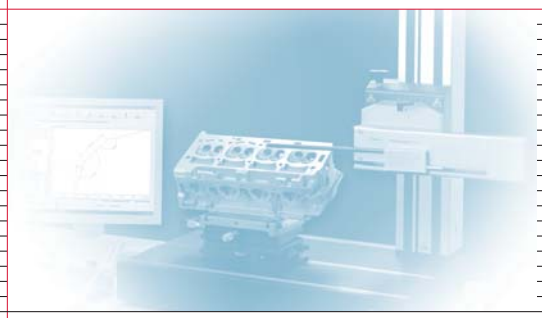
آزما صنعت گراد

نماینده انحصاری کمپانی Mahr آلمان

Mahr

EXACTLY

MARSURF | MARSURF XC 2 / XC 20 – MARWIN



PC-BASED STATIONARY CONTOUR MEASURING STATIONS

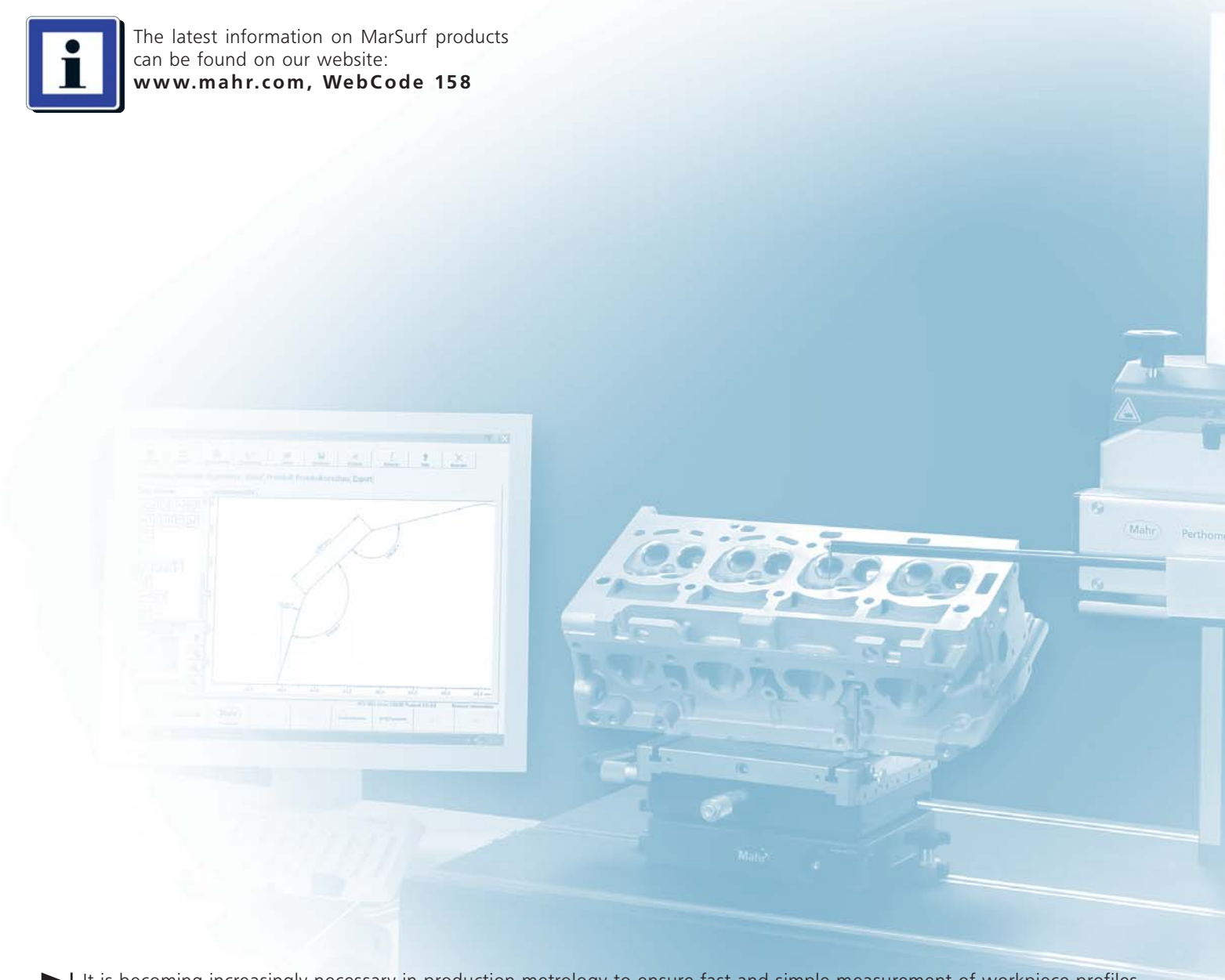
Mahr

EXACTLY

THE NEW GENERATION OF CONTOUR MEASUREMENT SYSTEMS.

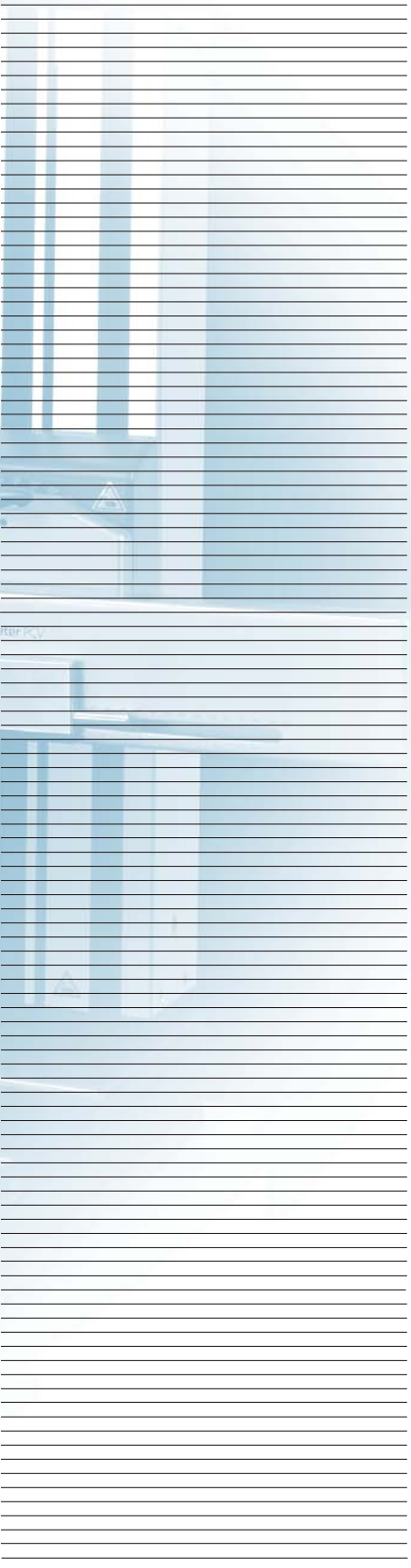
EVEN MORE FLEXIBILITY WITH MARWIN

The latest information on MarSurf products can be found on our website:
www.mahr.com, WebCode 158



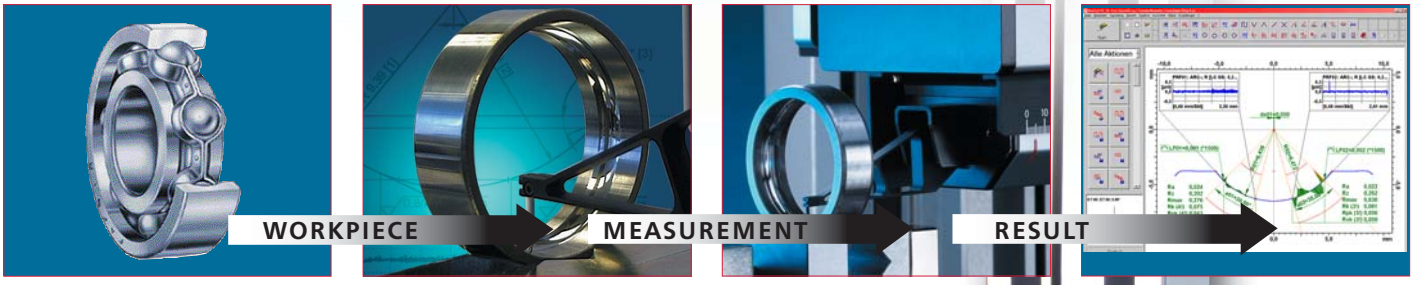
► | It is becoming increasingly necessary in production metrology to ensure fast and simple measurement of workpiece profiles. Measurement tasks are varied and call for ever greater precision and optimal measuring strategies for the entire system. We are therefore delighted to be able to present the MarWin-based MarSurf XC 20 / MarSurf XC 2 contour measurement and evaluation system. Decades of experience in contour metrology and numerous requests and information from our customers have shaped this new generation of devices. What started over 30 years ago with the Conturograph – consisting of a drive unit and x-y plotter for drawing contours and comparing with templates – has today developed into a state-of-the-art contour measurement system with the very latest technology. This covers the entire measuring station, consisting of a measurement and evaluation system, drive unit, probe, measuring stand, and equipment table. With MarSurf XC 20 und MarSurf XC 2, you are assured top quality and reliability. We wish you every success and hope you enjoy your Mahr measurement technology. | ◄

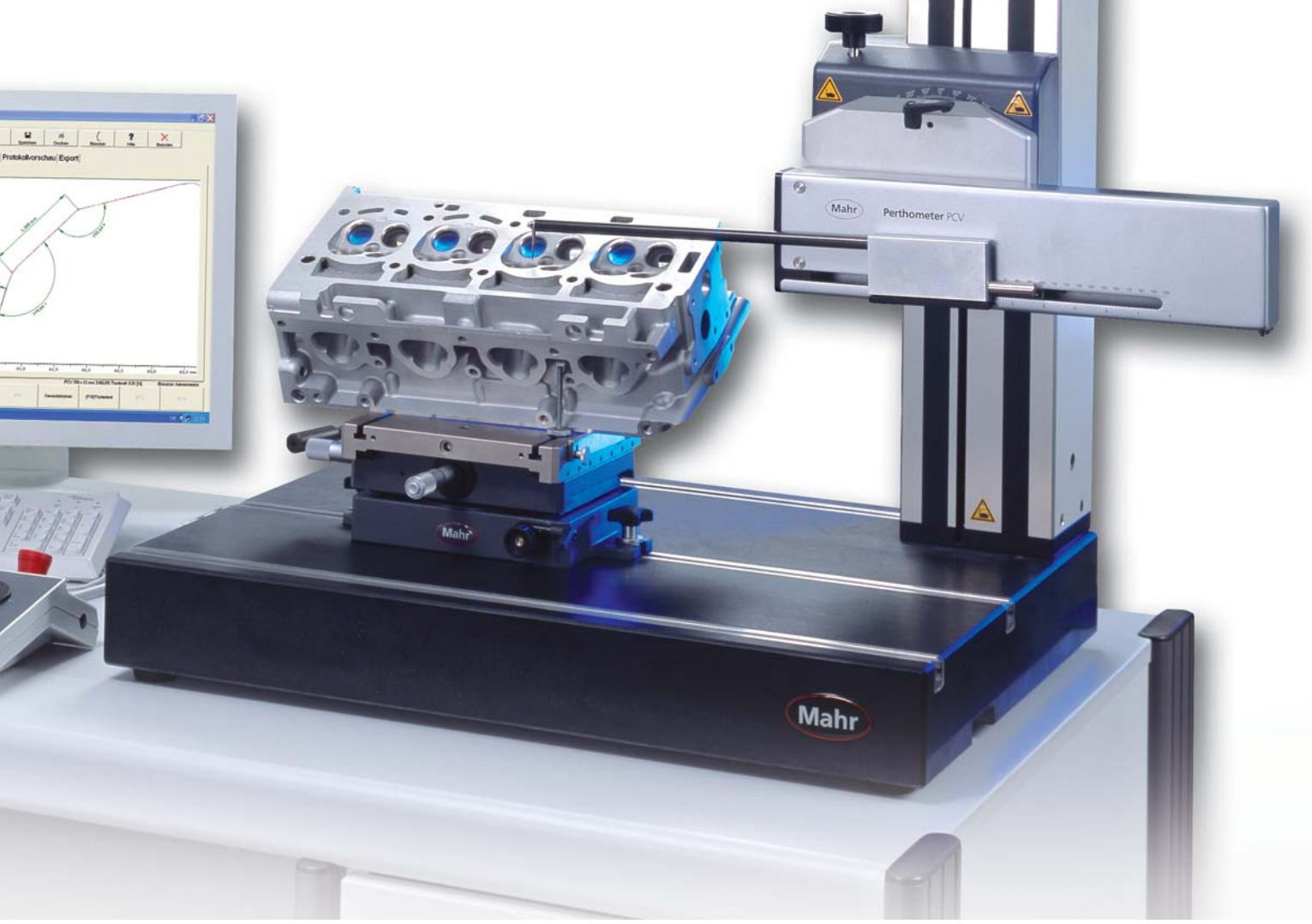
MarSurf XC 2 / XC 20



MarSurf. PC-based Stationary Contour Measuring Stations
VERSATILE, HIGH-PERFORMANCE UNITS FOR INSPECTION ROOM AND PRODUCTION

