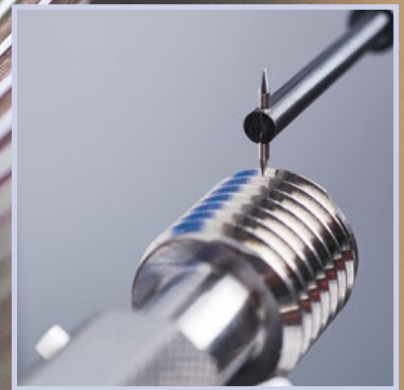# Next Level Thread Measurement
## ConturoMatic GS/GM-X & QM-Soft®

- easy
- flexible
- optimized in time
- DAkkS-accreditable*

**T&S**
*just measure*

# ConturoMatic GS/GM-X

## Thread measurement today → future-ready

Increasing demands on the precision of threads and thread gauges, as well as the need to ensure the function and safety of screwed connections, require new, modern measuring methods. In addition, the specifications of the current IATF 16949 within the scope of product safety, require significantly stricter documentation and test equipment monitoring. Lightweight construction and highly stressed connections also demand compliance with even tighter tolerances.

Measuring procedures used in the past, such as the 3-wire measurement method or the determination of the pitch diameter via balls, are being replaced by new, more accurate and reliable methods. The classic methods for determining the pitch on Abbe-Comparator only allow limited conclusions to be drawn about the real thread geometry. The "gauging" of threads which is predominant in the manufacturing sector, is increasingly being accompanied or replaced by measuring methods. The measurement of flank angle, flank form deviation, core diameter, radius
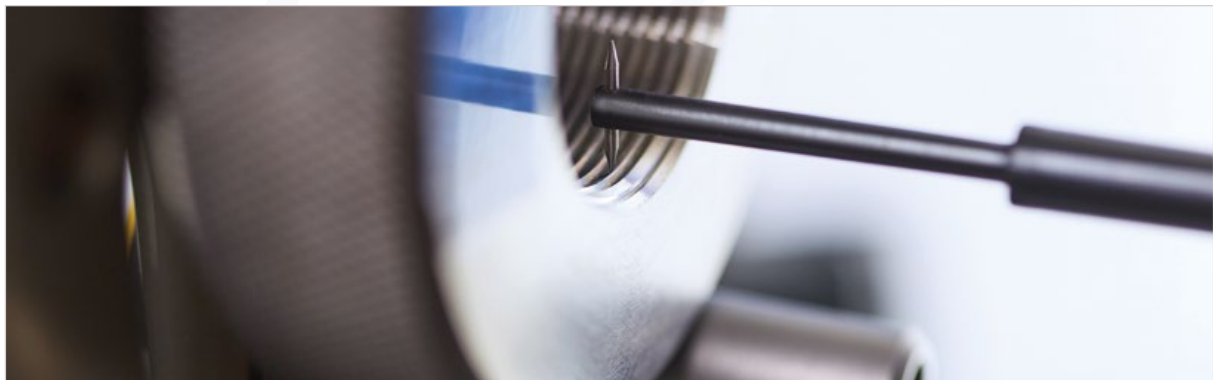


in the thread root and the roughness of the thread flanks, is only possible by modern, scanning data acquisition. Parameters that cannot be measured by „gauging" can be determined quickly and reliably, recorded, and monitored in compliance with tolerances. Optical measurement is only possible to a limited extent due to the overlap caused by the thread pitch.

Based on our established *ConturoMatic-T systems*, we have developed measuring devices that enable flexible, fast, and cost-effective measurement of gauge and functional threads with outstanding effectiveness and accuracy. In conjunction, with the currently most powerful software for calculating the characteristics of gauge and functional threads, *QM-Soft®*, we offer you an unrivaled efficient and flexible tool for modern measurement of gauges and functional threads. The robust design and the simple operation allow a usage close to the production without any limitations.

