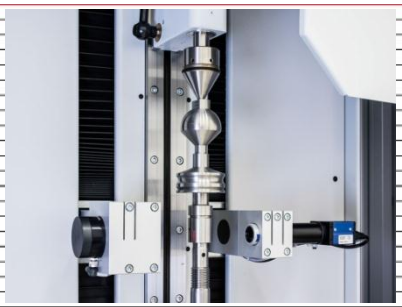
MARSHAFT I OPTICAL SHAFT MEASURING MACHINES



EXACTLY

MarShaft SCOPE plus

The MarShaft SCOPE plus is a universal, fully automatic, optical measuring unit for measuring turned parts.

The MarShaft SCOPE plus is equipped with a precision roundness measuring axis (C), a vertical measuring axis (Z) and a horizontal measuring axis (X).

Optionally available is a tactile measuring system with an inductive measuring probe to measure features that are not easily visible to an optical camera system e.g. run-out measurements in the axial direction. This tactile measuring unit is calibrated to an optical measuring system, enabling tactile and optical measuring tasks to be combined.

The MarShaft SCOPE plus is controlled by the powerful MarWin EasyShaft software which provides powerful measuring tools, a high level of flexibility along with a simple instruction set for quick familiarity with the machine.

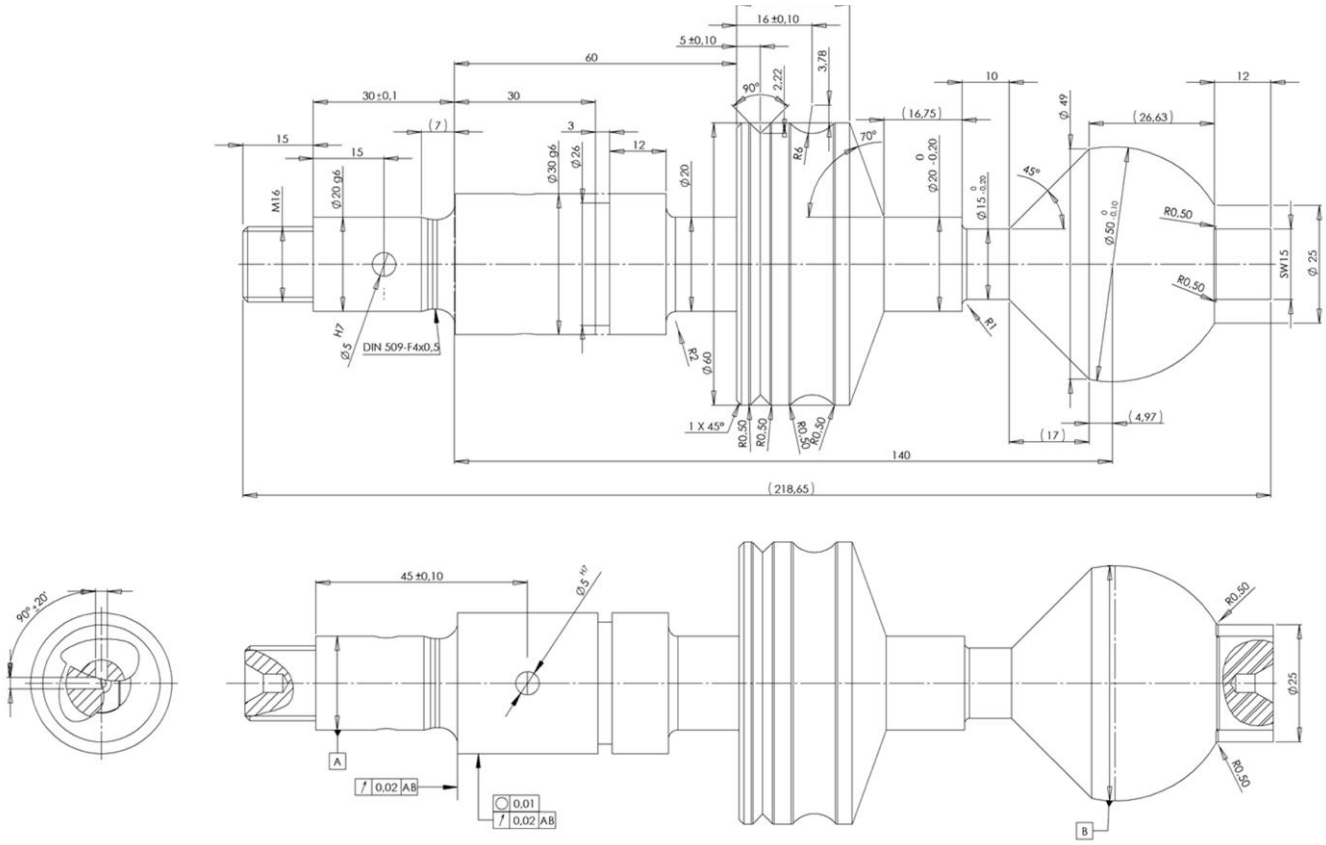
Measuring runs are totally automatic, completely free from influence by an operator.