► I Measuring and evaluating geometries of workpieces and tools that are relevant for correct functioning is one of the primary requirements of research, technology, and industry. The tried-and-tested 2D contour measuring system is increasingly winning out over other systems, as it is fast, simple, and cost-effective compared to other methods. An evaluation can be produced in a fast and user-friendly manner from a measured profile that delivers reliable results despite ever greater demands in terms of accuracy and evaluation criteria. I ◄





MarSurf XC 2

Measuring contours made easy

Description

The **MarSurf XC 2** provides you with everything you need to move into Mahr's top-flight contour metrology. This PC-based unit supplies all the required contour measurement and evaluation features both in the inspection room and on the shop floor.
Clear, well-arranged icons and straightforward aids to operation make this practical product easy to use. The **MarSurf XC 2** is the culmination of many years of contour metrology experience combined with up-to-the-minute, forward-looking technology.
MarSurf XC 2 is **Mahr's** future-focused contour evaluation software.

Features

Features of the contour measuring software are as follows:

- Creates regression straight lines and circles
- Creates points, intersection points, free points, center points, maximum points and minimum points
- Creates coordinate systems
- Determines radii, distances, angles, coordinates, and line form deviations
- Performs nominal/actual comparisons
- Tolerance monitoring
- Automatic program runs
- Imports profile data, e.g. DXF files (option)

These are just a few examples of the large range of functions of the **MarSurf XC 2**.
Different user levels protect against operator error and ensure that no unauthorized operators are able to use the device.

MarSurf XC 2

The easy introduction to contour measurement

During the first few operating steps, users learn about the benefits of logical and straightforward handling of the unit. A wide selection of various probe arms and stylus tips are available for external and internal measurements.

Fast probe arm exchange without the need for tools is ensured by the magnetically supported probe arms. The stored calibration data is available for each probe arm that has been calibrated.

Setting up the measuring station and an initial measurement are fast and straightforward. Mapping the measuring station by representing axis positions accelerates the setup process considerably. All measuring conditions are selected in the "Measuring assistant" menu, enabling targeted measurement.

A "Start point to end point measurement" function facilitates the start of the first measurement. The path of the profile is displayed on the screen during measurement.

Evaluation can be performed immediately after measurement. Storing the profile data, evaluation, results, and the entire program as a QE (Quick & Easy) offer the possibility of permanent documentation. A complete record with the key text and evaluation contents is entered in the "Measuring record" menu by the operator.

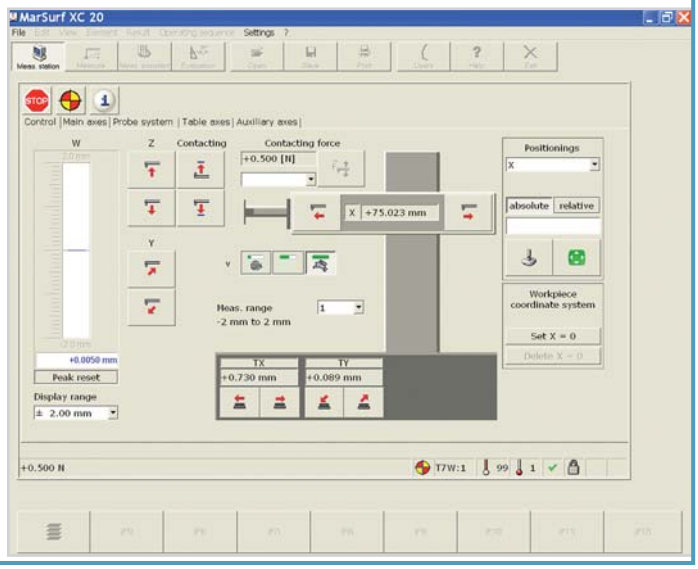
MarSurf XC 2 means you measure:
Simply
Quickly
Reliably

Description

The **MarSurf XC 2** gives you everything you need to perform all standard measurement tasks in contour metrology. Straightforward and fast operation combined with peak performance.

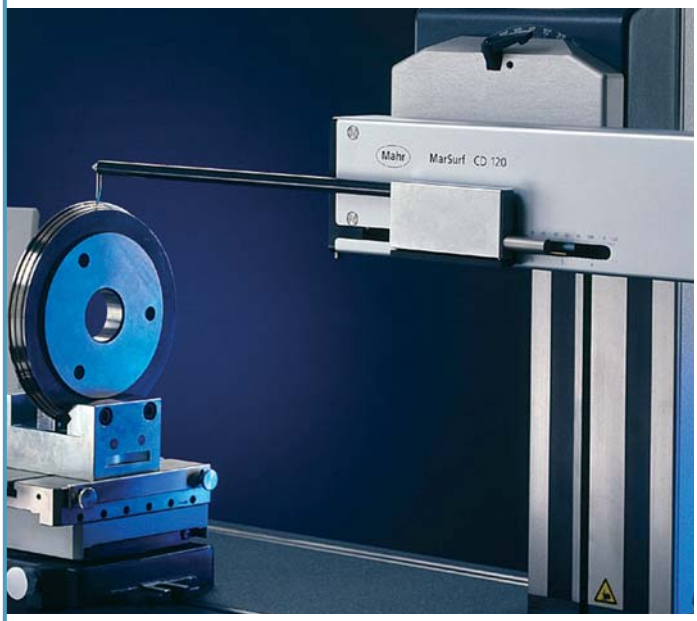
MarSurf XC 2 Measuring Station

MarSurf XC 2	**6268355**
Consisting of:	
MidRange Standard control unit	
MarSurf XC 2 software (MarWin-based)	
PC	
Windows XP country package	62682xx
17" TFT monitor	5460041
Printer	5460030
USB cable	3018232
MCP 23 manual control panel (standard)	7035195
CD 120 drive unit	6720812
MarSurf ST 500 measuring stand	
with 700 mm x 550 mm (27.56 in x 21.65 in) granite plate	6710250
PCV 200/CD 120 mount	6851362
CT 120 XY table	6710529
Rotary attachment for CT 120	6710547
Contour 2 calibration set (standard)	6820124



MarSurf XC 2

XC 2 with CD 120 drive unit and ST 500 or ST 750 measuring stand



The CD 120 contour drive unit is a key component of the measuring station. Precise calculation of radii, distances, angles, and straightness largely depends on the quality and technical properties of the drive unit. The quiet drive, combined with the software-supported error correction, ensures reproducible measurements with a high vertical and horizontal resolution.

ST 500 Measuring Stand (optionally ST 750)

- Granite plate measuring 700 mm × 550 mm (27.56 in x 21.65 in) (L × W) with three 10 mm (0.39 in) T-grooves
- Measuring column with motorized vertical adjustment over range of 500 mm (19.69 in) for the drive unit

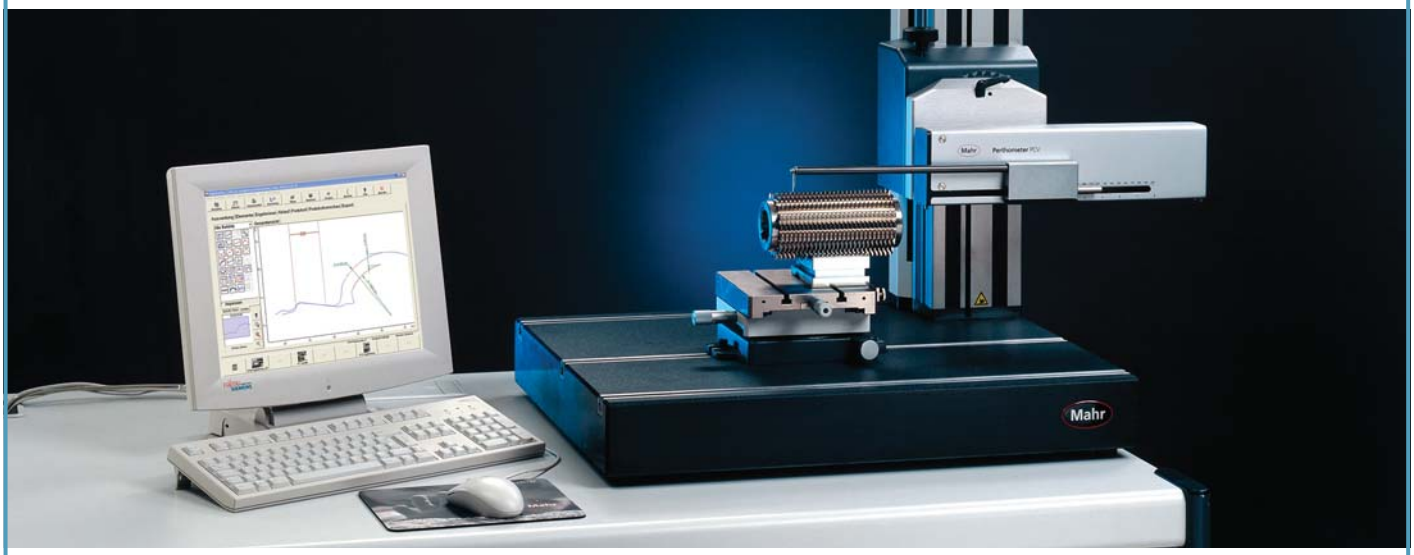
Technical Data

Traversing length (in X)	0.2 mm to 120 mm (0.0079 in x 4.72 in)
Measuring range (in Z)	50 mm (1.97 in) for 350 mm (13.78 in) probe arm 25 mm (0.98 in) for 175 mm (6.89 in) probe arm
Measuring system (in X)	Highly accurate incremental measuring system (factory calibration with laser interferometer)
Measuring system (in Z)	Inductive transducer* featuring high accuracy and linearity
Resolution (in Z) relative to stylus tip	0.38 µm (15 µin) for 350 mm (13.78 in) probe arm 0.19 µm (7.5 µin) for 175 mm (6.89 in) probe arm
Resolution (in Z) relative to measuring system	0.04 µm (1.6 µin)
Guide deviation	< 1 µm (40 µin) (over 120 mm (4.72 in))
Measuring direction (in X)	Forwards (+X), backwards (-X)
Contacting direction (in Z)	Downwards (-Z), upwards (+Z)
Measuring force (in Z)	1 mN to 120 mN, downwards and upwards (adjustable in MarSurf XC 2)
Tracing angle	On smooth surfaces, depending on the deflection: trailing edges to 88°, rising edges to 77°
Measuring speed (in X)	0.2 mm/s to 4 mm/s (0.0079 in/s to 0.16 in/s)
Contacting speed (in Z)	0.1 mm/s to 1 mm/s (0.0039 in/s to 0.039 in/s)
Positioning speed (in X) and return travel speed	0.2 mm/s to 8 mm/s (0.0079 in/s to 0.31 in/s)
Positioning speed (in Z)	0.2 mm/s to 10 mm/s (0.0079 in/s to 0.39 in/s)
Probe arm length	175 mm (6.89 in), 350 mm (13.78 in)
Stylus tip radius	25 µm (0.00098 in)
Distance measurement in X and Z	MPE_{EA} ± (2+L/50) µm
Angle measurment on smooth surfaces (Rz < 2,0 µm) with inclination ± 45° across horizontal leg length 3 mm - 30 mm	MPE_W < 3,0 Min
Radius measurment on smooth surfaces (Rz < 2,0 µm) for measurment ± 45° across from horizontal	MPE_R ± 3 µm form R 0.5 mm till 10 mm MPE_R ± 5 µm form R 10 mm till 100 mm MPE_R ± 7 µm form R 100 ≥ mm till 1000 mm

** patented*

MarSurf XC 20

High-performance contour measurement



Description

The **MarSurf XC 20** significantly expands the range of functions as compared to the **MarSurf XC 2** measuring station described earlier. The measuring station displayed above shows the **MarSurf XC 20** system with the **PCV 200** drive unit and **ST 500** measuring stand.
A long history of experience in contour metrology is put into practice with the **MarSurf XC 20**. Complex contour measurement tasks are achieved from all areas.

