



**3D Metrology –
Measuring and Layout Machines**

Metrology by STIEFELMAYER – Flexible and tailor-made

The Success Story

STIEFELMAYER is one of the pioneers in 3D coordinate metrology. Back in the early 70s we have installed the first 3D horizontal-arm machine with digital display at our customers'.

In the meantime there are more than 8000 STIEFELMAYER measuring and layout machines throughout the world.



STIEFELMAYER Today

Continuous research and development as well as untiring search for future-oriented technologies turned the company today into a successful, medium-sized group of companies, which offers not only 3D metrology but also customized solutions in the area of laser technology and special clamping tools.

In metrology we focus on horizontal-arm machines in variable sizes and equipment versions.

The brochure on hand only provides a small insight into the manifold possibilities with STIEFELMAYER measuring and layout machines.

Find out more about our complete
range of measuring machines...



3D Metrology – To meet your needs

Horizontal-Arm Machines

Suitable for your manifold measuring and marking-out tasks

Tailor-made solutions

Today, STIEFELMAYER measuring and layout machines are available in a great number of versions in order to meet our customers' requirements at the best with regard to size, precision and equipment. This includes high-quality and long-lasting machines, suitable evaluation and software systems as well as a multitude of field-proven options and accessories.

Versatile in use

Our machines stand their test particularly when measuring large work pieces. Another important application is the marking-out of cast parts in preparation for the downstream milling.

STIEFELMAYER measuring and marking-out machines are also well-proven companions in the development process, ranging from reverse engineering in the design stage to measuring applications in prototyping and pilot-series and to measuring of serial parts made of sheet metal, plastics, and carbon.



STIEFELMAYER metrology at a glance



- **Reliable quality –**
The features

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- **Measuring counter MZ 2000**
● **electronic handwheel**

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STIEFELMAYER CMMs – Highly robust and durable

The Characteristics

Our own production facilities, high-quality components and accurate assembly

Reliable quality – Characteristics you can trust in:

Versatility:

We offer our measuring machines in a great number of versions: as manual or motorised machines, in CNC version, as single-column or duplex installation.

Easy to move

Due to special drive components and exact finish, STIEFELMAYER measuring and layout machines can be moved easily in all axes. They are therefore perfectly suitable also for manual use.

Precision:

Our measuring machines – whether merely manual or CNC – work with excellent mechanical precision which is the crucial requirement for your reliability.

The additional option of a CAA for CNC-machines is based on this precision.

Robustness:

STIEFELMAYER measuring and layout machines stand the test also in challenging environment, e.g. casting dust.

Among other things, we use an extremely dirt-resistant inductive magnetic measuring system.

Hardened and chrome-plated running surfaces protect the system permanently against corrosion.

In the area of drives, we have made many provisions to protect them against contamination in order to guarantee the proper functioning of the machines on the long term.

Ease of maintenance:

We have paid particular attention to a service-friendly machine design. All wear parts, e.g. bearings are easy to access. This helps to reduce service time and costs.

Tailor-made sizes:

We work to our customers' requirements. This includes the manufactured size which we can adjust as required.

Thanks to our high vertical range of manufacture we can carry our large measuring volumes of up to Z (column) = 4000 mm and Y (traversing arm) = 2500 mm (depending on the machine type).



STIEFELMAYER Service – For a long machine life

Our Commitment

Reliable support from
one single source

Service Ranging from A to Z – What we can do for you



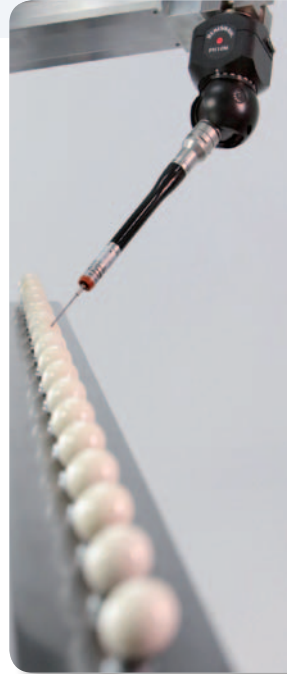
Qualified support services in advance

We provide customer support already in the design phase – our experts discuss your specific requirements intensively and develop the optimal solution.

Top-quality execution:

We attach great importance to a high mechanic quality of all components in order to achieve longevity and robustness for our equipment.

For that, we rely on our own, highly specialized manufacture and thoroughly selected suppliers.