The MarShaft SCOPE plus is suitable for use in rough workshop environments. Zoom functions enable the measurements of details that would difficult to evaluate by any other means.

All specifications are subject to change due to improvements and new developments.

The most important features that can be tested:

- Length
- Diameter
- Form and location tolerances
- Shoulders
- Groove width
- Chamfer width
- Points of intersection
- Location of points of intersection
- Rotation angle
- Run-out, axial and radial
- Radii
- Position of radii
- Taper length
- Flank angle of thread
- Pitch of thread
- Width across flats
- Outside diameter of thread



MarShaft SCOPE plus Shaft Measuring Machines / Table Units

MarShaft SCOPE plus table units

MarShaft SCOPE plus measuring range Z = 350 mm, ∅ = 80 mm Order no. 5361501

MarShaft SCOPE plus measuring range Z = 750 mm, ∅ = 80 mm Order no. 5361502

MarShaft SCOPE plus measuring range Z = 350 mm, ∅ = 120 mm Order no. 5361505

MarShaft SCOPE plus measuring range Z = 750 mm, ∅ = 120 mm Order no. 5361506

MarShaft SCOPE plus Shaft Measuring Machines / Standing Units

MarShaft SCOPE plus standing units

MarShaft SCOPE plus measuring range Z = 350 mm, ∅ = 80 mm Order no. 5361503

MarShaft SCOPE plus measuring range Z = 750 mm, ∅ = 80 mm Order no. 5361504

MarShaft SCOPE plus measuring range Z = 350 mm, ∅ = 120 mm Order no. 5361507

MarShaft SCOPE plus measuring range Z = 750 mm, ∅ = 120 mm Order no. 5361508

MarShaft SCOPE plus measuring range Z = 1000 mm, ∅ = 120 mm Order no. 5361516

MarShaft SCOPE plus in rollable cabinet

MarShaft SCOPE measuring range Z = 750 mm, ∅ = 120 mm Order no. 5361509

MarShaft SCOPE measuring range Z = 1000 mm, ∅ = 120 mm Order no. 5361517

MarShaft SCOPE plus / Components

Measuring spindle

Precision measuring spindle

The centering tip serves as a workpiece mounting bearing.

The precision measuring spindle drives the centering tip via a motor causing a rotation of the clamped specimen.

The tip is interchangeable (see pages 6-8) to allow a variety of workpieces to be held between the spindle and the tailstock.

Included in the basic machine

Tailstock

Tailstock

The tailstock serves as the upper workpiece mounting bearing.

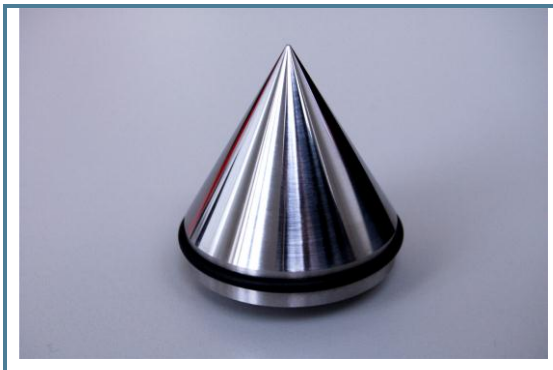
To enable positioning at any Z height, the tailstock is equipped with an eccentric clamp which is clamped and released with a clamping lever.