Features

The **PCV 200** drive unit features a measuring length of 200 mm (7.87 in) and a 50 mm (1.97 in) stroke. Many additional software functions are supported as compared to the **MarSurf XC 2** (see table on page 11). These include:

Sections
An unlimited number of sections can be displayed. Each section is shown as a separate field in the record.

Measurement using a twin stylus
Opposing profiles, e.g. in bores but also in external geometries, can be measured using the twin stylus. Both "opposing" profiles can be evaluated with **XC 20** software, thereby enabling dimensions to be calculated that relate to the relationship between both profiles.

MarSurf XC 20 Measuring Station

MarSurf XC 20 **6268360**
consisting of
MidRange Standard control unit
MarSurf XC 20 software (MarWin-based)
PC

Windows XP Professional country package	62682xx
17" TFT monitor	5460041
Printer	5460030
USB cable	3018232
MCP 23 manual control panel (standard)	7035195
PCV 200	6720810
MarSurf ST 500 measuring stand with 700 mm x 550 mm (27.56 in x 21.65 in) granite plate	6710250
PCV 200/CD 120 mount	6851362
CT 200 XY table	6710530
Contour 2 calibration set (standard)	6820124

PCV 200 Drive Unit

Traversing length	1 mm to 200 mm (0.039 in to 7.87 in)
Measuring range (in Z)	50 mm (1.97 in)

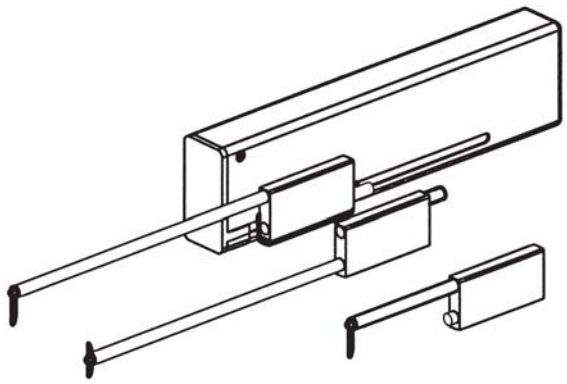
The versatile probe arm and stylus tip range for various tasks also includes the twin stylus (see page 23), which, using multiple measurement, enables an upper and lower profile of a workpiece to be measured without changing the probe arm.

ST 500 Measuring Stand

- Granite plate measuring 700 mm × 550 mm (27.56 in x 21.65 in) (L × W) with three 10 mm (0.39 in) T-grooves
- Measuring column with motorized vertical adjustment over range of 500 mm (19.69 in) for the drive unit
- Easily exchangeable mounts
- The measuring stand incorporates a manual mechanical angle adjuster for the drive unit

MarSurf XC 20

PCV 200 contour drive unit



Exchangeable probe arms for optimal adjustment to measurement tasks

Advantages

- Automatic lifting and lowering of the probe arm with adjustable speed
- Measuring force of 1 mN to 120 mN
- High positioning speed
- Patented probe arm mount with tool-free, reproducible probe arm exchange
- Collision protection
- Outstanding dynamics thanks to rigid design and use of new materials
- Selection of various positioning and measuring speeds
- Drive unit is free of control elements

→ reliable results

Technical Data

Traversing length (in X)	0.2 mm to 200 mm (0.0079 in to 7.87 in)
Measuring range (in Z)	50 mm (1.97 in) for 350 mm (13.78 in) probe arm 25 mm (0.98 in) for 175 mm (6.89 in) probe arm
Measuring system (in X)	Highly accurate incremental measuring system (factory calibration with laser interferometer)
Measuring system (in Z)	Inductive transducer* featuring high accuracy and linearity
Resolution in Z relative to stylus tip	0.38 µm (15 µin) for 350 mm (13.78 in) probe arm 0.19 µm (7.5 µin) for 175 mm (6.89 in) probe arm
Measuring point distance (in X)	1.0 µm to 8.0 µm (40 µin to 315 µin)
Resolution (in Z) relative to measuring system	0.04 µm (1.6 µin)
Guide deviation	< 1 µm (40 µin) (over 200 mm (7.87 in))
Measuring force (in Z)	1 mN to 120 mN, downwards and upwards (adjustable in MarSurf XC 20)
Tracing angle	On smooth surfaces, depending on the deflection: Trailing edges to 88°, rising edges to 77°
Measuring speed (in X)	0.2 mm/s to 4 mm/s (0.0079 in/s to 0.16 in/s), adjustable in 0.1 mm/s (0.0039 in/s) steps
Contacting speed (in Z)	0.1 mm/s to 1 mm/s (0.0040 in/s to 0.039 in/s), adjustable
Positioning speed (in X) and return travel speed	0.2 mm/s to 8 mm/s (0.0079 in/s to 0.31 in/s)
Positioning speed (in Z)	0.2 mm/s to 10 mm/s (0.0079 in/s to 0.39 in/s)
Probe arm length	175 mm (6.89 in), 350 mm (13.78 in)
Stylus tip radius	25 µm (0.00098 in)
Distance measurement in X and Z	MPE_{EA} ± (2+L/50) µm
Angle measurment on smooth surfaces (Rz < 2,0 µm) with inclination ± 45° across horizontal leg length 3 mm - 30 mm	MPE_W < 3,0 Min
Radius measurment on smooth surfaces (Rz < 2,0 µm) for measurment ± 45° across from horizontal	MPE_R ± 3 µm form R 0.5 mm till 10 mm MPE_R ± 5 µm form R 10 mm till 100 mm MPE_R ± 7 µm form R 100 ≥ mm till 1000 mm

** patented*

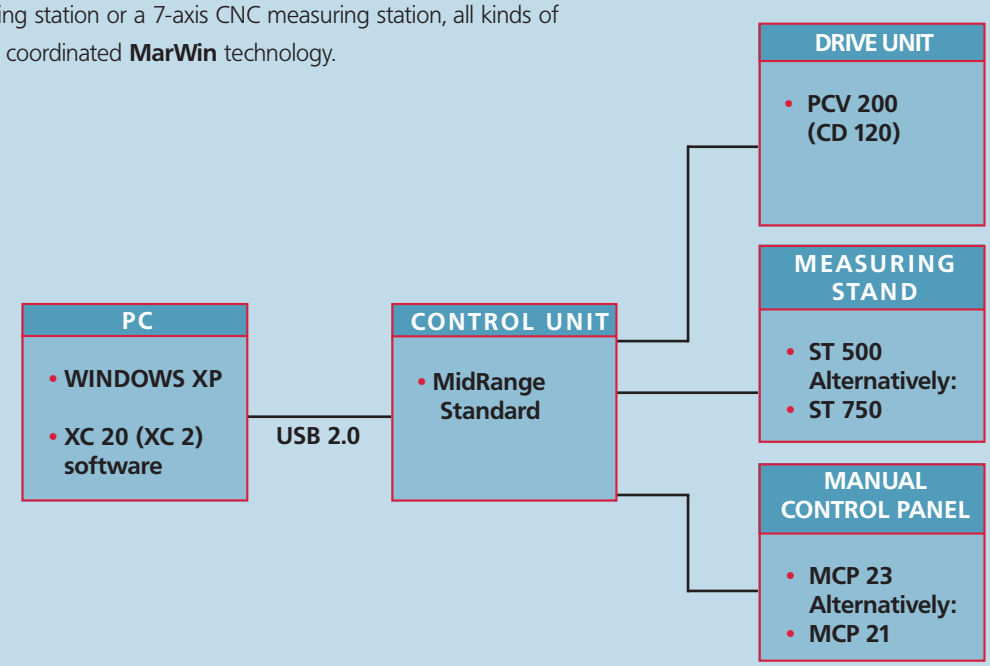
MarSurf XC 2/ XC 20. Configuration of a Standard Measuring Station

MarSurf XC 2 measuring station

MarSurf XC 20 measuring station shown with optional MCP21 control panel

MarSurf XC 2/ XC 20. Configuration of a Standard Measuring Station

The advantages of **MarWin** technology extend beyond software-related solutions to the entire coordinated measuring station concept, e.g. control unit, control elements and many other items. For a standard measuring station or a 7-axis CNC measuring station, all kinds of solutions are possible with the fully coordinated **MarWin** technology.

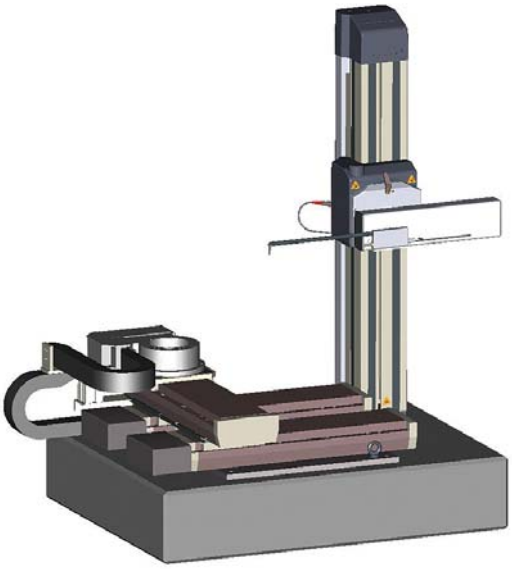


XC 2 / XC 20 Systems. The Key Features

	MarSurf XC 2	MarSurf XC 20
Drive unit connection	CD 120	PCV 200 / LD 120
Creation of sections	-	✓
Twin stylus	-	✓
Measuring assistant	Reduced, simplified version	✓
DXF import function	As an option via license	✓
Surface profile and parameters	-	✓
Multiple measurement	-	✓
Operating sequence	-	✓
Tolerance zone	1 tolerance zone	Unlimited number
Can be extended to XCR 20	-	✓

MarSurf XC 20 CNC

Automates measurement with several axes



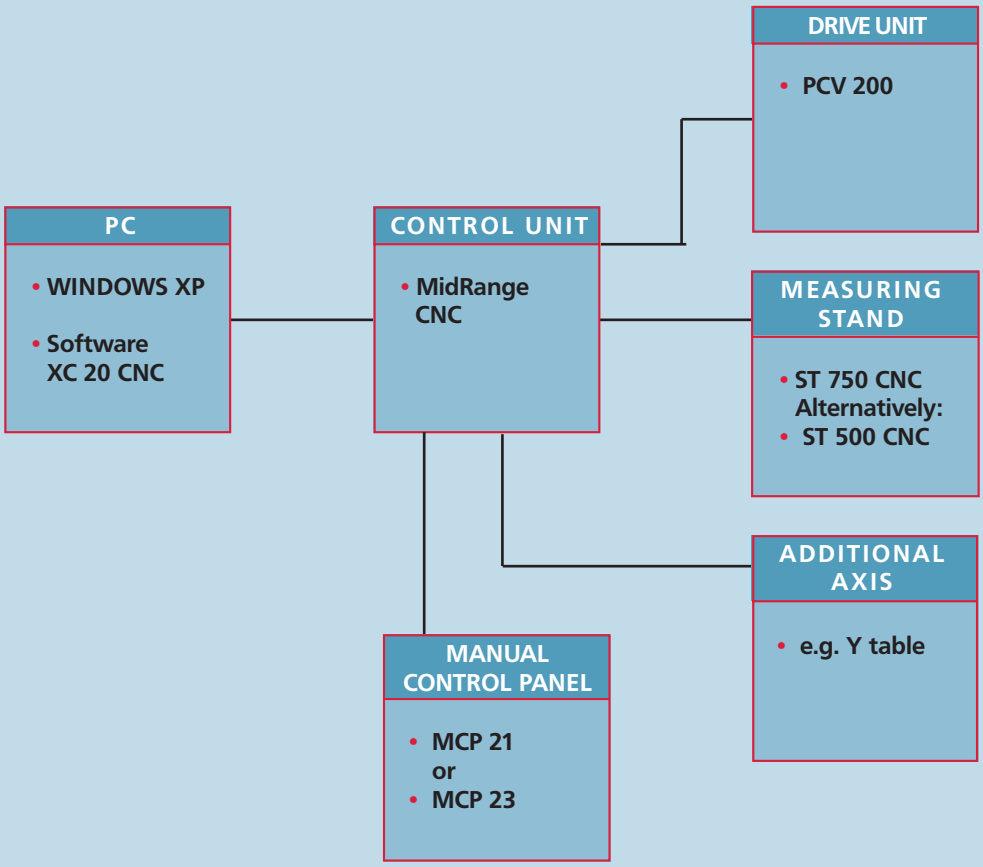
Description

The **XC 20 CNC** measuring station can be connected to the **ST 750 CNC** measuring stand and other additional axes to be controlled, e.g. for workpiece positioning.
The measuring assistant can be used to set measuring conditions such as positioning movements before or after the measurement. Operators can complete their measurement tasks quickly and simply thanks to the clear, comprehensive layout. The MCP 21 manual control panel allows quick and easy joystick-based axis control.

