# MarGear | Gear MeasuringInstruments

MarGear gear measuring technology allows you to carry out your measuring tasks on gears and gear cutting tools quickly, simply and accurately, in just one measuring process. The flexible systems – with or without mechanical alignment and reclamping, and with a combination of gear measuring technology and form and position evaluation – create the best possible conditions for gaining and retaining a competitive edge. By fully integrating measuring technology into production, you can achieve a closed quality control loop in transmission manufacturing.
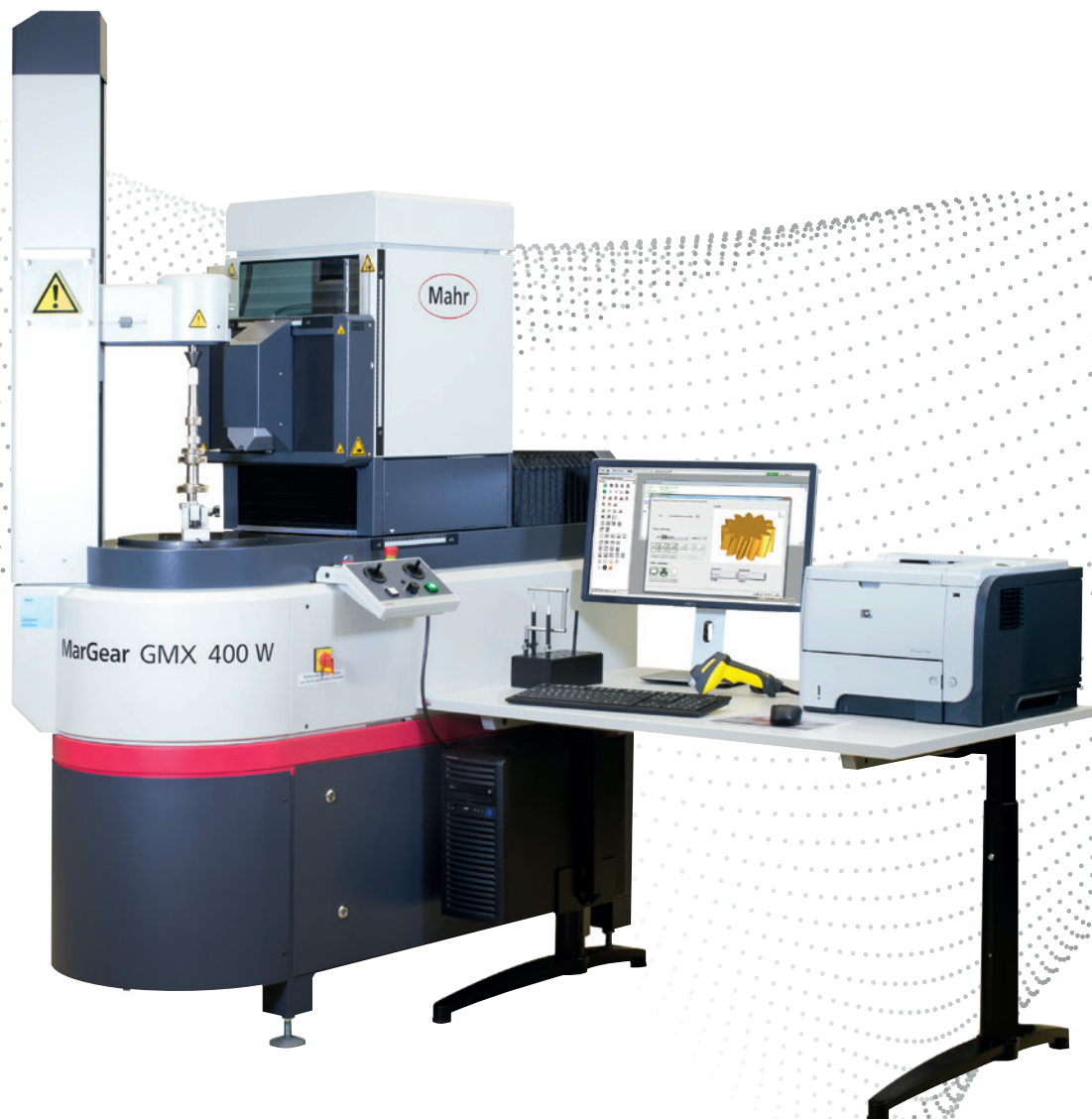
MarGear. MarGear GMX W Series

