

# Original version of assembly instructions



For	Series	Components
Spieth locknuts (precision locknuts)	MSA	MSA 20x1    MSA 25x1.5    MSA 30x1.5
		MSA 35x1.5    MSA 40x1.5    MSA 45x1.5
		MSA 50x1.5    MSA 55x1.5    MSA 60x1.5
		MSA 65x1.5    MSA 70x1.5    MSA 75x1.5
		MSA 80x2    MSA 85x2    MSA 90x2
		MSA 95x2    MSA 100x2    MSA 105x2
		MSA 110x2    MSA 120x2    MSA 130x3
		MSA 140x3    MSA 150x3    MSA 160x3
		MSA 170x3    MSA 180x3    MSA 190x3
		MSA 200x3

The Assembly Instructions are also available for download at [www.spieth-me.de](http://www.spieth-me.de). In case of any questions, please contact Spieth-Maschinenelemente GmbH & Co. KG directly.

**Legal:**

Spieth-Maschinenelemente GmbH & Co. KG, Alleenstraße 41, D - 73730 Esslingen  
 Phone +49 711 930730 0 - Fax +49 711 930730 7  
 E-Mail: [info@spieth-me.de](mailto:info@spieth-me.de) - Web: [www.spieth-me.de](http://www.spieth-me.de)

KG: Esslingen HQ, Stuttgart county court, company register sect. A 210689  
 PhG: Spieth-Beteiligungs-GmbH, Esslingen HQ, Stuttgart county court, company register sect. A 210636  
 Managing director: Dipl.-Ing. Alexander Hund

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## Assembly instructions for Spieth Locknuts

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## 1 Information about Spieth Locknuts

### 1.1 General information

Spieth locknuts are precision parts and require careful handling. Follow the information in these assembly instructions and the operating instructions. Failing to comply with them may significantly impact functionality and service life.

To apply the locking force, use only original Spieth clamping screws. Do not actuate the clamping screws until the locknut thread has been fully screwed onto the spindle thread. Otherwise, damage such as ductile deformation may occur on the locknut and render it unusable. Spieth-Maschinenelemente GmbH & Co. KG assumes no liability for damage from improper handling, incorrect installation, or unauthorised structural changes.

### 1.2 Safety notices

Spieth locknuts are intended for use on threaded spindles. Please follow all relevant safety notices.

**Caution!**

Any work carried out with or on the locknut needs to follow the "safety first" guideline!

During operation, keep your hands away from the working area of the locknut!

Prior to any assembly work, switch off all machine drives!

Secure the machine against accidental power-up!

Prior to commissioning the machine, install all safety devices!

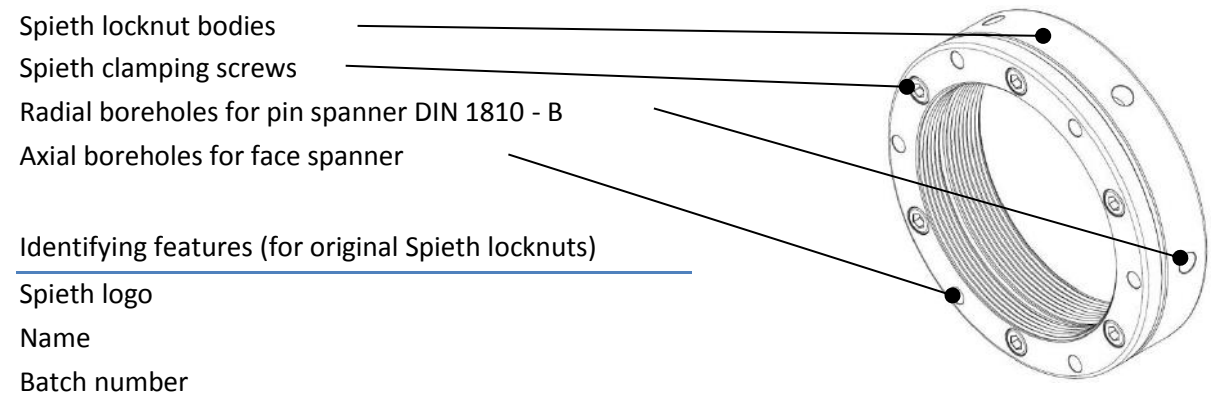
Only expert personnel are allowed to perform assembly work on Spieth locknuts. Using Spieth locknuts is only admissible according to specifications. Spieth-Maschinenelemente GmbH & Co. KG assumes no liability for violations of the operating instructions or safety notices. This also applies to incorrectly interpreting or circulating these notices and to incorrect assembly or maintenance.

The locknuts described here are state of the art at the time these assembly instructions are printed. Subject to changes based on evolved technologies. For international deliveries, follow the safety regulations applicable in the target country.

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## 2 Description of Spieth Locknuts

### 2.1 Structure



Spieth locknut bodies

Spieth clamping screws

Radial boreholes for pin spanner DIN 1810 - B

Axial boreholes for face spanner

#### Identifying features (for original Spieth locknuts)

Spieth logo

Name

Batch number

Locking torque  $M_s$  for clamping screws

Fig. 1: Schematic representation similar to Spieth MSA series locknuts

Spieth MSA series locknuts are assemblies consisting of locknut bodies and clamping screws. The thread inside the locknut body is interrupted by a groove, separating the locknut body into a load and a locking part. A diaphragm connects load and locking part.

## 3 Assembling Spieth Locknuts

### 3.1 Preparing for assembly

Remove Spieth locknuts from their packaging right before assembly. As hand perspiration can cause corrosion, ensure to keep your hands dry and clean and/or to always wear protective gloves for assembly.

Please note:  
For environmental reasons, please comply with applicable statutory regulations and guidelines when disposing of packaging materials.