Scope of Delivery

Depends on the relevant configuration.

Configuration of an XC 20 CNC Measuring Station



Other PC-based Measuring Stations. MarSurf XCR 20

The new generation of combined roughness and contour measurement systems

Description

The **MarSurf XCR 20** is ideal for combining contour and roughness depth evaluation.
MarSurf XC 20 + MarSurf XR 20 = MarSurf XCR 20
This system includes absolutely everything you need, saving both time and space. There are separate operating levels for the roughness-depth and contour programs. The **MarSurf XCR 20** is Mahr's top surface measurement system.

Features

- Saves space because both drive units (**PCV 200** contour drive unit and **GD 25** roughness drive unit) can be adapted using the corresponding combination-mount on the **ST 500** or **ST 750** measuring stand
- High-precision contour and roughness evaluation with the **MarSurf LD 120** measuring system on components requiring a large stroke and very high resolution
- Option of rapidly changing between roughness and contour measurements, realized through straightforward changeover within the software and changing of the mechanical components such as the drive unit and probe
- The CT 200-MOT Y-drive and XT 20 topography software option make it expandable into a topography measuring station.

Versions

- Combination measuring station with one measuring stand and two drive units (**PCV 200** and **GD 25**)
- The **MarSurf LD 120** measuring station enables high-precision contour and roughness evaluation on components

MarSurf XCR 20 Measuring Station

MarSurf XCR 20 standard consisting of:

PC and MidRange Standard control unit	Order no. 6268380
Windows XP Professional country package	Order no. 62682XX
17" TFT monitor	Order no. 5460041
Printer	Order no. 5460030
USB cable	Order no. 3018232
MCP 23	Order no. 7035195
GD 25	Order no. 6721006
MFW-250	Order no. 6111404
PCV 200	Order no. 6720810
Contour 2 calibration set (standard)	Order no. 6820124
MarSurf ST 500 measuring stand with 700 mm x 550 mm (27.56 x 21.65 in) granite plate	Order no. 6710250
GD 25/PCV 200 combi-mount	Order no. 6851369
CT 200 XY table	Order no. 6710530

Note: It is possible to upgrade the **MarSurf XR 20** measuring station to a **MarSurf XCR 20**.

Other PC-based MarSurf Measuring Systems. MarSurf LD 120

MarSurf LD 120. Two in one. Contour and roughness depth in a single stroke

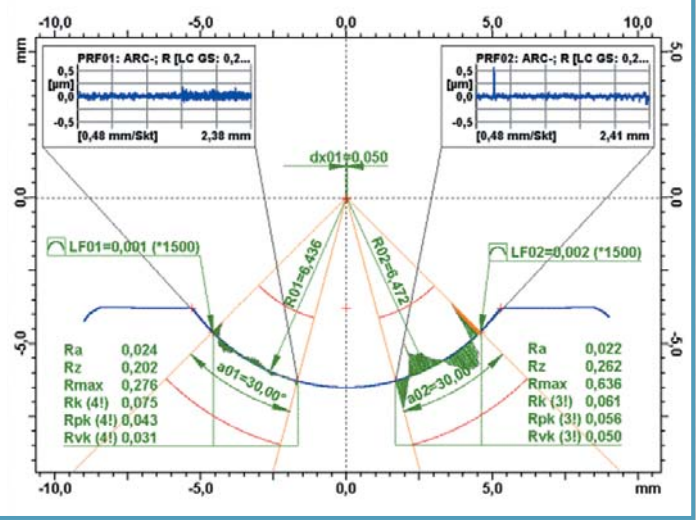
- Software can be used to set measuring forces from 0.5 to 30 mN which remain constant over the entire measuring stroke, thus ensuring flexibility and reliability. You can select the optimum measuring force to match the material characteristics of the workpiece and the probe arm of your choice.
- Probe arms changed without re-calibration. Storage of calibration data for each probe arm and the magnetic probe mount ensure high reproducibility.

For further information, please see the MarSurf LD 120 catalog.

Description

The **MarSurf LD 120** is the high-quality, high-precision **contour and roughness measuring station** with integrated optical measuring system.

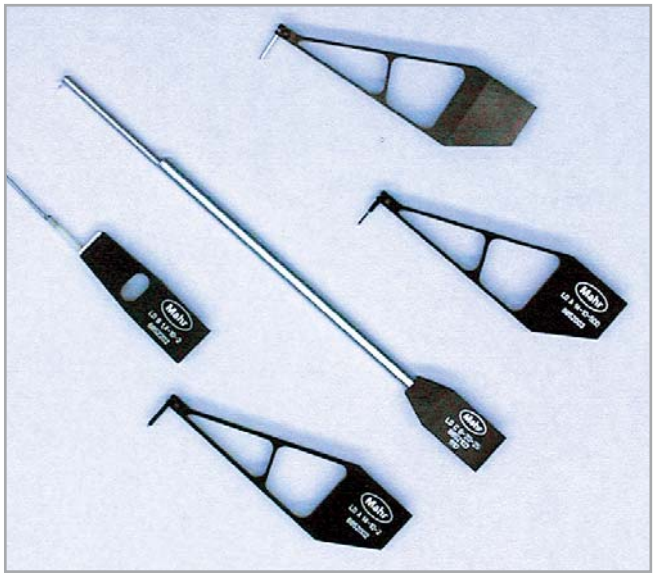
It performs roughness and contour evaluations in a single stroke. To complete both these measurement tasks with a single measurement, you need a high-precision measuring system that supports both the relatively large measuring stroke for the contour in radii, on slopes or in free form areas and a resolution in the nm range for the roughness depth measurement.



Features

- The magnetic probe mount ensures flexibility by supporting a wide range of probes that can be easily exchanged, while maintaining a high level of reliability
- Positioning accuracy when exchanging probes in the µm range and collision protection, rigidity, and stability of the probes for resolutions in the nm range
- Reliable results thanks to a calibration procedure specially geared to high accuracy

Other PC-based MarSurf Measuring Systems. MarSurf LD 120



Mapping of various probes for MarSurf LD 120

MarSurf LD 120 with ST 500 Measuring Stand

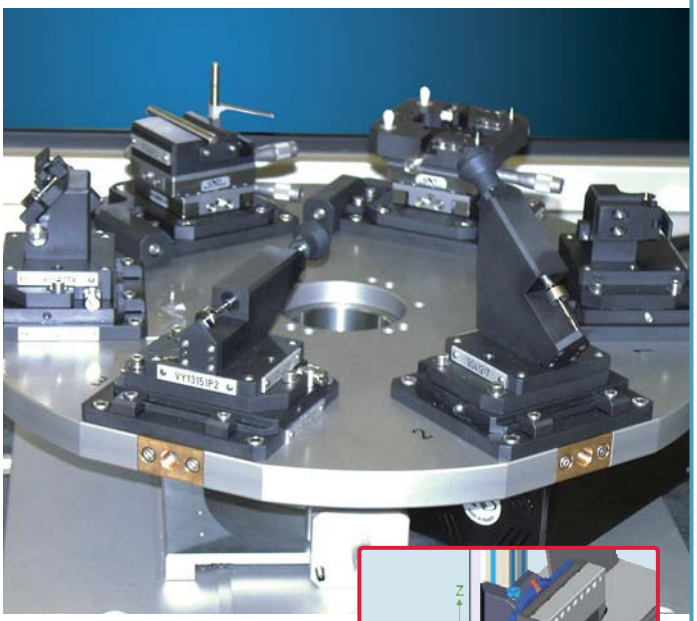
MarSurf XC 20 consisting of:	6268362
MidRange LD 120 control unit	
MarSurf XC 20 software (MarWin-based)	
PC	
Windows XP Professional country package	62682xx
17" TFT monitor	5460041
MCP 21 (advanced)	7033935
LD 120 drive unit incl. probe system	6720814
Contour 1 calibration standard for MarSurf LD 120, class 1 accuracy	6820121
CT 200 XY table	6710530
MarSurf ST 500 measuring stand with 700 mm x 550 mm (27.56 in x 21.65 in) granite plate	6710250
Damping elements set	6851368
Printer	5460030
USB cable	3018232
LD 120 mount	6851360

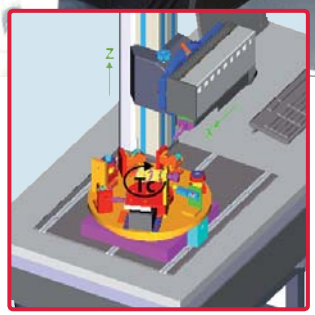
Technical Data

Traversing length (in X)	0.1 mm to 120 mm (0.0039 in to 4.72 in)
Measuring range (in Z)	10 mm (0.39 in) with 100 mm (3.94 in) probe arm (standard) 20 mm (0.79 in) with 200 mm (7.87 in) probe arm
Measuring system	Interference optical measuring system
Standard stylus tip	LD A14-10-2, diamond 2 µm (79 µin), 90° and LD A-14-10-500 (contour)
Resolution in Z	2 nm (0.08 µin)
Horizontal measuring axis	Glass scale
Measuring point distance in X	0.05 µm to 1 µm (20 µin to 40 µin)
Contacting force	0.5 mN to 30 mN (adjustable via software)
Measuring speed	0.1 mm/s to 2.0 mm/s (0.0039 in/s to 0.079 in/s) in 0.1 mm/s (0.0039 in/s) steps for contour measurement 0.1 mm/s to 0.5 mm/s (0.0039 in/s to 0.020 in/s) for roughness measurement
Return travel speed and positioning speed in X-direction	Up to 4 mm/s (0.16 in/s)
Guide deviation	0.12 µm/20mm (4.72 µin/0.79 in) 0.25 µm/60 mm (9.84 µin/2.36 in) 0.4 µm/120 mm (15.75 µin/4.72 in)
Angle measurement	MPE < 0.5'
Radius measurement	MPE = ± 0.01 % of nominal value for R 12.5 mm (0.49 in)
Distance measurement	MPE ± (1+L/100) µm
Display deviation for distance measurement **EA**	MPE_{EA} ± (1+100) µm
Display deviation for angle measurment $\mathbf{W_K}$	MPE_W 0,5 min
Display deviation for Radius measurment $\mathbf{R_K}$	MPE_R (R ≤ 10 mm) ± 1 µm MPE_R (10 mm < R ≤ 300 mm) ± (R/10) µm

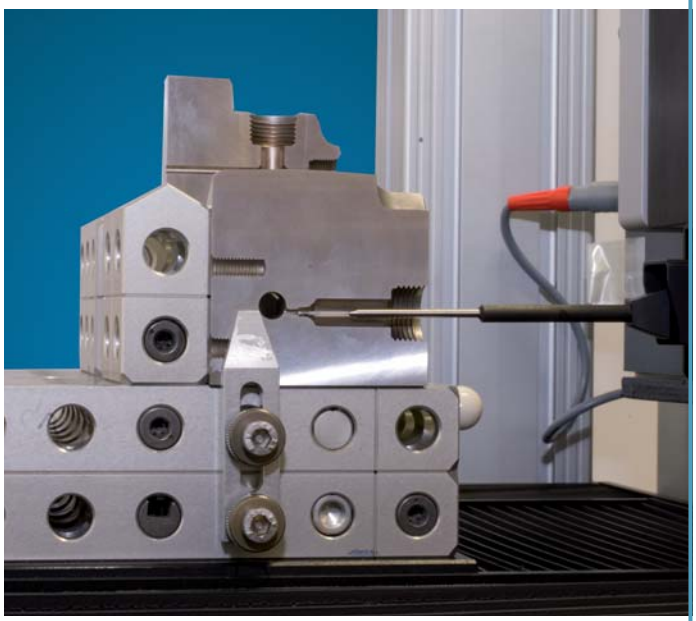
CNC Measuring Stations. MarSurf XP 20

CNC measuring station with LD 120 and integrated rotary table for high-precision measurement of contour and roughness depth measuring tasks.





