



# Your competent partner for Coordinate Measuring Technology



Precision „Made in Germany“

## Manual Coordinate Measuring Machine SMART

- **Single clamping of all axes**

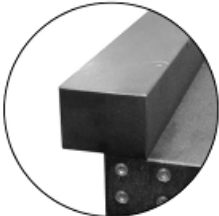


- **Two-stage fine drive**

**Stage 1:** Fast positioning for fast probing of easily accessible contours.

**Stage 2:** Fine positioning for touching very small geometries.

**Air-bearing granite guides** for highest accuracy and thermal stability.

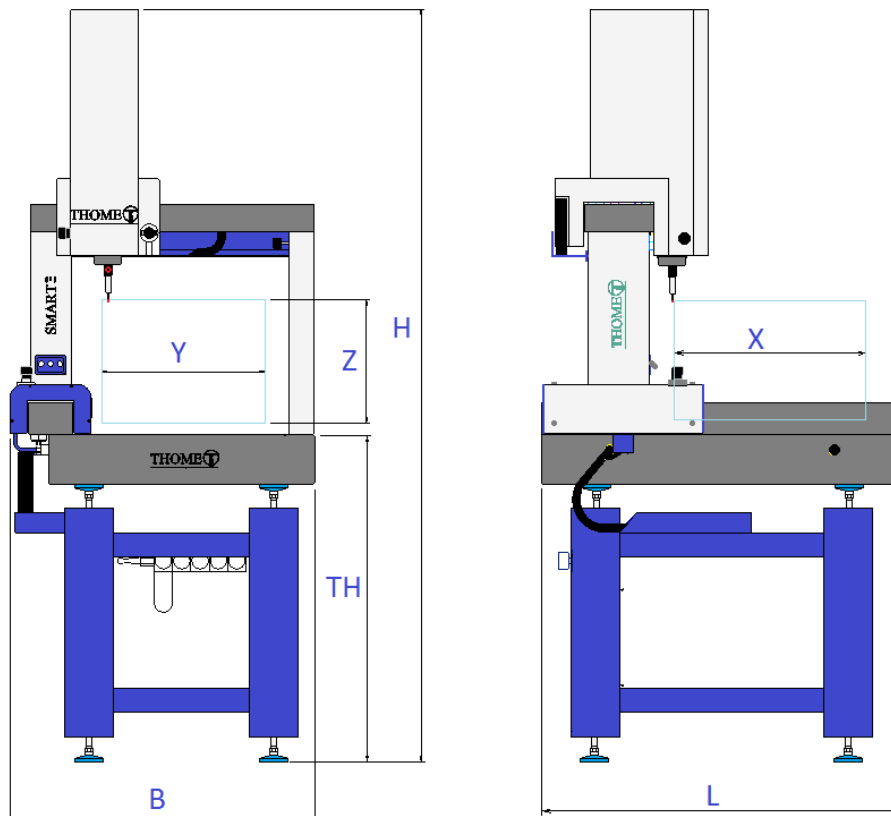


**Double passive vibration damping**



## The technical data of the manual Coordinate Measuring Machine SMART:

Measuring area X/Y/Z [mm]	600/400/280	800/400/280	600/500/280	800/500/280	800/600/280
Machine weight [kg]	410	500	500	600	730
Permissible Workpiece weight	200	250	200	250	300
Length L [mm]	1.015	1.215	1.015	1.215	1.215
Width B [mm]	760	760	860	860	960
Height H [mm]	1.845				
Table height TH [mm]	850				
Length measurement deviation according to ISO 10360-2 [µm]	MPE <sub>E</sub> = 3,0 + (L/250) with TP20 and TP8 Touchprobe				
Probe deviation according to ISO 10360-2 [µm]	MPE <sub>p</sub> = 3,5 with TP20 and TP8 Touchprobe				
Resolution of the scales [µm]	0,5				
Temperature to ensure the length measurement uncertainty	Without temp. Compensation: 20°C +/-2°C, max. 1°C per hour and 1.5 °C per day. With online temp. Compensation: 15°C – 28°C, max. 1°C per hour and 3°C per day. Spatial temp. Gradient: Max. 1°C per meter.				
Air consumption	25 [l/min] Air source: min. 120 [l/min]				
Air quality	Cleaned and filtered compressed air at 6 bar. Air quality according to ISO 8573 Part 1 Class 2.				
Electrical connection	4 earthed Schuko sockets 220V with 16A fuse. Power consumption: max. 700 watts.				



The manual measuring machine SMART is a very robust, reliable and precise measuring machine with an optimized price / performance ratio.