In case of damage to packaging components, check the locknuts for damage and remove any contamination. The preservative used is compatible with all conventional machine oils. If in doubt, check the preservative's compatibility.

For an optimum mode of action of Spieth locknuts, remove the thin wax-like film of preservative from the contact surfaces using a lint-free cloth. Directly afterwards, use machine oil without friction-reducing additives to lightly oil the component and protect it from corrosion.

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### 3.2 Ambience/Environment

During assembly, ensure that...

- the assembly location is clean and free from dust,
- the components have no contact with corrosive media,
- foreign bodies such as sand, sawdust, fluff, etc. are kept away from the component,
- metal filings (in particular from machining tools such as files, etc.) are kept away from the component.

**Caution!**  
Contamination can significantly impact the functionality and service life of Spieth locknuts.

For best results, use a suitable, enclosed space for assembly and proceed swiftly. If this is not possible, make sure to protect the components from ambient contamination and from damage.

### 3.3 Assembly process

Essentially, assembly is a 4-step process:

- 1. Screwing
- 2. Aligning
- 3. Tightening
- 4. Locking

For an optimum mode of action of Spieth locknuts, perform all four assembly steps in the specified order.

**Caution!**  
To apply the locking force, use only original Spieth clamping screws. Do not actuate the clamping screws until the nut thread has been fully screwed onto the spindle thread.  
Otherwise, damage such as plastic deformation may occur on the locknut and render it unusable.

Use only the following assembly process for assembling Spieth MSA series locknuts:

#### 3.3.1 Screwing:

First clean, lightly oil and then screw the locknut onto the spindle thread but avoid contact with the end face. It is recommended to lightly oil the spindle thread, too. Since the nut thread is coordinated with the clearance of the spindle thread, you can easily do this manually. We recommend maintaining sufficient distance to the planar support while ensuring that the locking part of the nut body is fully screwed onto the spindle thread.

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### 3.3.2 Aligning:

Tighten the clamping screws stepwise and crosswise. Regularly check how much play the nut has on the thread. Repeat this process until the movement is nearly free of play. This aligns the end face of the locknut with the spindle axis. This requires very little torque on the clamping screws (normally far less than 1 Nm); we recommend using a manual tool (screwdriver or spanner) for sensitive tightening.

### 3.3.3 Tightening (1):

To reduce subsidence, first use an increased pretensioning torque  $M_{ve}$  to tighten the locknut against the planar support; then undo it. Depending on the load capacity of the connecting components, the increased pretensioning torque  $M_{ve}$  of the locknut may amount up to 1.2 to 1.5 times the calculated pretensioning torque  $M_v$  (see design guide/see note).

### 3.3.4 Tightening (2):

Now tighten the locknut with the calculated pretensioning torque  $M_v$  (see design guide/see notice) using a suitable tool (see design guide).

### 3.3.5 Locking:

Lock locknut by tightening the clamping screws stepwise and crosswise until the specified locking torque  $M_s$  (see design guide). For optimum effectiveness we recommend tightening the clamping screws in three steps (50%, 75% and 100% of the specified locking torque  $M_s$ ). Due to the operating principle there may be a slight localised relief of strain of the contact on the end face but this has been factored into the calculated pretensioning torque  $M_v$ . Lock Spieth locknuts only if used with original Spieth clamping screws and if the nut thread is fully screwed onto the spindle thread.

In case of maximum demands on spindle concentricity you can individually adjust the clamping screws to achieve the desired result.

**Please note:**

Intense clamping at the thread flanks during the locking process causes a high level of axial rigidity on the locknut. In turn, this slightly reduces the pretension. The degree of this end face strain relief is reproducible and is easily compensated by the calculated pretensioning torque  $M_v$  (see design guide).

Following specified assembly, Spieth locknuts are ready for use immediately.

For more information on assembly, please see the relevant assembly instructions, available at [www.spieth-me.de](http://www.spieth-me.de).

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## 4 Disassembling Spieth Locknuts

If handled correctly, Spieth locknuts can be reused several times. Due to the adjustments made, once a locknut has been locked onto a spindle thread you can only reuse it on the same thread after they have been disassembled.

**Caution!**

Unlock all the clamping screws stepwise and crosswise to avoid overstraining the screws. Otherwise, the screws may fracture or the locknut or its adjoining components may be damaged.

To disassemble, proceed in reverse assembly order.

- 1. Unlock: Unlock by undoing the clamping screws stepwise and crosswise.
- 2. Undo: Undo locknut from system using suitable tools.
- 3. Unscrew: Unscrew locknut by hand from threaded spindle.

If used as intended the diaphragm will open the interlocked thread flanks during unlocking. This restored joint play makes it easy to unscrew the locknut manually without damaging the threaded spindle.

**Please note:**

Following complete disassembly, slightly (manually) tighten the loosened clamping screws until they are flush. In any case, avoid tightening the clamping screws without a fully covered nut thread.

To enable later reuse, clean, preserve, and store Spieth locknuts correctly. Prior to reuse, proceed as detailed in section 3.1, "Preparing for assembly" ff.

If non-original Spieth spare parts are used, Spieth-Maschinenelemente GmbH & Co. KG assumes no liability or warranty.

## 5 Maintenance and servicing of Spieth clamping sleeves

Spieth clamping sleeves are low-maintenance. If used as intended, Spieth clamping sleeves provide permanently precise pretensioning and positioning of the bearing on a spindle shaft.

We recommend periodic visual inspections of the clamping sleeves for potential damage.

Follow general safety notices when using Spieth clamping sleeves.

**Caution!**

Never touch actively rotating components. Take protective measures against accidental contact.

If you notice irregularities with the Spieth clamping sleeves during operation, immediately switch off the machine's drive.

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