The sleeve is spring-loaded and automatically applies the clamping force.

One-handed operation of the tailstock allows safe switching of specimens.

The quill is mounted for rotation measurements with a precision ball bearing.

Included in the basic machine



Tip 60°

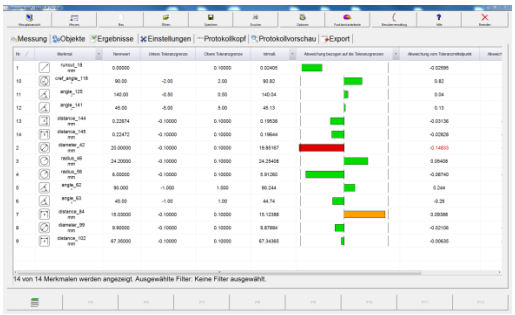
Tip 60°, ∅ 2 – 44 mm

Order no. **5361223**

Standard tip, interchangeable with alternative tips (see pages 6-8) to allow a variety of workpieces to be held between the spindle and the tailstock.

2 pieces included in the basic machine

MarShaft SCOPE plus / Components



22“ Touch screen monitor

22" Touchscreen monitor

Mounted on the right side of the machine housing. Operation possible in vertical or horizontal position.

Touchscreen allows control of all machine functions, including entering of measurement instructions and also part measurement operation.

Model: In compliance with the current Mahr standard.

Included in the basic machine

Manual control panel / Option

Manual control panel

Order no. **5361513**

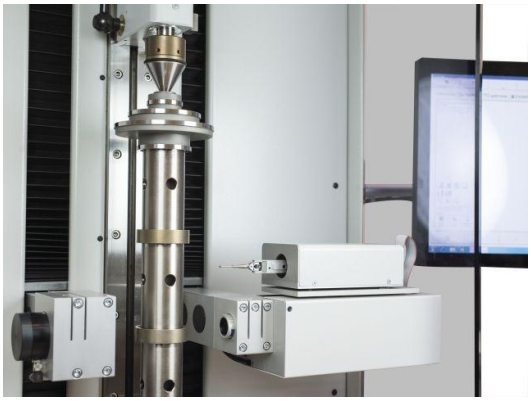
Manual control panel to manually control the machine axes (Z-X-C), 2 selectable positioning speeds..

Optional: Control of the tactile measuring unit 5361514.

Combined key to start and stop measuring programs.

3 additional function keys to start stored measuring programs.

Available as an option



Tactile measuring unit / Option

Tactile measuring unit with Y axis 60 mm

Order no. **5361514**

The tactile measuring device is equipped with an inductive measuring probe. The probe tip can be rotated 90° in its length axis to enable tracing in either the z or the x direction, allowing for a variety of measuring tasks. The measuring system of the tactile measuring device is calibrated to the optical measuring system, making tactile and optical measuring tasks possible.

Manual control with optional manual control panel 5361513 possible.

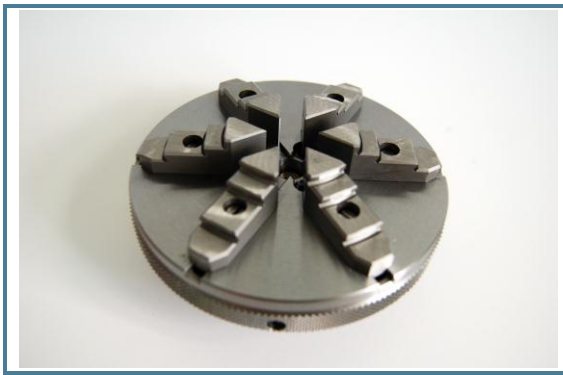
Available as an option

MarShaft SCOPE plus / Accessories

Chuck Ø 70 mm

Three chuck jaw ∅ 70 mm
Order no. 5361080

Rotatable three-chuck jaw for holding on outside or inside features of the workpiece.