Quality in service:

Our experienced and continuously trained service team provides its support services at any time, also after the installation of your machines.

The regular service offering maintenance and calibration guarantees the economic and stable use of your measuring machine.



Our services in detail:

- Service and maintenance of CMMs
- Factory Calibrations
- DAkKS calibrations according to DIN EN ISO/IEC
- Repairs and machine moving
- Hardware and software retrofits
- Training

Spare parts and accessories:

We offer an extensive range of accessories for your coordinate measuring machines.

Be it probe or marking-out tools or sensor systems – we offer you a wide range, from one source and with short delivery times.



Contact us – we would be glad to present our services to you.

Email: messtechnik@stiefelmayer.de · Phone: +49 (0)711 93 440 – 602

ACTURA – The manual starter machine

The guide rails

Optionally detachable
for mobile use

ACTURA – for measuring and marking-out tasks

ACTURA is a solid and easy-to-use measuring and layout machine. The X-axis is either manual or motorised. Y and Z axes are operated manually.

ACTURA machines are particularly suitable for measuring large individual components, marking-out and measuring in clay design, marking-out of workpieces as well as dimensional control during the construction of devices and workpieces.

Guide rails made to measure

ACTURA machines feature guide rulers which are screwed to the measuring or marking-out plate. Alternatively, it is also available with detachable guide rulers.

This offers the advantage that the machine can be moved around the workpiece. For the lifting and lowering of the machine we offer a special easy-to-use lifting trolley.



Duplex ACTURA, with several single measuring plates installed between the guide beams.

Standard equipment – measuring counter MZ 2000

ACTURA is equipped with the measuring counter MZ 2000, which is also offered as wireless solution to avoid annoying cables at the machine.



More information
on our measuring
counter on
page 14.

ACTURA – Easy to move and user-friendly

The Equipment

Measuring counter MZ 2000 and
extensive accessories

The ACTURA CMMs at a glance

Technical Data	ACTURA manual / Xmot
Machine Type	Floor level CMM
XYZ drive system	ACTURA manual: manual axes in X, Y and Z (operation with handwheels) ACTURA Xmot: X axis motor-driven (electronic handwheel) Y / Z axes manual (operation with handwheels)
Maximum measuring range X (possibly multi-piece)	Unlimited
Maximum measuring range Z	3000 mm
Maximum measuring range Y	2000 mm (2500 mm for layout machines)
Diameter column	160 * 160 mm
Diameter traversing arm	80 * 80 mm
Measuring system	Magnetic measuring system (incident light measuring system available upon request)
Standard equipment	Measuring counter MZ 2000
Connection guiding system to measuring plate	Screwed or pinned rails
Measuring plate – surface quality	Finish machined, flatness according to DIN 876 / II
Measuring plate / Guide beam	Thickness 250 mm. Optionally equipped with a slot for the ACTURA guide rail
Max. load carrying capacity	30 kN/m ²
Extras / Options	Rechargeable battery system for MZ 2000, inspection software, lifting trolley for ACTURA, customised raster borings on the measuring plate, Control-lift
Accessories	STIEFELMAYER probe and marking-out tools, Tactile sensor equipment for manual CMMs, Manual scanners



Please have a look at our
numerous probe and marking-out
tools for ACTURA machines.



FUTURA – Side-mounted guiding system

The Variations

Manual, CNC-controlled or
combined mode

The FUTURA Family – manual and CNC-controlled

The FUTURA measuring machines have a guiding system which is screwed to the side of the measuring plate which makes the whole surface of the measuring plate available as measuring surface.

FUTURA machines are available as manual, CNC-controlled or combined CNC-manual version.

The robust construction of the FUTURA coordinate measuring machines makes them highly suitable in all its versions for shopfloor use.

We also offer the FUTURA machines as duplex solution.

By that, the measuring columns can each work in an individual as well as in a shared coordinate measuring system.

FUTURA Manual

The machine is comfortably moved by operating elements at the bi-axial carriage and the base plate of the machine. The FUTURA manual is equipped with the measuring counter MZ 2000.

FUTURA CNC and CNC-manual

For FUTURA CNC measuring machines we focus solely on proven quality components and technologically advanced processing – as we do for all our other machines as well. As a real “all-rounder” the FUTURA CNC is suitable for use with tactile as well as optical sensors.

The version CNC-manual allows the operator to switch from CNC- to manual mode at any time making, for example, easier measurements possible without having to create a proper program beforehand. The intelligent disengaging of the drives makes the machine very smooth-running in manual operation.