CNC measuring station with MarSurf LD 120 and TWE probe arm changer.
Components with many different measurement characteristics can be measured particularly well in this measuring station configuration.



Automatically changing the probe arm enables the CNC measuring run to be performed without interruption, thus saving you time.

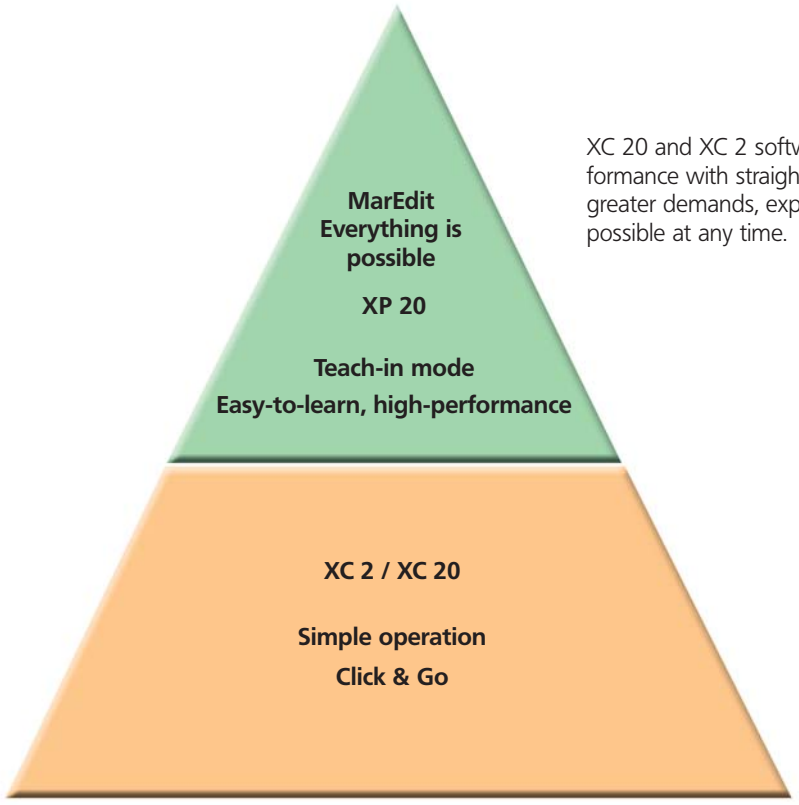
MarWin Software for MarSurf XC 2 / XC 20

Our application-based experience in the contour sector in combination with our experience in production software creates one of the most powerful contour measurement systems on the international market. On the basis of the MarWin software platform created for Mahr system metrology, all opportunities for users are fulfilled for a performance class that goes far beyond the current individual measuring task.

- **Standardized operating sequences** — in contour, roughness depth, topography, form
- **Modular software system** — enables other applications to be expanded at any time
  Access to libraries that grow continuously
- **Different performance and operating levels** — From the simple "stand-alone" XC 20 V.2.x version to the professional XP 20 V2.x measuring station, everything is possible. The XP solution opens the way up to the highest performance level with the teach-in and editor modes. This version is particularly interesting for CNC measuring stations and applications.
- **End-to-end hardware system for MarWin measuring stations** — MarWin-based measuring stations also mean integrated measuring station components such as control units (MidRange), manual control panels, and much more.

The MarWin philosophy:

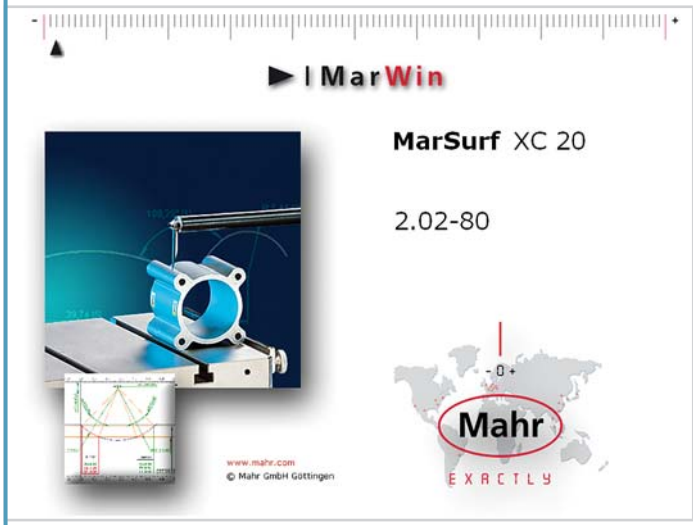
As simple as possible
As powerful as necessary



XC 20 and XC 2 software couple peak performance with straightforward operation. For greater demands, expansion to a further level is possible at any time.

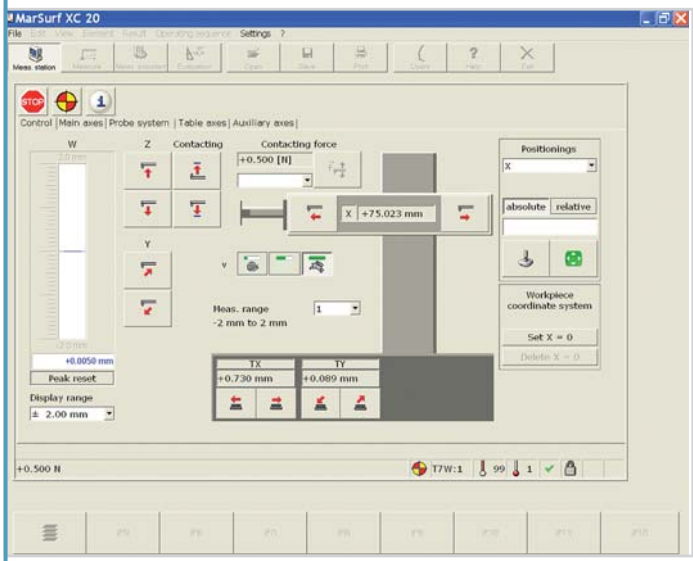
MarWin Software for MarSurf XC 2 / XC 20

MarWin-based software – user benefits

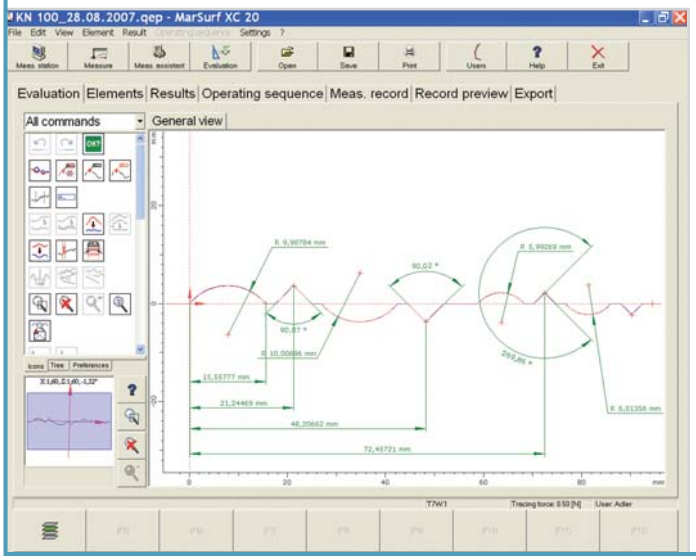


Description

The user-friendly **MarWin** software platform features many different measuring and evaluation criteria. Standardized symbols, operating sequences that are clearly structured even if applied differently, and clear-cut assignment of user rights are just a few of the many features making life easier for users.



It is possible to add further **MarWin**-based software applications such as **XR 20** or **XT 20** at any time. Simple measuring station displays showing the measuring setup's axes make work quick and easy.
The travel speed of the **ST 500 / ST 750** measuring stand and of the additional axes can be selected directly in 3 steps. To facilitate zenith searches, the display area can be set to the optimal zoom.

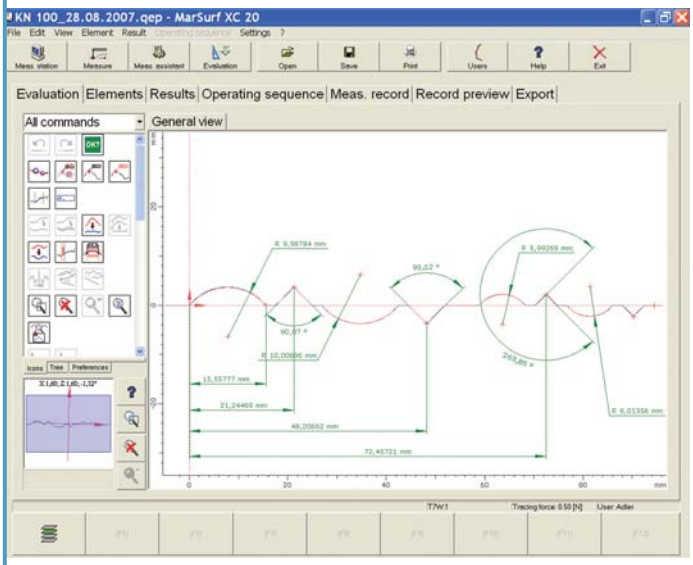


Operation is made much easier thanks to easily recognizable icons. As many users configure measuring runs in line with their own priorities, icons can be selected as **Preferences**. The Help function for the selected icon can be activated at any time.

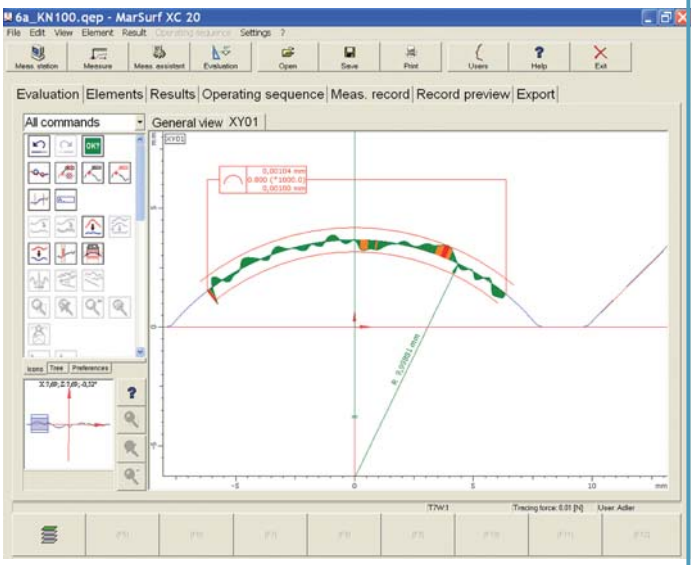
Setting measurement conditions, positioning the probe in the "loading station" and in the measuring position, and positioning after measurement with all boundary conditions are all possible in "Measuring assistant" view.

Multiple measurements, text information during a measurement procedure, and many other features are supported in clear and easy operating steps.