Opening up a new Dimension

The W Series extends the MarWin® platform to Mahr gear measurement

- MarEcon control unit with tracking mode
- Gear testing software runs under MarWin (option)
- Intuitive GDE interface for gear data (option)
- MarForm Advanced and Professional (option)
- Easy program creation in Teach-In mode
- Integration of data matrix code scanners (option)
- Uninterrupted movements
- High precision target positioning
- 3D visualization of gear geometry
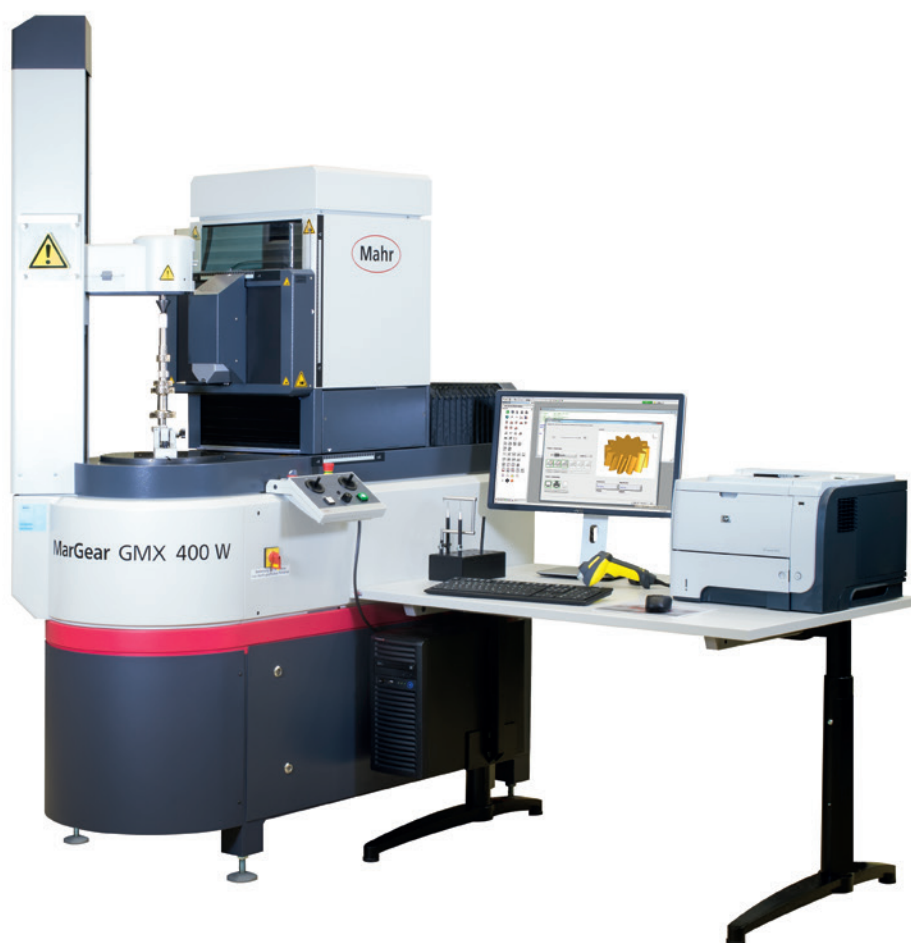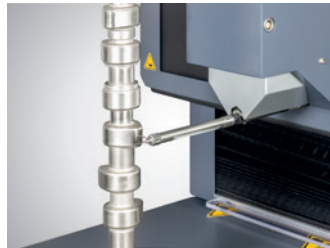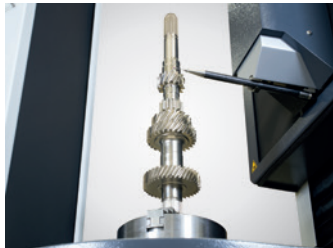
MarGear GMX 275 W

Universal Gear Measuring Center

FEATURES

- Fully automatic precision testing of gears and gear cutting tools up to an outer diameter of 275 mm
- Combining gear measuring tasks with various form & position features has never been easier
- With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrect use
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed and precision throughout the entire measuring and movement sequence
- **Gear, form and 3D measurements** are performed on one measuring instrument.
- **High-precision 3D scanning sensor** combined with directly driven C-axis for accuracy and efficiency
- GDE interface: "Closed loop" for cylindrical gears
- With tailstock option
- Gear measuring instrument, accuracy class 1, for gear measurements in accordance with **VDI/VDE 2612/2613 Group 1** at 20°C ± 2 K (rotational axis in form tester accuracy)

Options:
- Active damping system
- Data Matrix Scanner

TECHNICAL DATA

GMX 275 W	
Measuring path X (mm)	180
Measuring path Y (mm)	150
Measuring path Z (mm)	320
Diameter max.* [mm]	275
Length	1520
Width	621
Height	1920
Mass [kg]	760
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

* Max. diameter of cylindrical gears

APPLICATIONS

- Straight and helical toothed cylindrical gears
- Synchronous gears
- Form and position measurements
- Camshaft measurement
- 3D geometries such as distances, diameters, cone angles, position, etc.