The machine is equipped with the control panel HT 400.

This wireless operating panel fits comfortably in the hand and has a very good battery performance.

The compact construction and ergonomic comfort of the FUTURA CNC is realized by the on-board controller.

Our swiveling holding system control-lift is available in several versions for keyboard and monitor.

Find out more about measuring counter, radio control panel and control-lift:

**Pages 14 and 15 in this brochure or
www.stiefelmayer-messtechnik.de**

Our FUTURA machines are also optimally suitable for retrofitting:

The machines fit into the widespread STIEFELMAYER C guiding systems (from year of manufacture 1983).



FUTURA CNC: By separating the machine guiding system from the axes drive system, we avoid negative impacts of the drives on the machine geometry.

FUTURA – The all-rounder

Modular Concept

Many retrofit and upgrade options
for a long-term and safe investment

The FUTURA CMMs at a glance

Technical Data	FUTURA manual	FUTURA CNC / CNC-manual
Machine type	side mounted	side mounted
XYZ drive system	manual axes in X, Y, Z, (operation with handwheels)	FUTURA CNC: XYZ axis CNC or motorised (hand panel HT 400) FUTURA CNC-manual: XYZ axis CNC or motor-driven (hand panel HT 400), switchable to manual operation (handwheels)
Maximum measuring range X (possibly multi-piece)	Unlimited	Unlimited
Maximum measuring range Z	3500 mm	3500 mm
Maximum measuring range Y	2000 mm	2000 mm
Diameter column	160 * 160 mm	160 * 160 mm
Diameter traversing arm	80 * 80 mm	80 * 80 mm
Moving speed	–	150 mm/s
Measuring system	Magnetic measuring system, (incident light measuring system available upon request)	Magnetic measuring system, (incident light measuring system available upon request)
Standard equipment	Measuring counter MZ 2000	On-board controller, radio control panel HT 400
Working height	Approx. 550 mm	Approx. 550 mm
Measuring plate – surface quality	Finish machined, flatness according to DIN 876 / II	Finish machined, flatness according to DIN 876 / II
Measuring plate – thickness	350 mm	350 mm
Max. load carrying capacity	50 kN/m ²	50 kN/m ²
Extras / Options	Control-lift for notebook or for monitor/keyboard/trackball (desktop solution with KVM extender)	Control-lift for notebook or for monitor/ keyboard/trackball (desktop solution with KVM extender)
Accessories	STIEFELMAYER probe and layout tools Tactile probe equipment for manual CMMs	Tactile probe systems (PH10...), laser scanner, module changing racks
Possible retrofits	Extension of Y and Z measuring range (change of traversing arm and column) Upgrade to CNC version	Extension of Y and Z measuring range (change of traversing arm and column)



VENTURA – Always optimal in use

The Measuring Plate

Completely walkable and drivable

VENTURA – the CMM-solution at floor level

VENTURA measuring machines are installed at floor level, they stand out for their highly precise axes mechanics and utterly high-quality processing.

This makes VENTURA measuring machines the ideal basic equipment for measuring, design and modelbuilding rooms.

VENTURA machines are available as manual, motor-driven and CNC-controlled version. Of course, there is also a version with disengageable drives for the CMM-type available.

VENTURA Manual

In the X-axis the machine travels manually via electronic handwheel.. The drive is executed with powerful direct-current motors.

Movement of the CMM is carried out in Y and Z by means of hand wheels. The measuring machine is smooth-running in both axes and comfortably to operate.

VENTURA manual is equipped with the measuring counter MZ 2000.



VENTURA CMM: The guideways in X are protected by cover tapes and positioned in a way that dirt particles cannot directly deposit on the guideways.

VENTURA Motor-driven

VENTURA motor-driven is fitted with motorised drives in all three axes. The CMM comes with the wireless control panel HT 1000, including joystick, potentiometer and many other functions.

With the step-mode it is also possible to travel several equal distances one after the other, e.g. in order to apply marker points or reference lines on the workpiece. This means a significant saving of time for the operator.

The "Travel to Position in X"-function is a specialty of HT 1000 for the marking-out operation:

By means of this function the operator has the possibility to have the measuring machine travel motor-driven in X to defined positions.