**Our *ConturoMatic GS/GM-X systems* are increasingly used in *DIN EN ISO/IEC 17025:2018-03* accredited DAkkS calibration laboratories. In addition, the requirement for internal laboratories written down in *IATF 16949 section 7.1.5.3.1* can be realized as well.**

\* The measurement procedures DAkkS-DKD-R 4-3 sheet 4.8:2010 Option 1 to 5, as well as sheet 4.9:2010 Option 1 to 5 are applicable without taking any limitations.
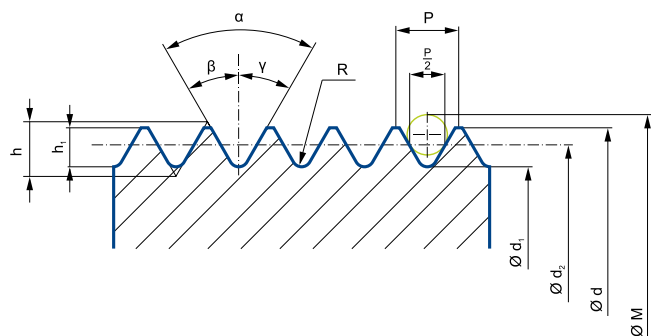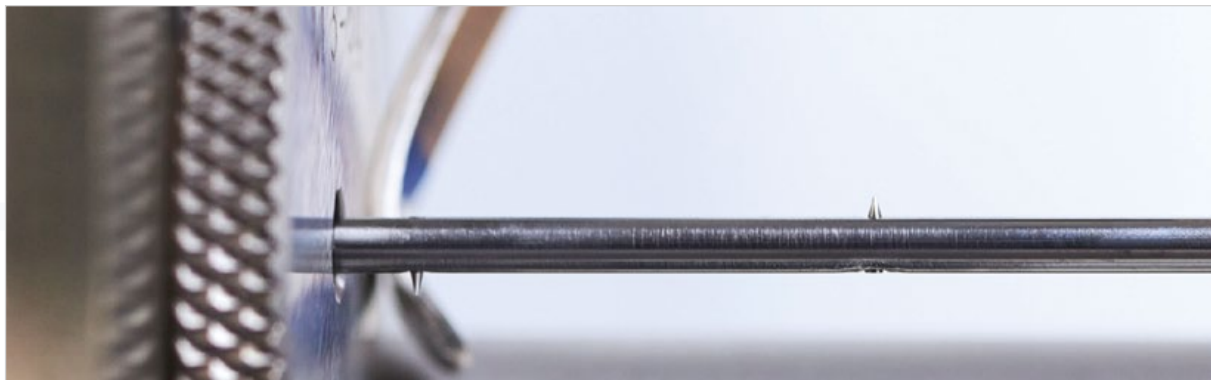
# ConturoMatic & QM-Soft®

Scanning the whole upper and lower thread contour, enables the evaluation of all relevant thread parameters. For this purpose, the recorded measuring points are used. Interpolation of measurement data is not necessary thanks to our dynamic speed control, which leads to a constant data point spacing orthogonal to the surface.

### Areas of application

The *ConturoMatic GS/GM-X thread scanners* can be used in series production *with automated measuring processes as well* as in the measuring room or calibration laboratory.

### Range of application

Thread gauges as well as male and female threads M1 to M300. With our *GM-XL* up to M500.

### Specific elements of our GS/GM-X systems

Accessories and software of our *ConturoMatic GS GewindeScanner* and *GM-X GewindeMaster*, are customized to meet the special requirements of thread measurement. All elements, necessary for the measurement of thread gauges, are included. The *UA-150*, included in the scope of delivery, ensures a safe fixture of thread ring gauges M1 - M70 and plug gauges M1 - M100. Thanks to a wide range of available probe arms and probe tips, the measurement of most thread types and thread gauges is feasible. We also offer probes and methods for measuring small internal threads from M1 (patent pending), or shape-optimized probes for measuring tapered threads. Our optionally available *thread standard SN-100* allows a fast system check.