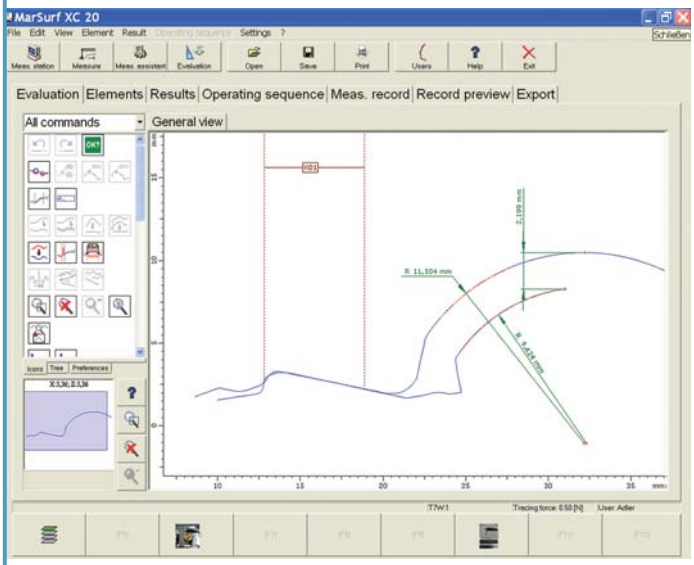
MarWin Software for MarSurf XC 2 / XC 20



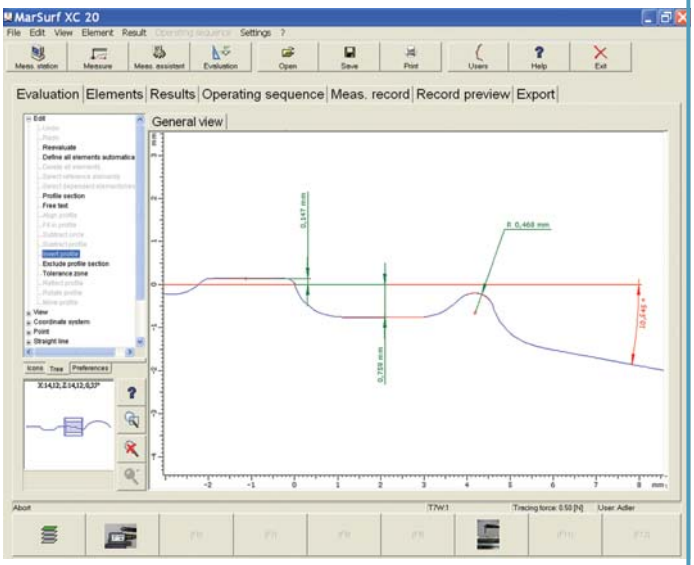
Standard evaluation
Fast and straightforward evaluation of geometrical basic elements such as radii, angles, and distances to coordinate axes is made possible without the slightest effort by means of tools from the action box.



Line form evaluation
Deviations of the actual geometry from the nominal geometry are shown graphically with indication of the maximum deviation. The preselected tolerance band shows at a glance whether the workpiece is inside or outside the tolerance.

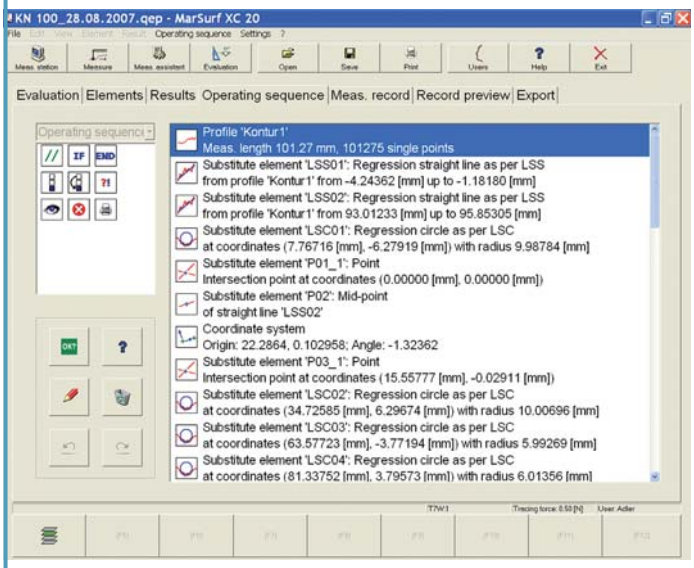


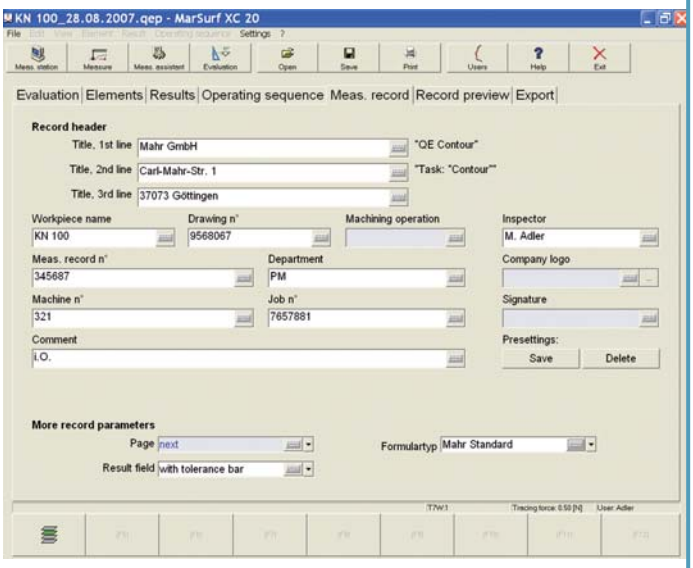
Nominal/actual comparison
Comparing an actual profile to a nominal profile is one of the most demanding tasks in contour evaluation. In the example shown above, adaptation is performed in the profile section displayed. Differences in dimensions can now be calculated that in this case reflect the wear and tear of a tool.



Creation of auxiliary references
Many technical drawings of workpieces contain dimensions that are not referenced solely to the visible edges but also to auxiliary references. Creation of a parallel to a workpiece edge is shown in this example.

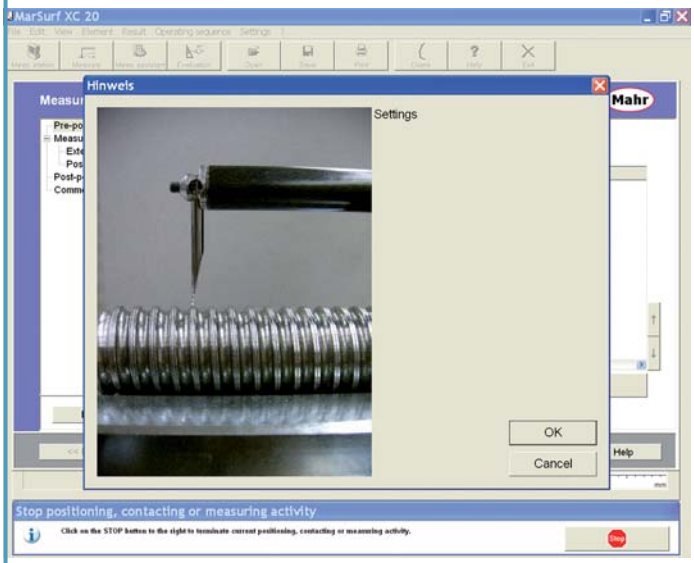
MarWin Software for MarSurf XC 2 / XC 20

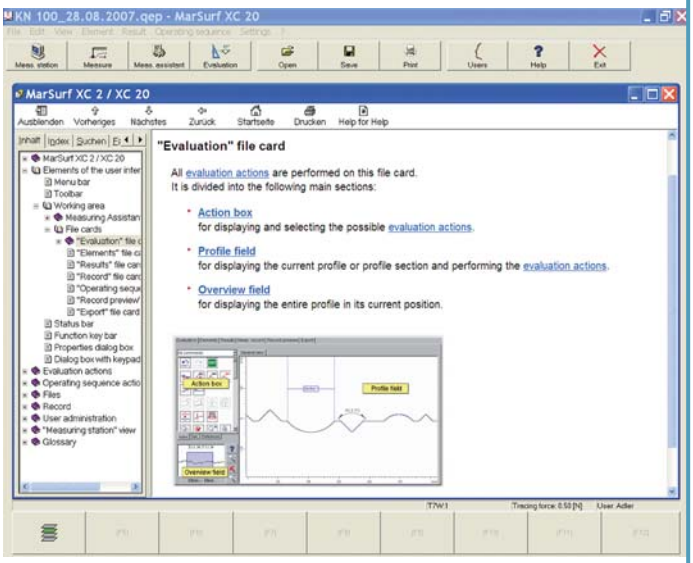




Key information and control fields
Operators need an overview of all processes, particularly when performing complex measuring tasks with numerous evaluation steps. In the "Operating sequence" file card, they can see all individual actions and change or delete these if required (XC 20 only).

Documentation
All necessary text entries can be made in the "Measuring record" overview.





Operating help
To also provide help to inexperienced operating staff at key stages of the measuring run, message texts supported by images can be shown at the necessary points.

Help
Comprehensive help is available "online" to operators in each operation. All key functions are described through texts and appropriate graphics.

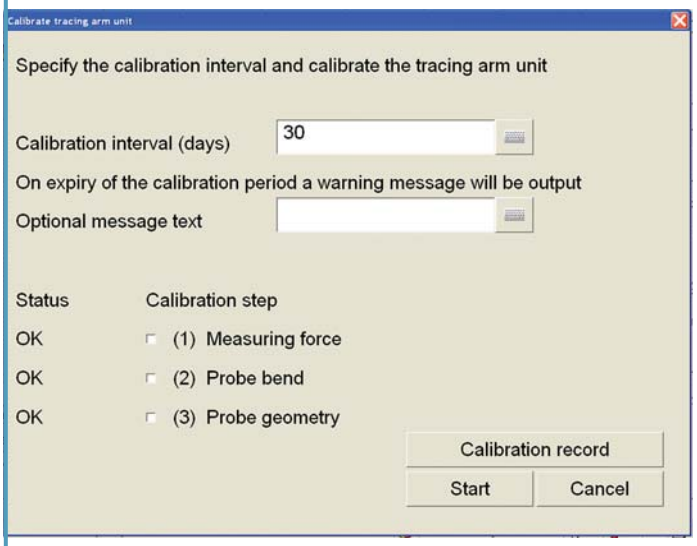
MarSurf XC 2 / XC 20. Calibration

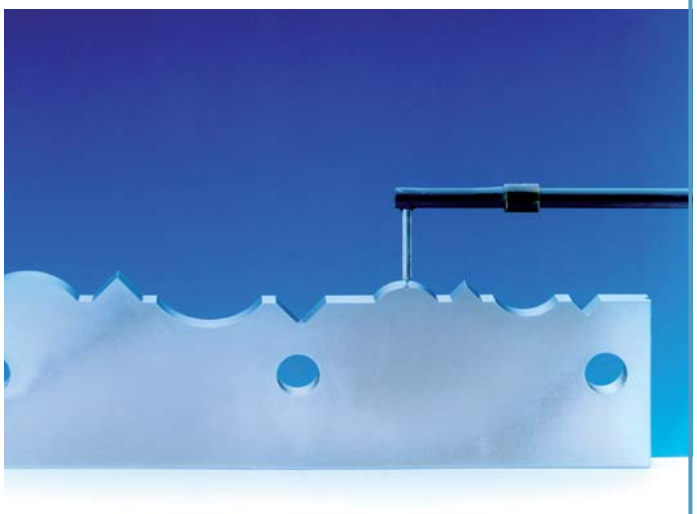
Calibration – the basis for accurate results.

An intelligent calibration system enables measurements that are accurate on a µm scale. Geometry calibration, deflection, and measuring force calibration are key elements. An easy-to-use measuring program guides users easily and quickly through the calibration steps. As soon as a probe arm is calibrated, the data is saved, which means that, when changing probe arms, calibration only needs to be performed once for each arm.

This standard is also suitable for calibrating the twin stylus.