VENTURA CNC – Effective and productive

The on-board control

Compact, reliable and secure

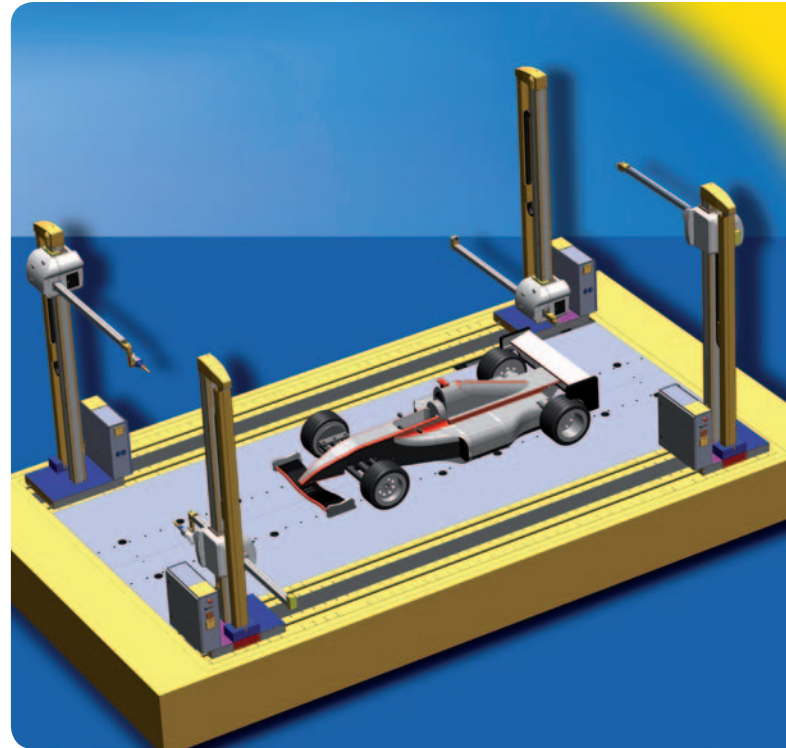
VENTURA CNC – a coordinated package solution

Measuring plate and guiding beam

The X-axis of the VENTURA system is installed at floor level. It either consists of a measuring plate with integrated walkable and drivable covered guiding and measuring system, or a guiding beam fitted with the same technology.

In this case, we offer separate clamping plates or even special solutions for the clamping of the models or work-pieces.

You will find a variety of options for alignment and lifting, e.g. integrated lifting tables or custom-built grid-patterned borings or T-nuts for the VENTURA system.



VENTURA installation with four columns

The VENTURA is available in two versions for CNC-operation:

VENTURA CNC:

X-, Y- and Z-axis purely CNC or motor-driven with joystick

VENTURA CNC-manual

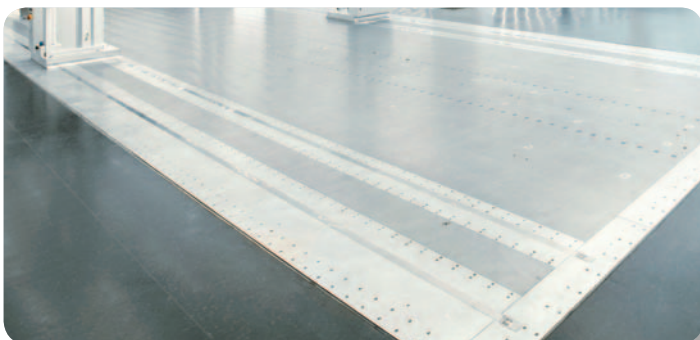
Y- and Z-axis can be disengaged and operated also manually without restriction due to the smooth-running mechanics.

Powerful with on-board control

The mechanical construction corresponds to that of VENTURA manual/motor-driven. The movement of the machine is carried out by means of the manual operating panel HT 400 (see page 15 for more details).

The VENTURA CNC is equipped with a modern continuous path control, which is accommodated in the carriage of the machine. Due to the on-board control a separate control cabinet is no longer needed.

At the same time, the system offers higher flexibility and security, e.g. against cable breaks.



Measuring plate, flush-with-floor, for Duplex installation

You are interested in a VENTURA measuring machine with milling option?

Learn more about our VENTURA Design here:



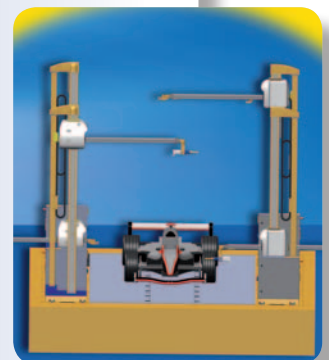
VENTURA – Precise and long-term stable

Measuring Range in X

Simply unlimited!