### Contour- and roughness measurement

Besides the thread measurements, the basic flexibility of contour and roughness measurements remains unrestricted. *ConturoMatic T1, T3, TS-UD and TS-X systems already in use can easily be upgraded to a thread scanner.*

### Our optimized data interface to the *L&W QM-Soft® evaluation software* offers you a variety of advantages:

- Automated management of thread measuring sequences
- Selection aid of the tracing arm suitable for the specific thread type
- Software-based suitability check of the selected tracing arm
- Detection of faulty measurements due to incorrect parameter settings
- Automatic generated save files of measurements
- Considerable time savings due to measurement process optimization
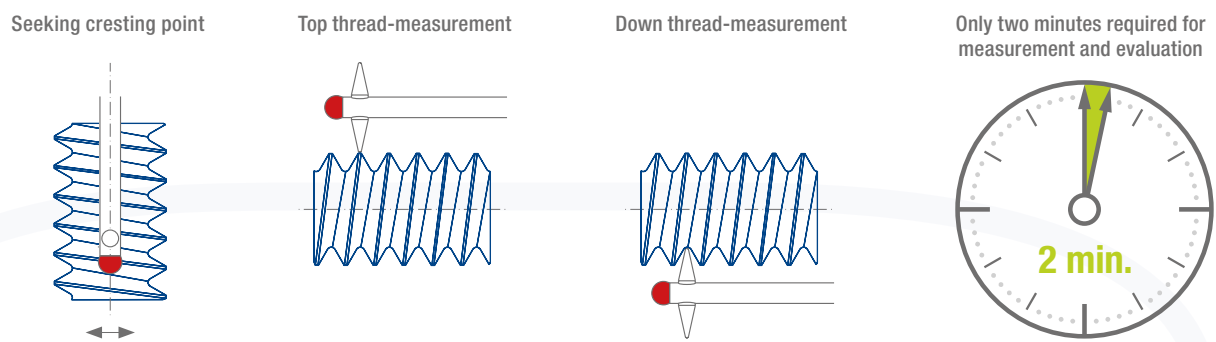- Automated processes reduce the possibility of operating failures

# Measuring process of the thread scanners ConturoMatic GS/GM-X

The conjunction of our *ConturoMatic software* with the *thread modules of L&Ws "QM-Soft®",* enables you to perform exact, fast and repeatable evaluations in just a few steps. The integrated database includes all parameters and tolerances of common, but also exotic thread standards.

For the calculation of the thread contour, various deviations caused by the scanning of the thread pitch and measurement-related deviations are corrected and calculated to the actual contour (contact correction).

## Time-optimized measurement process

**Seeking cresting point**  **Top thread-measurement**  **Down thread-measurement**  **Only two minutes required for measurement and evaluation**



**2 min.**

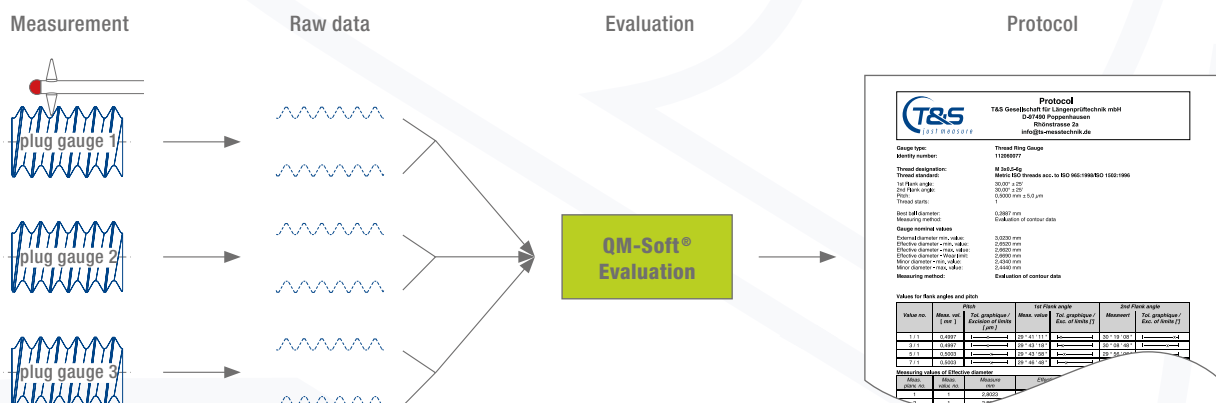## Automated positioning of the thread axis – *GAS*

Precise thread measurement absolutely requires scanning at the zenith of the thread. Due to the flank pitch, manual positioning of the probe is often practically impossible.