ACCESSORIES

- Data matrix scanner
- Range of chucks for "clamping on the fly" and measurements on "virtually" aligned workpieces (wobble coordinate system)
- Optional roughness probe
- Active vibration damping system

i For more information, please visit our website: www.mahr.com

MarGear GMX 400 W

Universal Gear Measuring Center

FEATURES

- Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 400 mm
- Combining gear measuring tasks with various form & position features has never been easier
- With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrect use
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed and precision throughout the entire measuring and movement sequence
- **Gear, form and 3D measurements** are performed on one measuring instrument.
- **High-precision 3D scanning sensor** combined with directly driven C-axis for accuracy and efficiency
- GDE interface: "Closed loop" for cylindrical gears
- With tailstock option
- Gear measuring instrument, accuracy class 1, for gear measurements in accordance with **VDI/VDE 2612/2613 Group 1** at 20°C ± 2 K (rotational axis in form tester accuracy)

Options:
- Active damping System
- Data Matrix Scanner

TECHNICAL DATA

GMX 400 W	
Measuring path X (mm)	200
Measuring path Y (mm)	200
Measuring path Z (mm)	320
Diameter max.* [mm]	400
Length	1520
Width	621
Height	1920
Mass [kg]	760
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

* Max. diameter of cylindrical gears

APPLICATIONS

- Basic measuring station with MahrEcon Control unit
- Suitable for use as a gear measuring station with QE Cylindrical Gear

ACCESSORIES

- Data matrix scanner
- Range of chucks for "clamping on the fly" and measurements on "virtually" aligned workpieces (wobble coordinate system)
- Optional roughness probe
- Active vibration damping system

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MarGear GMX 400 ZLW

Universal Gear Measuring Center

FEATURES

- Fully automatic precision testing of long gear shafts and gear cutting tools up to an outer diameter of 400 mm
- Combining gear measuring tasks with various form & position features has never been easier
- With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrect use
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed and precision throughout the entire measuring and movement sequence
- **Gear, form and 3D measurements** are performed on one measuring instrument
- **High-precision 3D scanning sensor** combined with directly driven C-axis for accuracy and efficiency
- GDE interface: "Closed loop" for cylindrical gears
- With the long tailstock option, transmission shafts up to 850 mm can be clamped
- Gear measuring instrument, accuracy class 1, for gear measurements in accordance with **VDI/VDE 2612/2613 Group 1** at 20°C ± 2 K (rotational axis in form tester accuracy)

Options:
- Active damping System
- Data Matrix Scanner

TECHNICAL DATA

GMX 400 ZLW	
Measuring path X (mm)	200
Measuring path Y (mm)	200
Measuring path Z (mm)	650
Diameter max.* [mm]	400
Length	1520
Width	621
Height	2170
Mass [kg]	780
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

* Max. diameter of cylindrical gears

APPLICATIONS

- Basic measuring station with MahrEcon Control unit
- Suitable for use as a gear measuring station with QE Cylindrical Gear

ACCESSORIES

- Active vibration damping system
- Revolving counter tip
- Data matrix scanner
- Chuck 70 mm
- Chuck 200 mm
- Drive pin set

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MarGear GMX 600 W
Universal Gear Measuring Center

DESCRIPTION

- The new GMX 600 W cylinder coordinate measuring center
- The successful combination of diameter, gear and form measurement in one setup saves on additional investment and maintenance costs as well as time
- Full functionality as gear or cylinder coordinate measuring center and form tester up to an outside diameter of 600 mm
- The **MarGear GMX 600W**, as a complete solution, can also be used for measuring hydraulic parts, crankshafts, camshafts and pistons
- Combining **gear measuring** tasks with various **diameter, form & position features** has never been easier. Due to high precision scales and smooth drive units, even contour measurements and waviness analysis are possible
- With over 6000 units sold, the **MarWin** environment is a clear and simple way ofcreating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrectuse
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed andprecision throughout the entire measuring and movement sequenc
- The **high-precision 3D scanning sensor** combined with fully automated swivelling unit leads to highest flexibility even regarding future measuring tasks
- The use of **standardized interfaces** leads to universal communication in terms of Industry 4.0. The following interfaces are available:
- GDE interface for inner and outer gears
- Data export to QS-STAT
- ASCII

TECHNICAL DATA

GMX 600 W	
Measuring path X (mm)	300
Measuring path Y (mm)	600
Measuring path Z (mm)	700
Diameter max.* [mm]	600
Mass [kg]	2250
Max. workpiece weight [kg]	300 (on fixed base plate)100 (on centering and tilting table)
Accuracy	Accuracy class I for gear measurement according to VDI/VDE 2612/2613 Group 1 at 20°C ±2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.07 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.1 µm