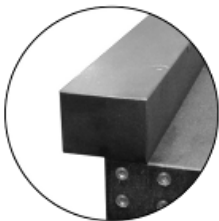
In addition to the dimensions mentioned here, we also like to create your own individual offer, with the optimal solution for you.

## CNC Coordinate Measuring Machine RAPID-Plus

### Covered guides

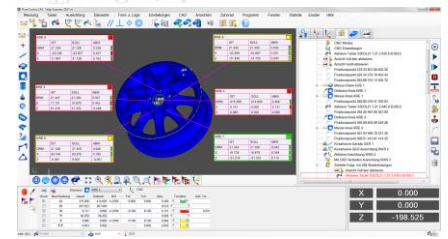
For protection against dirt and thermal influences.

**Air-bearing granite guides** for highest accuracy and thermal stability.



### User-friendly measuring software

**ThomControl**



Fast and easy inspection with excellent graphical support.

**Joystick and controller by RENISHAW**

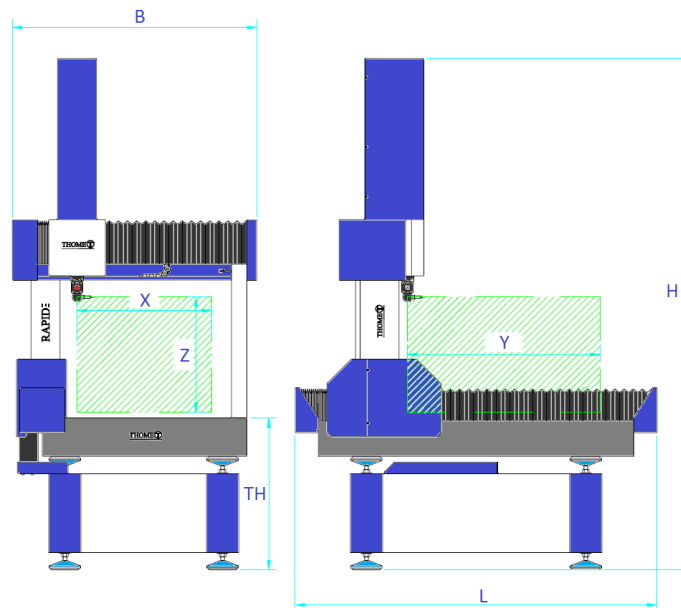


**Double passive vibration damping**



## The technical data of the CNC Coordinate Measuring Machine RAPID-Plus:

Measuring area X/Y/Z [mm]	500/700/500	600/800/500	700/1200/600	800/1200/700	800/1500/700
Machine weight [kg]	750	1.100	1.500	2.100	2.700
Permissible Workpiece weight	500	600	700	800	900
Length L [mm]	1.460	1.560	1.960	1.960	2.260
Width B [mm]	1.071	1.171	1.271	1.371	1.371
Height H [mm]	2.450	2.450	2.650	2.850	2.850
Table height TH [mm]	1.900	1.900	2.000	2.100	2.100
Length measurement deviation according to ISO 10360-2 [μm]	800				
Probe deviation according to ISO 10360-2 [μm]	$MPE_E = 1,9 + (L/350)$ with TP200 and SP25 Touchprobe $MPE_E = 2,2 + (L/350)$ with TP20 and TP8 Touchprobe				
Table height TH [mm]	$MPE_P = 2,1$ with TP200 and SP25 Touchprobe $MPE_P = 2,5$ with TP20 and TP8 Touchprobe				
Scanning probe deviation according to ISO 10360-4 [μm]	$MPE_{THP} = 3,5$				
Resolution of the scales [μm]	0,5				
Joystick speed	0 – 150 [mm/s]				
Max. speed	1.000 [mm/s]				
Max. acceleration	400 [mm/s <sup>2</sup> ]				
Temperature to ensure the length measurement uncertainty	Without temp. Compensation: 20°C +/-2°C, max. 1°C per hour and 1.5 °C per day. With online temp. Compensation: 15°C – 28°C, max. 1°C per hour and 3°C per day. Spatial temp. Gradient: Max. 1°C per meter.				
Air consumption	25 [l/min] Air source: min. 120 [l/min]				
Air quality	Cleaned and filtered compressed air at 6 bar. Air quality according to ISO 8573 Part 1 Class 2.				
Electrical connection	4 earthed Schuko sockets 220V with 16A fuse. Power consumption: max. 1.000 watts.				



The RAPID-Plus can be delivered in many different axis lengths combinations! Each in 100 mm steps. The above mentioned measuring lengths are preferred standard dimensions with shorter delivery times.

Maximum reliability, high precision and an optimized price / performance ratio make this Coordinate Measuring Machine to the ideal choice for the inspection of your workpieces.