Our *"GAS module" for seeking thread axis,* determines the optimal probe tip position software-controlled and autonomously, and can be integrated into automatic measuring sequences (usable for thread gauges from M1).

## Example – automated series measurement

For serial measurement of threads, several thread profiles can be acquired in one measuring task. Such measuring programs are created by using our proven and simple *Teach-In* function. The operator does not need any knowledge of special software functions to perform these steps.

After the fully automated measuring sequence, the digitized data is automatically transferred to the *QM-Soft®* for evaluation.

**Measurement**  **Raw data**  **Evaluation**  **Protocol**



plug gauge 1

plug gauge 2

plug gauge 3

**QM-Soft® Evaluation**

# Thread standards integrated in QM-Soft®: *(Excerpt)*

- ISO metric screw threads according to ISO 1502:1996 (DIN ISO 965:1998)
- Gauges for Metric M Screw Threads according to ANSI/ASME B1.16M-1984
- ISO metric trapezoidal screw threads according to DIN 103:1997
- Unified threads and thread gauges according to ANSI/ASME B1.1-1983/ B1.2-1983
- Gauges for unified threads (ANSI/ASME B1.1-1982) according to BS 919-1:2007
- Pipe threads and gauges according to ISO 228:2000 (also the older DIN 259:1979)
- Steel conduit threads according to DIN 40431:1972
- Knuckle threads according to DIN 405:1997
- Parallel screw threads of Whitworth form according to BS 84:2007 / BS 919-2:2007
- NPSM pipe threads according to ANSI/ASME B1.20.1-1983
- Buttress threads according to DIN 513:1985 (factory standard for gauge values)
- MJ threads DIN ISO 5855:1989
- Metrical thread inserts according to DIN 8140:1999 (EG threads)

- HELICOIL threads according to Boellhoff factory standard
- Threads for valves according to DIN 7756:1979 and ETRTO V.7
- ACME Threads according to ASME / ANSI B 1.5 – 1988
- Stub ACME Threads according to ASME / ANSI B 1.8 – 1988
- Screw threads for bicycles and mopeds DIN 79012:2011-04
- Geometrical product specifications (GPS) - DIN 2241:2018-07

**Optional:** Software for evaluation of tapered threads:

- According to DIN 2999
- ANSI/ASME B1.20.1 (NPT)
- BS 21, ISO 7-2
- ASME B1.20.5-1991 (NPTF)

*(A complete list of all measurable thread types is available on request).*

# Technical Data: *(Excerpt)*

| ConturoMatic | | TS-UD / GS | TS-X / GM-X |
|---|---|---|---|
| ConturoMatic system data | | | |
| Measuring range-X | ←→ | 300 mm | 280 mm |
| Measuring range-Z | ↑↓ | 370 mm | 350 mm |
| Scanning from below | ↓ | ✓ | ✓ |
| Scanning from above | ↑ | • | ✓ |
| Measuring direction | ←→ | ✓ | ✓ |
| X-scanning | ⊢← →⊣ | – | ✓ |
| Roughness measurement | | • | ✓ |

• = Option   – = not available

*Information without warranty as of June 01, 2022*

## 30 Years
### *just measure*

**New:** DAkkS-accreditable systems

**New:** Styli and methods for measurement of small threads
from M1 available (Patent pending)

**New:** *„GAS" 3D – Thread-Axis-Search algorithm* for autonomous cresting point
determination on internal and external thread gauges

**New:** Optimized data interface with *QM-Soft®*

**New:** Can be integrated directly into production processes
using collaborative robots

Can be used near production lines

Universal use as:
Contour-, Roughness-, and Thread measuring system

Intuitive and easy to use

System expansion made possible via modules

Multiple measurements can be automated using *Teach-In* files

Some models feature Aerostatic air bearings along measurement axes *(GM-X)*

Outstanding price-performance ratio

## T&S
### *just measure*

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