Rim chuck Ø 100 mm

Rim chuck with 6 jaws ∅ 100 mm
Order no. 5361081

Rotatable six-jaw chuck for holding on outside or inside features of the workpiece.

Tips, hollow, 90°

Alternate tips, interchangeable with standard tip (see page 6) allowing holding cylindrical parts that have no center hole.

Tip, hollow 90° ∅ 6 – 20 mm
Order no. 5361104

Tip, hollow, 90° ∅ 8 – 40 mm
Order no. 5361107

Tips 60°

Alternate center tips, interchangeable with standard tip (see page 6) to allow a wide variety of workpiece to be held between the spindle and the tailstock.

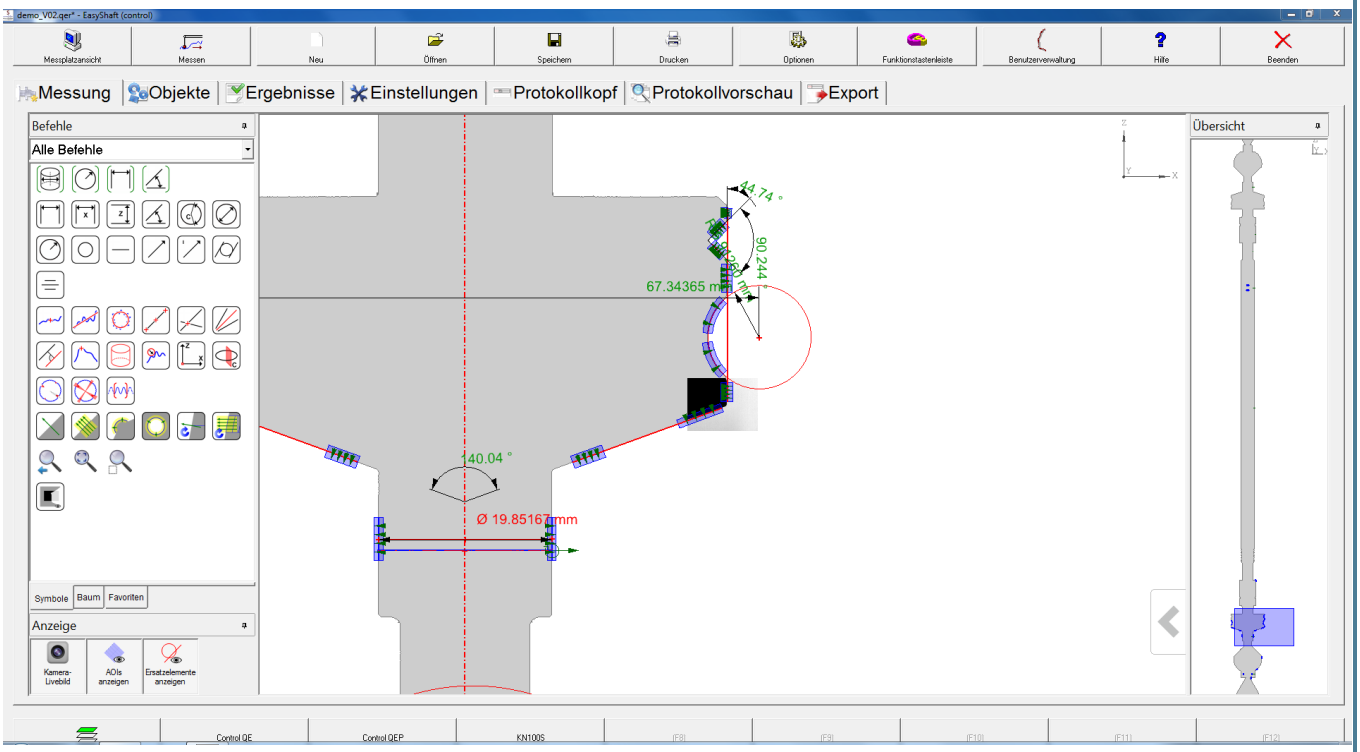
Tip 60° ∅ 3 – 15 mm Order no. 5361105

Tip 60° ∅ 2 – 19 mm Order no. 5361106

Tip 60° ∅ 15 – 44 mm Order no. 5361108

MarShaft SCOPE plus / EasyShaft Software

MarWin Software EasyShaft



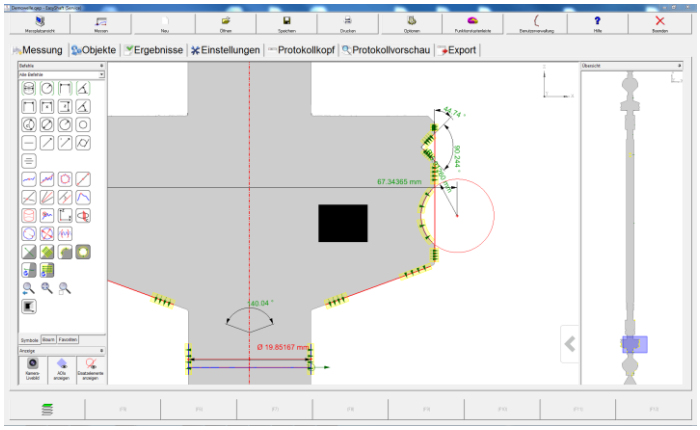
MarWin Software EasyShaft is the measuring, controlling and evaluation system for the MarShaft SCOPE plus. It offers measurements of diameters, lengths, contour features, form, and feature locations. Where applicable, it performs measurements in accordance with international standards. It enables high precision measurements of many features not previously possible, using