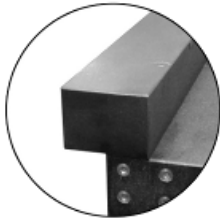


## CNC Coordinate Measuring Machine TETA

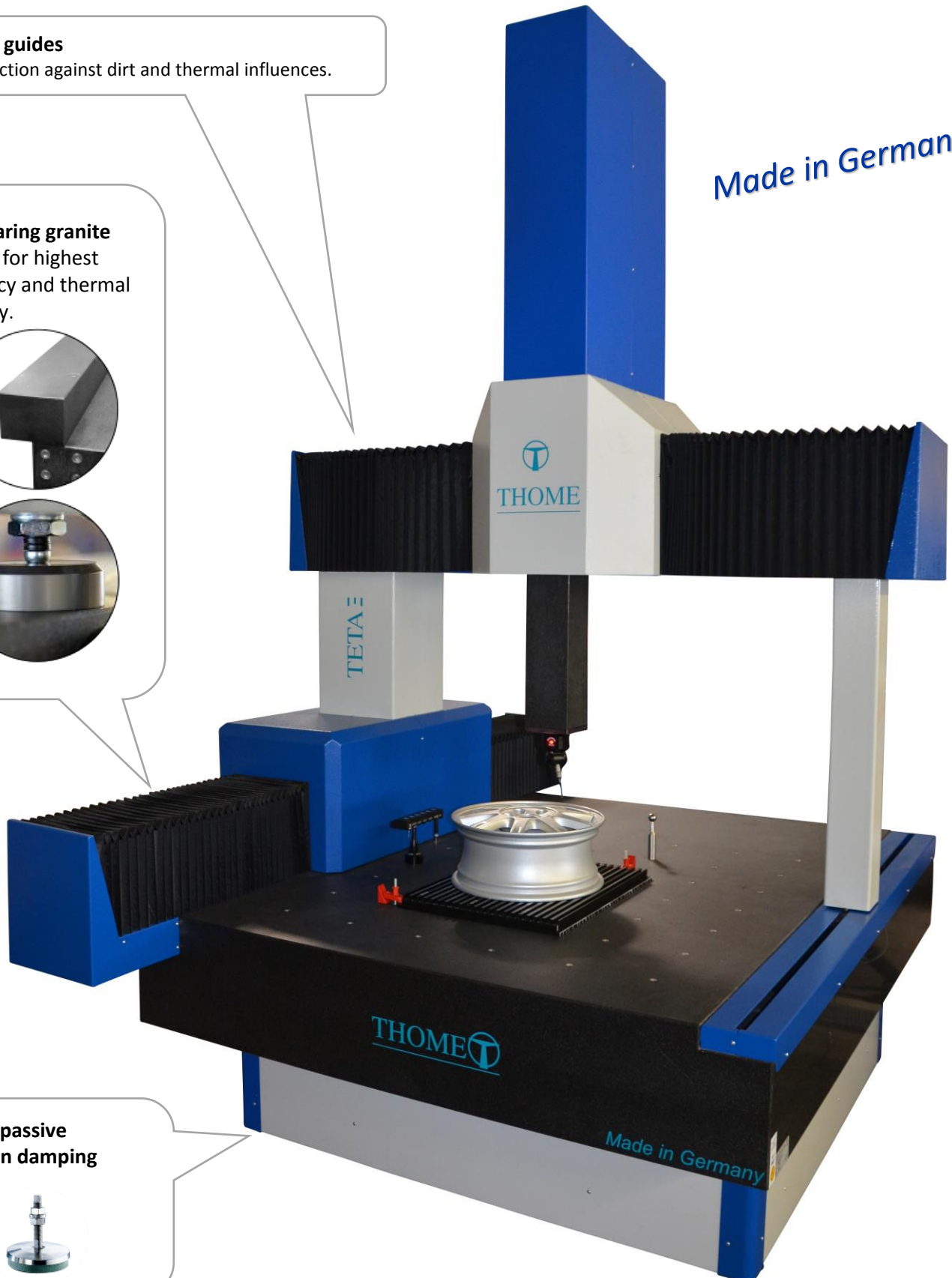
### Covered guides

For protection against dirt and thermal influences.