Contour 1 calibration standard for MarSurf LD 120
Order no. 6820121





KN 100 contour standard
Order no. 6820125

A key benefit of CD 120 / PCV 200 / LD 120 probe arms is that they can be changed without the need for tools, thanks to the use of the magnetic mount. The appropriate probe arms are therefore changed quickly and easily for different measuring tasks.

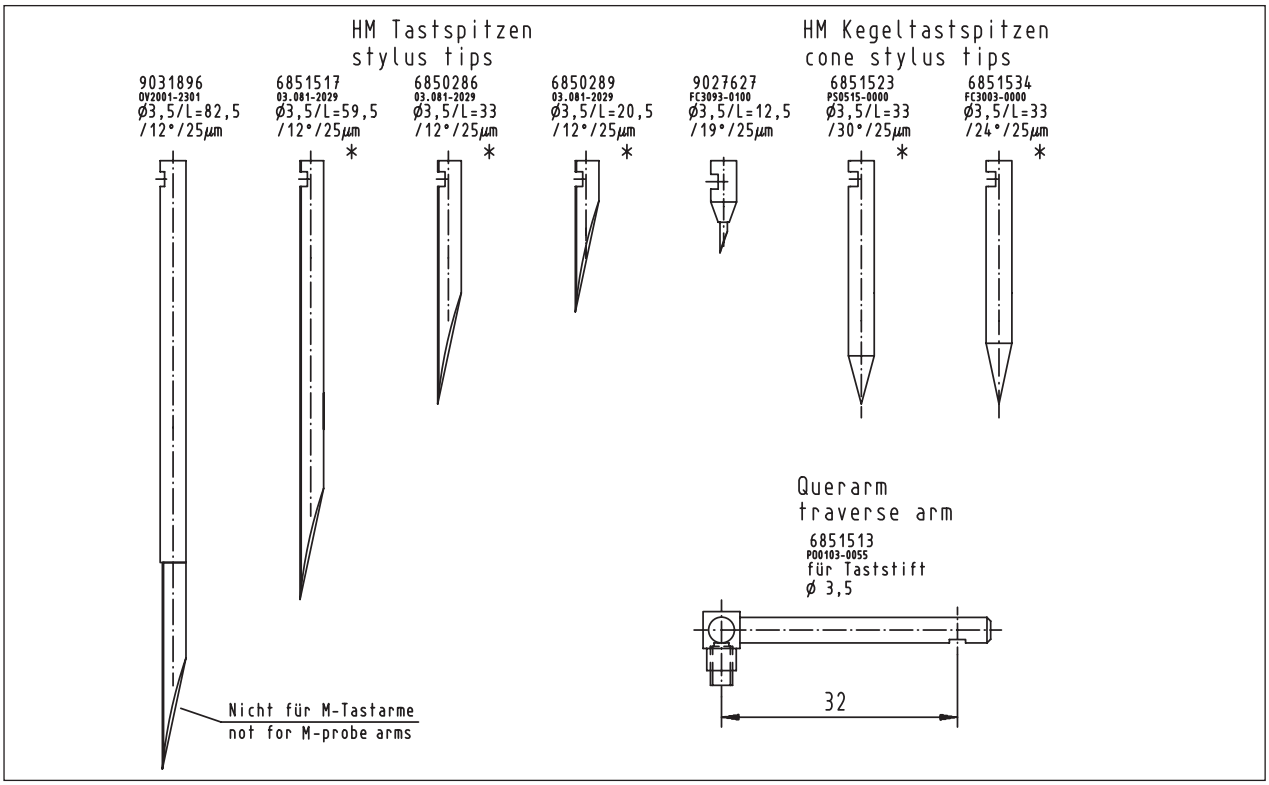
The calibration menu enables each probe arm to be calibrated and calibration data to be saved. Calibration is only necessary once for each probe arm. No further calibration is required when changing probe arms.

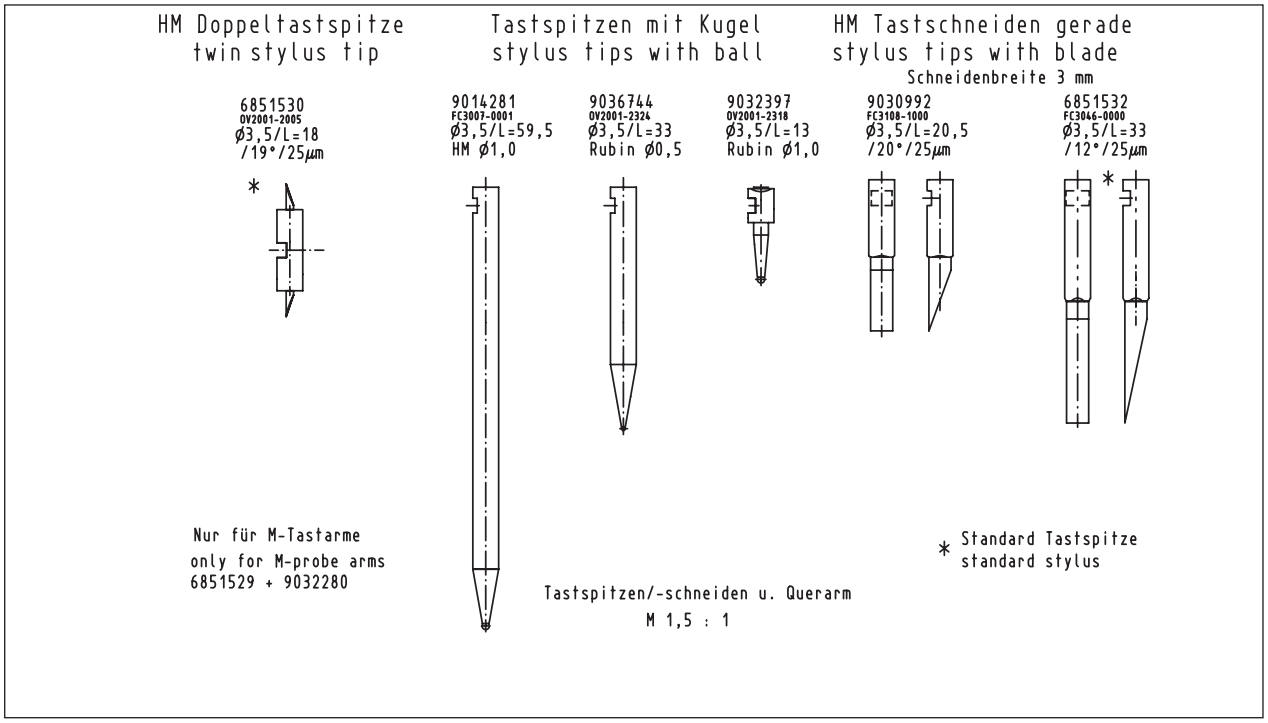
The KN 100 contour standard is used for practical monitoring of the measuring station. The standard contains the key geometrical elements. The KN 100 is supplied with a DKD or Mahr certificate if required.

KN 100 DKD calibration	Order no. 6980110
KN 100 Mahr calibration	Order no. 9964316

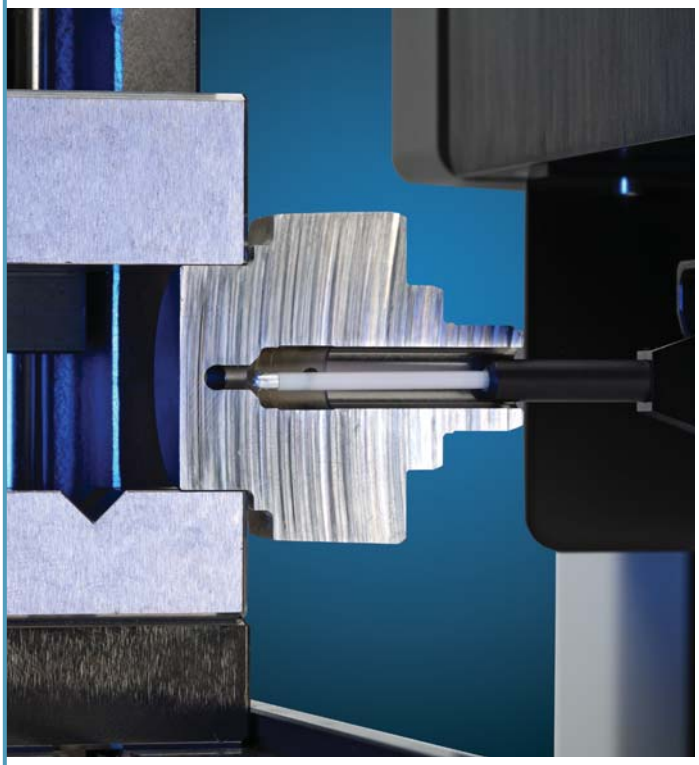
MarSurf XC 2 / XC 20. Contour Probes and Stylus Tips

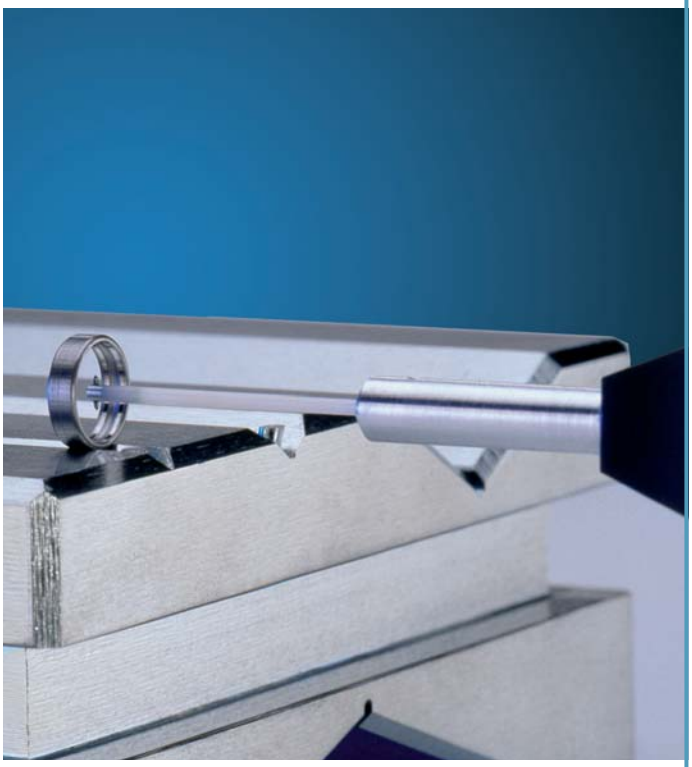
Wide selection of probe arms and stylus tips to solve various measuring tasks

