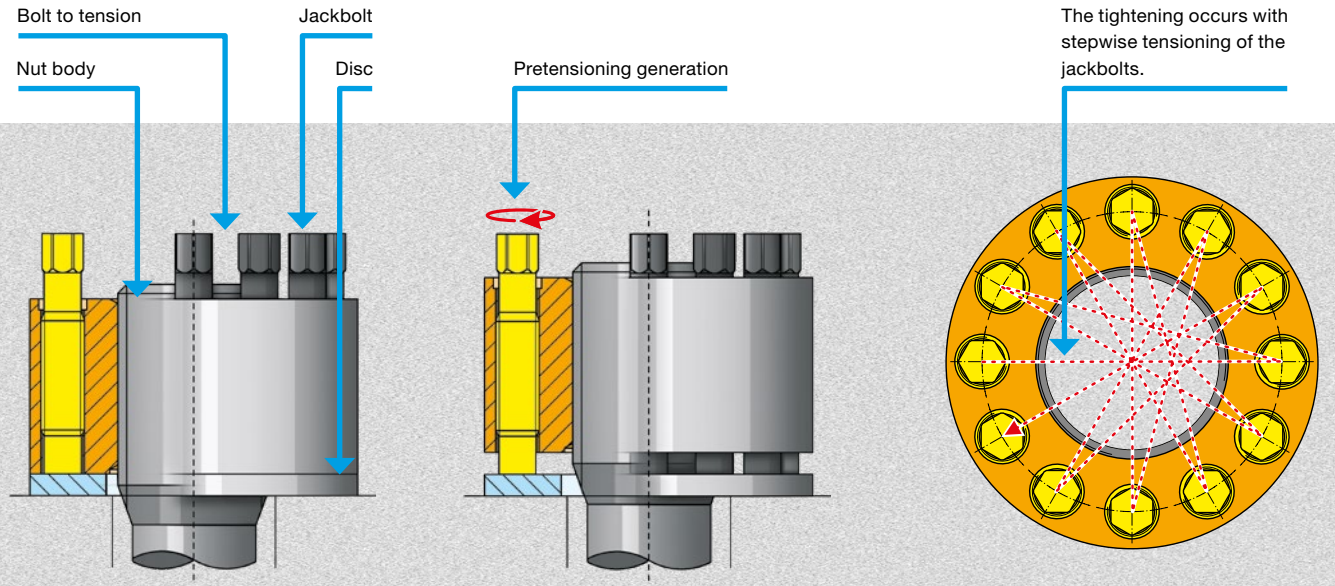
MSN

Function of a Multiple Stud Tensioning (MSN) PG 48 in simplified representation



After the pretensioning force generation, the MSN stays on the bolted respectively component connection.
Due to mounting without further accessories, the MSN is an economic and effective axial bolt tensioner with little diffusion.

Basic position

The MSN is screwed onto the bolt being tightened until lying at the clamping disc. The jackbolts are integrated into the nut body and ready for pretensioning generation.

Elongation and compression

Due to the stepwise turning of the jackbolts with torque, the axial pretensioning force is generated. The bolt being tightened is elongated and by leading in the force into the disc the flange parts are compressed.

Pretensioning

After reaching the required torque, the pretensioning force of the bolt is achieved. The sum of the axial pressure forces of the jackbolts is in accordance with the overall bolt pretensioning force (axial traction). The main bolt is pretensioned absolutely torsion-free. The Multiple Stud Nut automatically is protected against loosening.

More information in animated operating instructions as well as further information and a complete product overview under **www.schaaf-gmbh.com**

All **SSV, HM** and **MSN** threads can be equipped with Tensioned Thread Geometry (**TTG**). This enables a targeted equal force in the thread area for increase of longevity. Please see www.schaaf-gmbh.com/ttg/

Torsion-free generation of tension force – Economical use of bolt material capacity

A bolt is designed to hold two or more components together. Axial bolt elongation is the only force at work here. Torsion, which is generated, due to friction in the threads and in the support surface, by using torque wrenching methods, means only unnecessary weakening of the components. This requires stronger bolt connections. This disadvantage is no longer existing when using SCHAAF **MSN** to generate the axial pre-tension. This increases the economic utilisation factor. Axial tension force has been attained by using SCHAAF **MSN** for bolts with a thread diameter from 16 mm up to 1800 mm.

Simple pretensioning

MSN-tensioning elements replace conventional nuts because of their universal and simple design. The nut body is screwed onto the thread and transfers the pretensioning force via the jackbolts, which is tightened with simple hand tools.

Increased safety

Due to the purely axial bolt tensioning force applied and as the safety factors given in bolt calculation instructions come down to a minimum, bolts can be higher tensioned for the same bolt thread cross section. The connection is more secure.

Fields of Application

- General mechanical engineering
- Metal industry
- Structural and civil engineering
- Refineries, chemical industry
- Powerplant technology
- Research technology
- Onshore / Offshore

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Advantages

The SCHAAF **MSN – Multiple Stud Nuts** offer you many advantages compared to conventional fixing devices and methods of mounting:

- Main bolt is pretightened 100 % torsion-free
- No torsion under load (no thread wear)
- Robust, durable and lightweight mode of construction
- Simple and easy mounting and dismantling
- Permanent maintenance-free connection
- Wide choice of sizes and designs
- Anytime quickest control possibility of the pretensioning force
- Mounting with many individuals possible
- Easy pretensioning control
- Tensioning locking at static, alternating and impact loads
- Improves the bolt lifetime because of gentle pretensioning force generation and pure axial load

Versions

The SCHAAF **MSN – Multiple Stud Nuts** can be manufactured/supplied as follows:

- **Construction**
  - · Compact design
  - · Standard design
  - · High-tensile design
  - · Customer specific solutions up to Ø 1800 mm
  - · All sorts of threads, standards and others
  - Power transmission elements as e. g. bayonet
- **Materials**
  - · High-tensile steel
  - · Rust and acid-resistant steels
  - · Heat-resisting materials
  - · High-strength aluminium alloys
  - · Different material combinations
- **Surface finish**
  - · Burnished, lacquered or chemically nickel-plated
  - · Requested by the customer

Quality Assurance

All **MSN – Multiple Stud Nuts** are checked for material quality, dimensional accuracy, proper operation and reliability. They are subject to quality assurance measures during order execution and delivered with detailed documentation.

Services

MSN are, of course, delivered packaged ready for installation and operation.

SCHAAF **MSN** are user-friendly, reliable and are manufactured in accordance with the highest level of technical know-how. Our highly-motivated staff will be pleased to train your personnel, in situ or at our works, in the general handling of **MSN**.

The **MSN** are the optimum solution wherever a safe and maintenance-free connection must be ensured.

User-defined special designs possible.

SCHAAF Accessories and additional product groups

- Torque key, electric torque wrench, mechanical-hydraulic torque wrench
- Hexagonal Nuts
- Protection Caps
- Mounting aids such as centering pin and lifting devices, or as requested by the customer
- Lubricant and anti-corrosion agents
- Mounting set if customer maintains
- Documentation system

Certificates and Acceptance Tests

- Material test reports
- Specific test reports
- Certificates as per special customer requirements

Leading joining technology

SCHAAF®

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Data will change as developments occur.

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