The VENTURA CMMs at a glance

Technical Data	VENTURA manual – motor-driven	VENTURA CNC / CNC-manual
Machine type	Flush-with-floor, accessible by foot and vehicle	
Antriebe XYZ	<p>VENTURA manual: X-axis motor-driven (electronic handwheel) manual axes in Y and Z (operation with handwheels)</p> <p>VENTURA motor-driven: XYZ axis motorised (hand panel HT 1000)</p>	<p>VENTURA CNC: XYZ axis CNC or motor-driven (hand panel HT 400)</p> <p>VENTURA CNC-manual: XYZ axis CNC or motor-driven (hand panel HT 400) switchable to manual operation (electronic handwheel in X / handwheels in YZ)</p>
Maximum measuring range X (possibly multi-piece)	Unlimited	Unlimited
Maximum measuring range Z	3500 mm (4000 mm for layout machine)	3500 mm
Maximum measuring range Y	2000 mm (2500 mm for layout machine)	2000 mm
Diameter column	160 * 160 mm	160 * 160 mm
Diameter traversing arm	80 * 80 mm	80 * 80 mm
Moving speed	150 mm/s	150 mm/s
Measuring system	Magnetic measuring system, resolution 0.001 mm (incident light measuring system available upon request)	
Standard equipment	<p>VENTURA manual: Measuring counter MZ 2000 Electronic handwheel (X-axis)</p> <p>VENTURA motor-driven: Radio hand panel HT 1000</p>	<p>VENTURA CNC: Radio hand panel HT 400</p> <p>VENTURA CNC-manual: Radio hand panel HT 400 Electronic handwheel (X-axis)</p>
Working height	Floor level, Working area accessible by foot and vehicle	
Measuring plate – surface quality	Finish machined, flatness according to DIN 876 / II	
Measuring plate – thickness	250 mm (option thin-bed: 190 mm)	
Max. load carrying capacity	30 kN/m ² (option thin-bed: 25 kN/m ²)	



The measuring accuracy of our machines depends from their size and equipment – we would be happy to provide you with an individual quotation.

Special Solutions – Our specialty

Underfloor Machines

For the measuring of floor assemblies

The VENTURA CMMs at a glance

Technical Data	VENTURA manual – motor-driven	VENTURA CNC / CNC-manual
Extras / Options	Holder system for Inotebook or for monitor/keyboard/trackball, Measuring software, Enhancement duplex solution, Customised raster borings on the measuring plate	
Accessories	STIEFELMAYER probe and marking-out tools Tactile probe equipment for manual CMMs	Tactile probe systems (PH10...), laser scanner, module changing racks
Possible retrofits	Extension of Y and Z measuring range (change of traversing arm and column), Upgrade to CNC version	Extension of Y and Z measuring range (change of traversing arm and column)

Special solutions

Our customers have individual requirements – and receive custom-made solutions from us; such as our combi-machine VENTURA DESIGN, which was specially developed for the work in design studios supplementing proven

measuring technology by a CNC-milling option for clay and rigid foam.

Additionally, we try to make the work for our customers easier with numerous extras: integrated webcams for high layout machines or detachable VENTURA columns are only a few examples.



VENTURA DESIGN: Manual measuring, marking-out and CNC-milling in one machine – a coordinated package solution with software package and many other attractive extras



As with all manual STIEFELMAYER measuring machines also here the CMM-arm is equipped with a highly precise receptacle cube for probing tools.

Underfloor CMMs – for the measuring of vehicle underbodies.

All over the world floor assemblies of vehicles are measured with STIEFELMAYER underfloor machines, often together with duplex machines at floor level.

This manual machine type is equipped in proven smooth-running STIEFELMAYER-technology

As with the other STIEFELMAYER machines, this machine type features a robust magnet measuring machine.

The operation of drives and clamping is carried out by means of handwheels; axes positions can be comfortably read by the on-board measuring counter MZ 2000.

Measuring Counter MZ 2000 – Clearly readable 3-axes-display with LCD-display mit LCD Display

Special Feature

Simultaneous project processing
by means of saved work piece
zero points



MZ 2000: clearly readable, display visible over a long distance, insusceptible membrane keyboard

Further advantages:

- Graphics LCD-display, clearly readable
- 3-axes-display: axes designation, decimal places and signs are adjustable
- Axes change/change of counting direction possible
- Entering and saving of work piece zero points for simultaneous processing of several projects

Measuring counter MZ 2000 – also optimally suitable for retrofits.