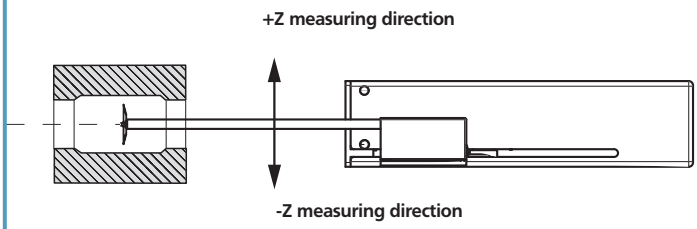


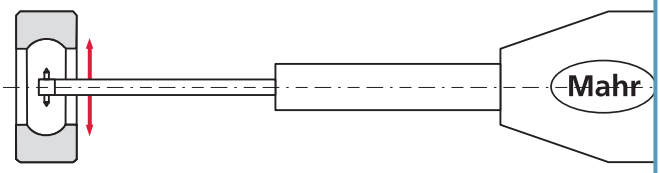


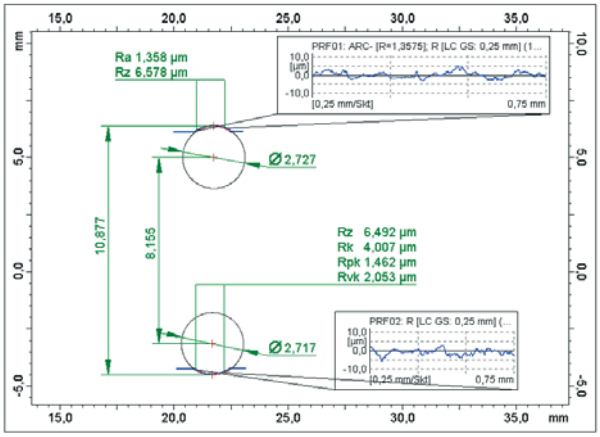
Measurement Using a Twin Stylus







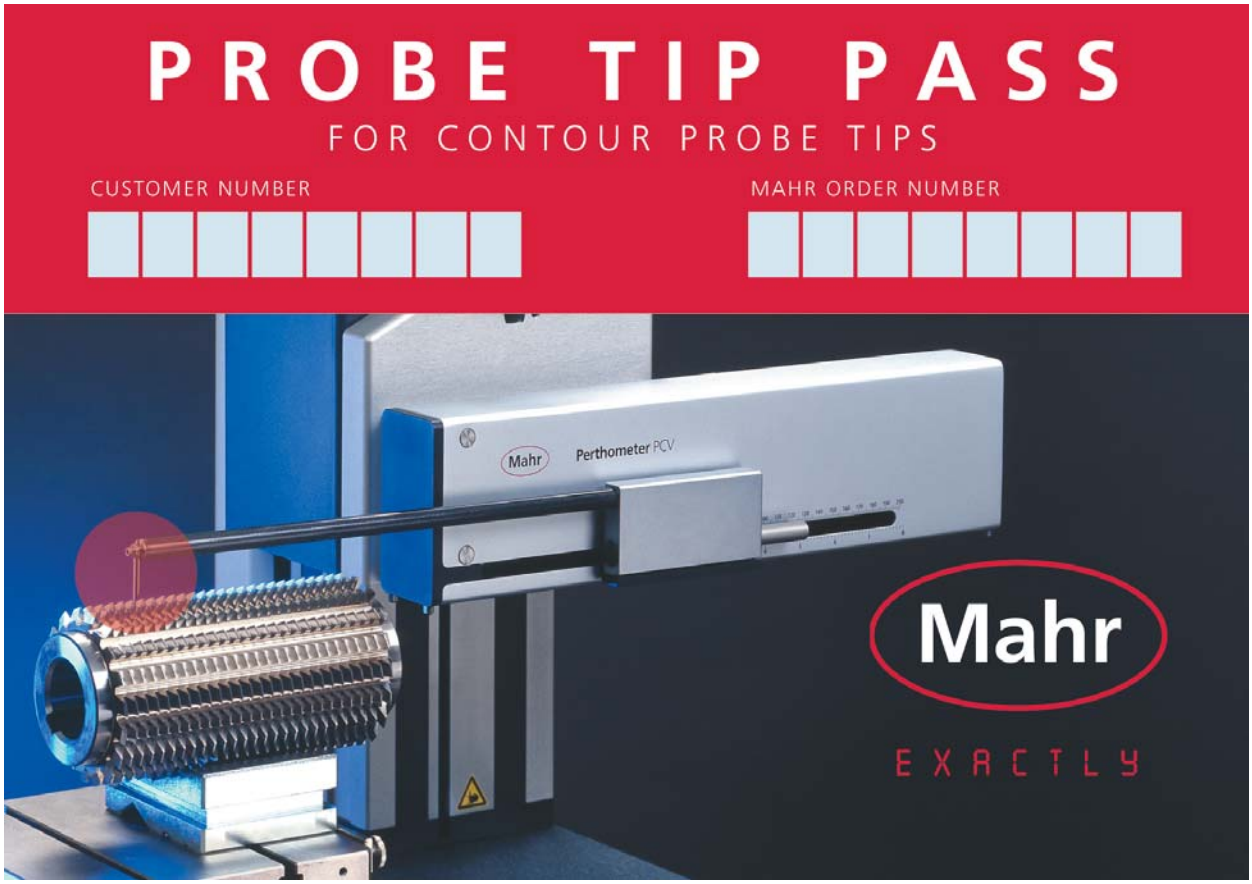




Measuring contours "above and below"
Many workpiece geometries require contour measurements in the opposing direction.
With **MarSurf XC 20** and the **PCV 200** or **LD 120** drive unit, this measuring task is perfectly solved. The following properties are basic requirements for this complex measurement task:

- Switching measuring force
- Calibrating a twin stylus
- Saving multiple profiles
- Evaluating multiple profiles

MarSurf XC 2 / XC 20. Stylus Tip Pass



Only Mahr Stylus Tips Ensure You Measure Correctly

If you want high-quality workpieces, you have to be able to rely on the results of your contour measurement system. Stylus tips for contour measuring instruments are absolute precision spare parts.

Only stylus tips with the original Mahr logo give you the measurement reliability that is vital for your workpieces. Use this pass and immediately take advantage of lower prices when buying replacement contour stylus tips.

Benefit from the stylus tip pass from Mahr:

- Measure with original tips
- Full guarantee for the measuring station
- Regular visual checks of stylus tips
- Mahr service whenever you need it

Measuring Stands

ST 500 / 750 / 750 CNC measuring stands

The MarSurf ST 500, ST 750 and ST 750 CNC measuring stands provide everything you need for a perfect surface measuring station. Decades of experience in surface metrology have gone into this new design along with core expertise relating to vibration, smooth running and accommodation of environmental influences, thereby providing perfect conditions for a high-quality surface measuring station for roughness and contour measurements.

- Straightforward clamping of accessories with set of 10 mm (0.39 in) clamping slots
- Straightforward installation. Quick-action clamping device thanks to eccentric clamp
- 60 mm (2.36 in) adjustment in Y-direction

Optional:
- Damping elements set to absorb environmental vibrations
- A centralized air supply allows controlled filling and refilling of the damping elements

Measuring stand combinations

ST 500 complete **Order no. 6710250**
including granite plate,
500 mm (19.69 in) travel
Plate size in mm 700 x 550 x 90
(27.56 in x 21.65 in x 3.54 in)

ST 500 column **Order no. 6851350**

ST 750 complete **Order no. 6710251**
including granite plate,
750 mm (29.53 in) travel
Plate size in mm 700 x 550 x 90
(27.56 in x 21.65 in x 3.54 in)

ST 750 column **Order no. 6851351**

Granite plate **Order no. 6710580**

Plate size in mm 1000 x 550 x 90
(39.37 in x 21.56 in x 3.54 in)

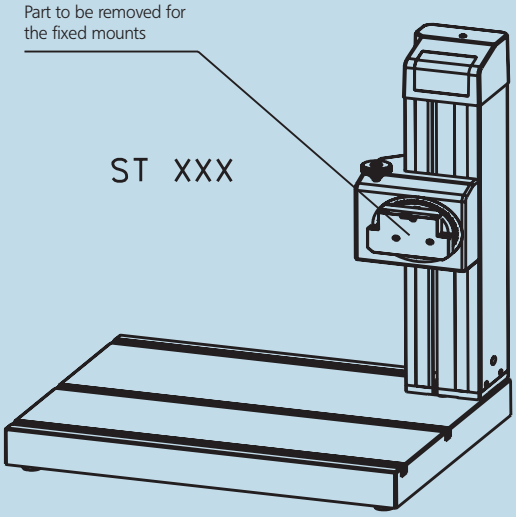
ST 500 CNC / HZ column
Order no. 6851392

ST 500 CNC / HZ+HB column
Order no. 6851393

Measuring Stand Accessories

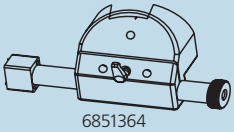
Mounts for ST 500 Measuring Stand

- **LD 120** — **Order no. 6851360**
- **PGK 120 / GD 120 CNC** — **Order no. 6851361**
- **PCV 200 / CD 120** — **Order no. 6851362**
- **GD 25 (PGK 20) standard mount** — **Order no. 6851363**
- **GD 25 (PGK 20) tube mount** — **Order no. 6851364**
- **GD 25 / PCV 200 combination-mount** — **Order no. 6851369**



Fixed mount for:

PGK 20 / GD 25



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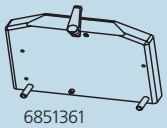
Exchangeable mounts for:

PGK 120 / GD 120 CNC



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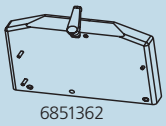
PCV 200 / CD 120



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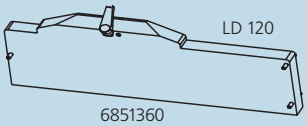
LD 120



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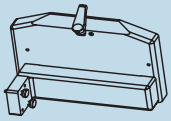
PGK 20 / GD 25



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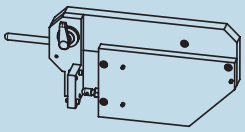
Combi-mount for:

PGK 20 or GD 25
with PCV 200



6851369

MarSurf. Damping Set (not illustrated)

Damping set for workpieces of 0 kg to 100 kg (0 lbs to 220 lbs).
MarSurf damping set 1 consists of:
- 4 pneumatic-spring elements
- Supply line kit
- Air pump (with pressure gage)

Load capacity: 20 kg to 60 kg (44 lbs to 132 lbs) x 4 units = 80 kg to 240 kg (176 lbs to 528 lbs)
Weight of granite plate + column: 80 kg + 50 kg = 130 kg (176 lbs + 110 lbs = 286 lbs)
Max. permissible workpiece weight: approx. 100 kg (220 lbs)

Order no. 6851368

Manual Control Panels

MCP 23 — **Order no. 7035195**
with ***emergency stop*** function and release button

MCP 21 — **Order no. 7039135**
With **emergency stop** function, release button, touchscreen and joystick

Accessories

PP V-block unit
Order no. 6710401

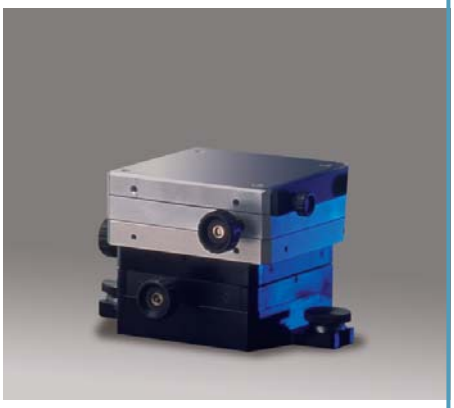
with four different V-blocks to mount rotary parts for test diameters from 1 mm to 160 mm (0.039 in to 6.30 in), including tension springs to clamp lightweight workpieces in the V-block.

Dimensions: 80 mm x 100 mm x 40 mm
(3.15 in x 3.94 in x 1.57 in)
Weight: 1.5 kg (3.3 lbs)

PPS parallel vise
Order no. 6710604

for clamping workpieces.

- Jaw width: 70 mm (2.76 in)
- Jaw height: 25 mm (0.98 in)
- Span: 40 mm (1.57 in)
- Total height: 58 mm (2.28 in)
- Weight: 2 kg (4.4 lbs)



CT 120 XY table
Order no. 6710529

for mounting and aligning workpieces.
Can be moved 15 mm (0.59 in) in each of two coordinates.
Table surface: 120 mm x 120 mm
(4.72 in x 4.72 in),
with two quick-release jaws

Option: Rotary attachment for CT 120
Order no. 6710547

PKS ball vise
Order no. 6710610

This item is based on the above PPS parallel vise. The ball-and-socket joint can be swiveled precisely in any required direction and rotated about 360°.

Total height: 150 mm (5.91 in)
Weight: 3.5 kg (7.7 lbs)

CT 200 XY table
Order no. 6710530

Comes with versatile clamping options – 3 clamping slots (6 mm (0.24 in)), 4 M5 threaded bores and 2 quick-release jaws.
Clamping area 200 mm x 200 mm
(7.87 in x 7.87 in) (option of extending to 400 mm x 400 mm (15.75 in x 15.75 in) with an adapter plate).
XY adjustment by 25 mm (0.98 in) each, using micrometer screws.
C-axis can be adjusted by ± 2.5° for high-precision alignment of parts.

Equipment table
Order no. 6830139

with continuous plate, PC base unit on left and drawer unit on right

Dimensions (L x W x H):
1710 mm x 870 mm x 750 mm
(67.32 in x 34.25 in x 29.53 in).
Max. load capacity: 250 kg (550 lbs)

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تست و اندازه گیری . تجهیزات . مشاوره

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