clear instructions and easy operation. The operation is compatible with other Windows® applications, shortening the training time needed. Printing of measured results can be accomplished using any Windows®. supported printer.

Overview of features:

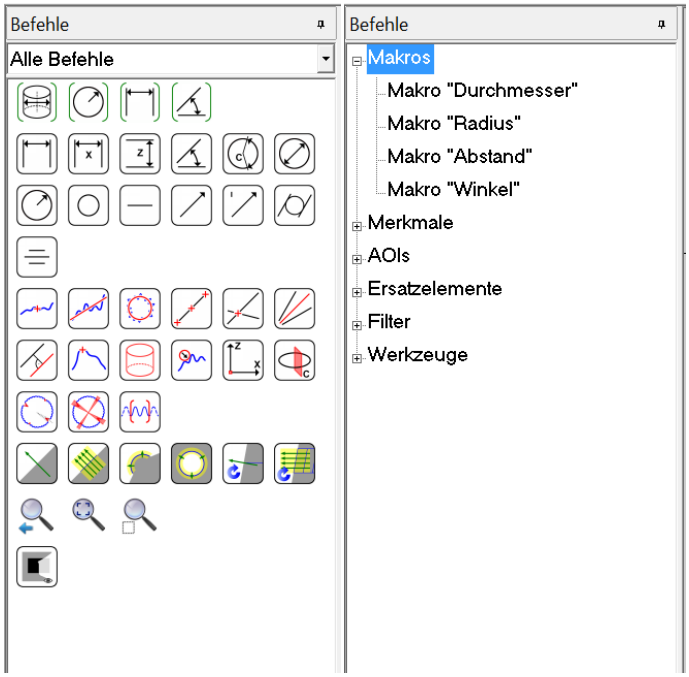
- The familiar Windows® user interface provides short training periods
- Uniform Mahr user interface for all products (e.g. EasyForm or Contour 1)
- Clearly structured thanks to windows technique
- 100% touchscreen operation
- Easiest programming with macros (e.g. diameter measurement with one mouse click)
- Many directly selectable functions using clear symbols (icons)
- Control of machine movement possible using touchscreen
- Constant display of the live image of the matrix camera even during the measurement, i.e. direct visual assessment of the workpiece conditions (e.g. dirt) during measurement
- Convenient and most modern measuring program management
- Measuring program sequence with optimized measuring times.
- Clear measuring records in black/white or in color – on all Windows® printers
- Future-proof investment, operable under Windows 7 Ultimate
- Optional data export to statistics programs