For machines already in use, we offer the counter MZ 2000 as complete retrofit kit which contains beside the counter also adapter cable, power supply and data lines as well as mounting accessories.

Measuring counter MZ 2000 – 3-axes-display for manual 3D coordinate measuring machines

Our horizontal arm measuring machines are equipped with the reliable measuring counter MZ 2000 for manual operation. The counter is easy to use and has a clearly readable 3-axes-display.

Functions:

- Reset and preset input
- Reference function
- Shrink measure function
- Individually adjustable model scales
- Support point, angle and tilt correction

Interfaces:

- Data outlet in MZ 1060 format
- Connection possibility of 3D-probes (e.g. Renishaw)
- RS-232 interface for data transfer to evaluation processor with software of PowerInspect, Zeiss, metromec and many others

Option:

- Battery pack: 24 volt battery-option for wireless operation. Operating time of the rechargeable battery approx. 8 hours, with removable, rechargeable battery and charging station.

Electronic handwheel – for manual machines with motor-driven X axis:

The electronic handwheel allows the movement of the X axis while standing next to the model. A dynamic rotary knob controls the machine moving speed in X.

Further features are keys for fine and rapid movement, and a button for manual take-point when working with non-trigger probes.



Electronic handwheel

HT 400 and HT 1000 – Our wireless control panels

Control-Lift

Infinitely rotating and swivelling
PC-mount

Manual control panel HT 1000 – for motor-driven CMMs

Equipment:

- Emergency-Stop switch (DECT-standard)
- Joystick for machine control in all 3 axes
- Speed regulation (potentiometer)
- Protection class IP 20

Function keys:

- Engaging and disengaging of axes
- Travel directions in joystick mode adjustable to operator position.
- Incorporation of probing point (in case of manual measuring) or deletion of last probing point
- Specialty: Travelling to defined positions in X-axis, also in step-mode (see page 10)



Control-lift

The Control-lift is a rotating and swivelling holding fixture for PC-units. Being directly mounted to the machine column it offers the operator optimum freedom of action within the working range.

The Control-lift is available in various versions:

- Equipped with keyboard, trackball (or mouse), and TFT Monitor. Signal transfer via KVM extender modules.
- Equipped with plate for notebooks, plus storage shelf for mains adaptor and oddments.

Manual control panel HT 400 – for our CNC-controlled machines

Equipment:

- Emergency-Stop switch (DECT-standard)
- Joystick for machine control in all 3 axes
- Speed regulation (potentiometer)
- Protection class IP 20

Functions:

- Engaging and disengaging of axes
- Shifting between machine coordinates and workpiece coordinate system
- Travel directions in joystick mode adjustable to operator position.
- Incorporation of probing point (in case of manual measuring) or deletion of last probing point



**Control-lift: rotating and swivelling,
with height adjustment**

**You have special requirements on the
equipment? Call us: +49 (0)711 93 440 – 602**

STIEFELMAYER – The Company Group at a Glance



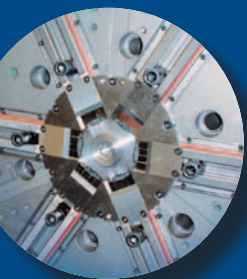
STIEFELMAYER- Metrology

- ! 3D coordinate metrology
- ! Measuring software
- ! Accessories



STIEFELMAYER- Laser Technology

- ! Laser cutting
- ! Laser hardening



STIEFELMAYER- Clamping Tools

- ! Special chucks
- ! Special mandrels

Metrology – the product range:

Horizontal arm measuring machines

- ! ACTURA manual · Xmot
- ! FUTURA manual · CNC · CNC-manual
- ! VENTURA manual · motorised · CNC · CNC-manual
- ! VENTURA DESIGN manual · Allround

Modernisations · Upgrades

- ! Measuring counter MZ 2000
- ! Controller modernisations
- ! Upgrades manual · motorised · CNC

Accessories

- ! Probe tools
- ! Marking-out tools
- ! Auxiliary equipment
- ! Extensions
- ! 3D probe accessories
- ! Threaded styli
- ! Scanning sensors

Software

Service

- ! Calibration
- ! Maintenance
- ! Repairs
- ! Machine moving

Second hand machines



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