*max. diameter of spur gears

APPLICATIONS

Fully automatic testing of:
- Diameter and distance
- Straight and helical toothed cylindrical gears
- Synchronizing gear
- Form and location (also with centering and tilting table)
- 3D geometries like line form

- Optional: camshafts, crankshafts and pistons

ACCESSORIES

- Probe arm changer (4 boxes)
- Anti vibration damping system
- XXL centering and tilting table (centering path up to ± 72 mm)
- Tailstock 1000 mm

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MarGear GRP1

Roughness Probe

DESCRIPTION

- **Expansion package for roughness measurement and analysis on gears**
- In the field of gear metrology, Mahr already offers highly accurate reference systems that combine gear measurement with the measurement of diameters or form. Moreover in the field of surface metrology, we have brought the worldwide styling method to perfection.
- So what could be more obvious than to measure and document roughness parameters such as Ra and Rz when testing your workpieces with a gear measuring device?
- As a specialist for inductive probes, Mahr combines the advantages of its self-developed universal 3D probe with the precision of the proven roughness probe PHT. Gear and roughness measurement grow together.
- Combine the gear analytical measurement with roughness characteristics monitoring on the MarGear GMX series gauging centers. Simultaneously document typical roughness parameters such as Ra and Rz during inspection without reclamping the workpiece on another measuring station. The superior positioning accuracy of the MarGear GMX combined with the new motorized swivel axis of the MarGear roughness probe ensures maximum reproducibility.

YOUR ADVANTAGES

- Miniaturized roughness probe for toothing from module 0.8
- The MarWin platform allows the use of our known roughness software for surface metrology at the gear measuring center
- Automatic swivel axis of the roughness probe enables standard surface measurement even on helical gears
- Characteristic values e.g. according to ISO 4287 or ISO 13565–2

APPLICATIONS

- Roughness at teeth flanks
- Roughness at bearing positions

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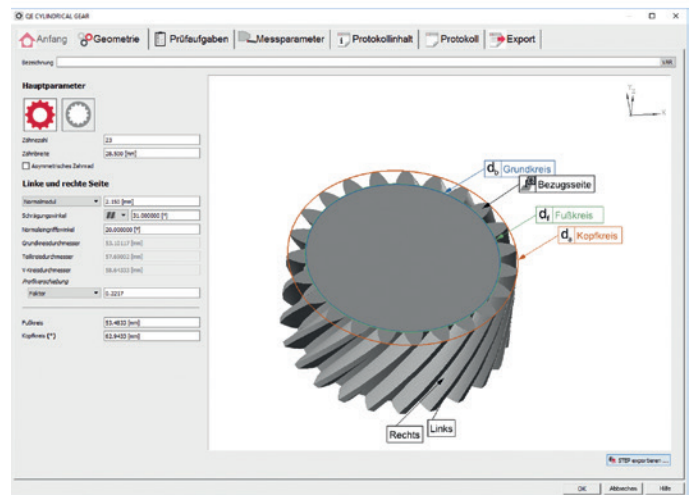+34 986 288118
Servicio de Att. al Cliente

MarGear

MarWin Software Solutions

DESCRIPTION

Software Highlights

- The intuitive 'QE Cylindrical Gear' user interface provides a number of interfaces for importing and exporting data
- Using the QEP interface (Quick&Easy profile) you can archive profile and results data relating to a gear measurement in MarWin format and then reload it subsequently for evaluation
- The new 'QE Cylindrical Gear' module is the latest measuring module to be added to the MarWin platform
- Q&E modules from the MarWin system can be linked together quickly and easily to create a complete program for a transmission shaft, for example
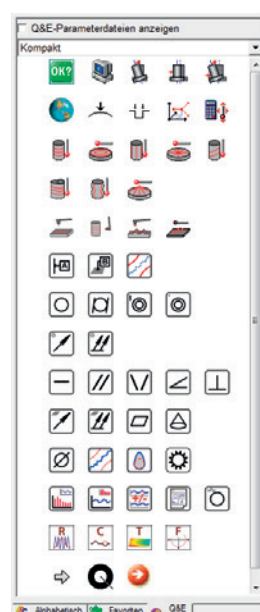

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MarGear

MarWin Software Solutions

DESCRIPTION

- In addition to simple controls, the new software offers users a variety of interfaces to simplify automation of the measuring procedure
- Gear data are imported in GDE format, for example. The software then generates a 3D model of the gear, which can be used for visual inspection and for checking the validity of the tooth geometry. This further reduces the possibility of operator errors

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