MarShaft SCOPE plus / EasyShaft Software

MarWin Software EasyShaft

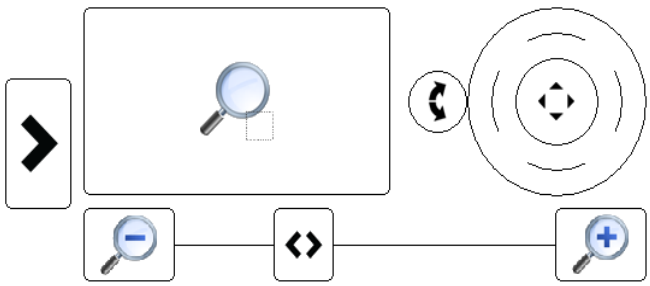


EasyShaft program window
With the EasyShaft software, you can perfectly control the MarShaft SCOPE plus. Using the touch screen, positioning, programming, direct measurements and documenting can be carried out. The good and easy user interface always provides a perfect overview of the measurement. Many functions, e.g. loading measuring results or adding feature measuring results, can be activated by simply touching on the icons.



EasyShaft commands
The command bar includes all commands that are required for measurements and evaluations.

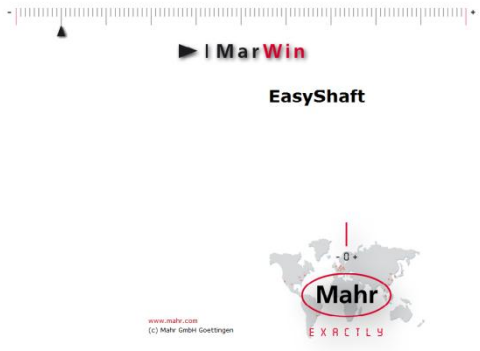
- Macros (summarized sequence of evaluation actions, e.g. diameter, radius, distance or angle
- Features that can be calculated (e.g. direct distances, distance in X and Z, angle, angle sector, radius, roundness, straightness, run-out, axial run-out, cylindricity, symmetry)
- Replacement elements that can be calculated (e.g. point, line circle, point on line, intersection, symmetry line, parallel line, extreme point, C reference)



View palette (control of machine axes by touch screen)

- The view palette can be activated or hidden using the touchscreen. This palette enables:
- Select zoom range
- Joystick for C axis
- Joystick for X and Z axis
- Enlarge view in increments
- Continuously enlarge or shrink view
- Shrink view in increments

MarShaft SCOPE plus / EasyShaft Software



MarWin Software EasyShaft

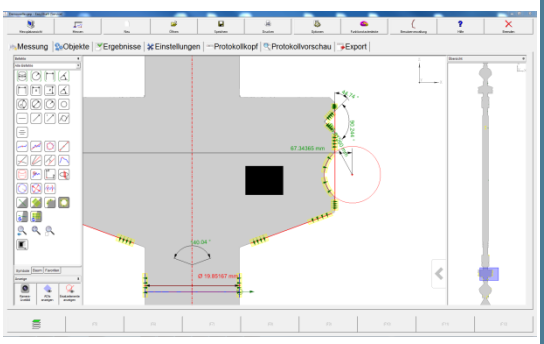
MarWin Software EasyShaft v6.00
Order no. **5361560**

MarWin Software EasyShaft is the measuring, controlling and evaluation system for the MarShaft SCOPE plus. It offers measurements of diameters, lengths, contour features, form, and feature locations. Where applicable, it performs measurements in accordance with international standards. It enables high precision measurements of many features not previously possible, using clear instructions and easy operation.

Country package with operating system Windows 7 Ultimate, optionally in the language versions

- German
- English/International
- French
- Other languages upon request

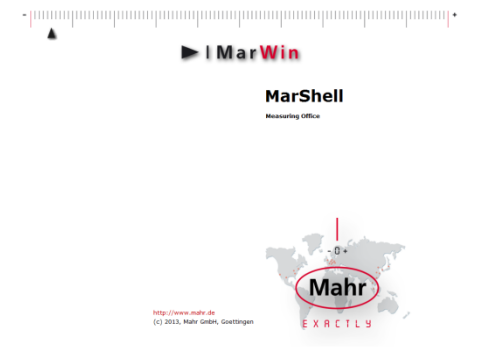
Included in the basic machine



MarWin Software EasyShaft Offline Programming

Option Offline Programming EasyShaft v6.00
Order no. **5361562**

Creation of measuring programs in the offline mode. The contours of the test specimen can be created by a fully-automatic form scan with the MarShaft SCOPE plus.



MarWin Software ProfessionalShaft

Software Option ProfessionalShaft v6.00
Order no. **5361561**

Free programming with MarWin MarScript for the realization of customer-specific applications.

MarShaft SCOPE plus / Technical Data

MarShaft SCOPE plus

Technical Data

Dimensions (basic unit)	W/H/D MarShaft SCOPE 350: 690/830/760 (mm) MarShaft SCOPE 750: 690/1230/760 (mm) MarShaft SCOPE 1000: 800/1230/760 (mm)
Weight (basic unit)	MarShaft SCOPE 350: 120 kg MarShaft SCOPE 750: 140 kg MarShaft SCOPE 1000: 160 kg
measuring range	MarShaft SCOPE 350: Z axis 360 mm; diameter 80 / 120 mm respectively MarShaft SCOPE 750: Z axis 760 mm; diameter 80 / 120 mm respectively MarShaft SCOPE 1000: Z axis 1000 mm; diameter 80 / 120 mm respectively
Workpiece weight	Max. 30 kg
Workpiece dimensions	MarShaft SCOPE 350: length* 350 mm diameter 120 mm MarShaft SCOPE 750: length* 750 mm diameter 120 mm MarShaft SCOPE 1000: length 1000 mm diameter 120 mm * When using the tactile measuring device, the max. workpiece length is reduced by 100 mm.
Measuring value resolution	adjustable: Length and diameter 0.01 mm – 0.0001 mm 0.001 inch – 0.0001 inch Angle 0.01 – 0.0001 degree (decimal) or degree, minute, second
Repeatability 4s **	Length: 1.5 µm Diameter 1.0 µm ** On clean, polished workpiece surfaces.
Error limits MPE_{E1}	Length: (2+L/ 125) µm L in mm Diameter (1.0+L/ 125) µm L in mm Valid in the temperature range 20°C ± 1 K
Drives	Maintenance-free, brushless servo-motors with longest life-time Drive speed Z max. 200 mm / s Drive speed X max. 100 mm / s Rotation speed C max. 1 revolution per second
Optics	Telecentric Red illumination with high light output in flash operation
Camera	CMOS matrix with USB interface; 1280 x 1024 pixels. Full-picture operation 15 pictures / s Partial-picture operation (16 lines) approx. 400 pictures / s Filter algorithm for blending out particles in edge calculation
Measuring computer	19“ Industrial PC; WIN 7
Ambient conditions	Operating temperature +10°C – +40°C. Recommended working temperature +15°C – +35°C. Storage and transport temperature -10°C – +50°C Permissible humidity max. 90 % not condensing! Temperature gradient time-wise < 2 K/h Temperature gradient space-wise <1 K/m room height Air pressure 1000 hPa ± 200 hPa Permissible noise level < 75 db (A)
Electrical supply	110 V / 230 V 50 / 60 Hz switchable Power consumption max. 1000 W.
Noise level emission	< 60 db (A)
Permissible ground vibrations	Range 0.5 Hz – 20 Hz 2 mm / s^2 up to 50 mm / s^2 increasing linearly Range > 20 Hz 50 mm / s^2

IMPRESSUM

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