**Air-bearing granite guides** for highest accuracy and thermal stability.



Made in Germany

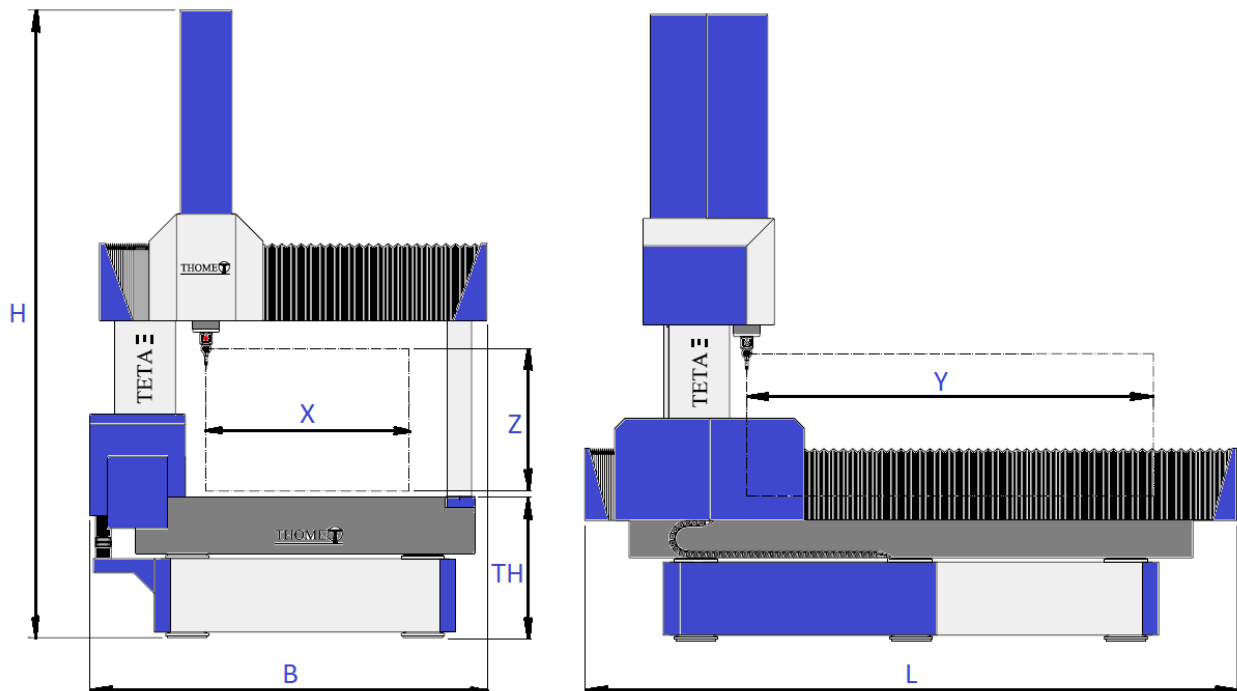


**Double passive vibration damping**



## The technical data of the CNC Coordinate Measuring Machine TETA:

Measuring area X/Y/Z [mm]	900/1.200/800	900/1.500/800	1.000/1.800/800	1.100/1.800/900	1.100/2.200/1.000
Machine weight [kg]	3.750	4.300	5.000	5.500	6.500
Permissible Workpiece weight	1.100	1.400	1.700	2.000	2.300
Length L [mm]	2.500	2.800	3.100	3.100	3.500
Width B [mm]	1.900	1.900	2.000	2.100	2.100
Height H [mm]	3.350	3.350	3.350	3.550	3.750
Table height TH [mm]	2.300	2.300	2.300	2.400	2.500
Length measurement deviation according to ISO 10360-2 [ $\mu\text{m}$ ]	700				
Probe deviation according to ISO 10360-2 [ $\mu\text{m}$ ]	$\text{MPE}_E = 3.1 + (L/350)$ with TP200 and SP25 Touchprobe $\text{MPE}_E = 3.5 + (L/350)$ with TP20 and TP8 Touchprobe				
Table height TH [mm]	$\text{MPE}_P = 3.5$ with TP200 and SP25 Touchprobe $\text{MPE}_P = 3.9$ with TP20 and TP8 Touchprobe				
Scanning probe deviation according to ISO 10360-4 [ $\mu\text{m}$ ]	$\text{MPE}_{\text{THP}} = 4.2$ Required measurement time $\text{MPT}_\tau = 72$ [s]				
Resolution of the scales [ $\mu\text{m}$ ]	0,5				
Joystick speed	0 – 150 [mm/s]				
Max. speed	540 [mm/s]				
Max. acceleration	400 [mm/s <sup>2</sup> ]				
Temperature to ensure the length measurement uncertainty	Without temp. Compensation: 20°C +/-2°C, max. 1°C per hour and 1.5 °C per day. With online temp. Compensation: 15°C – 28°C, max. 1°C per hour and 3°C per day. Spatial temp. Gradient: Max. 1°C per meter.				
Air consumption	35 [l/min]     Air source: min. 180 [l/min]				
Air quality	Cleaned and filtered compressed air at 6 bar. Air quality according to ISO 8573 Part 1 Class 2.				
Electrical connection	4 earthed Schuko sockets 220V with 16A fuse. Power consumption: max. 1.000 watts.				

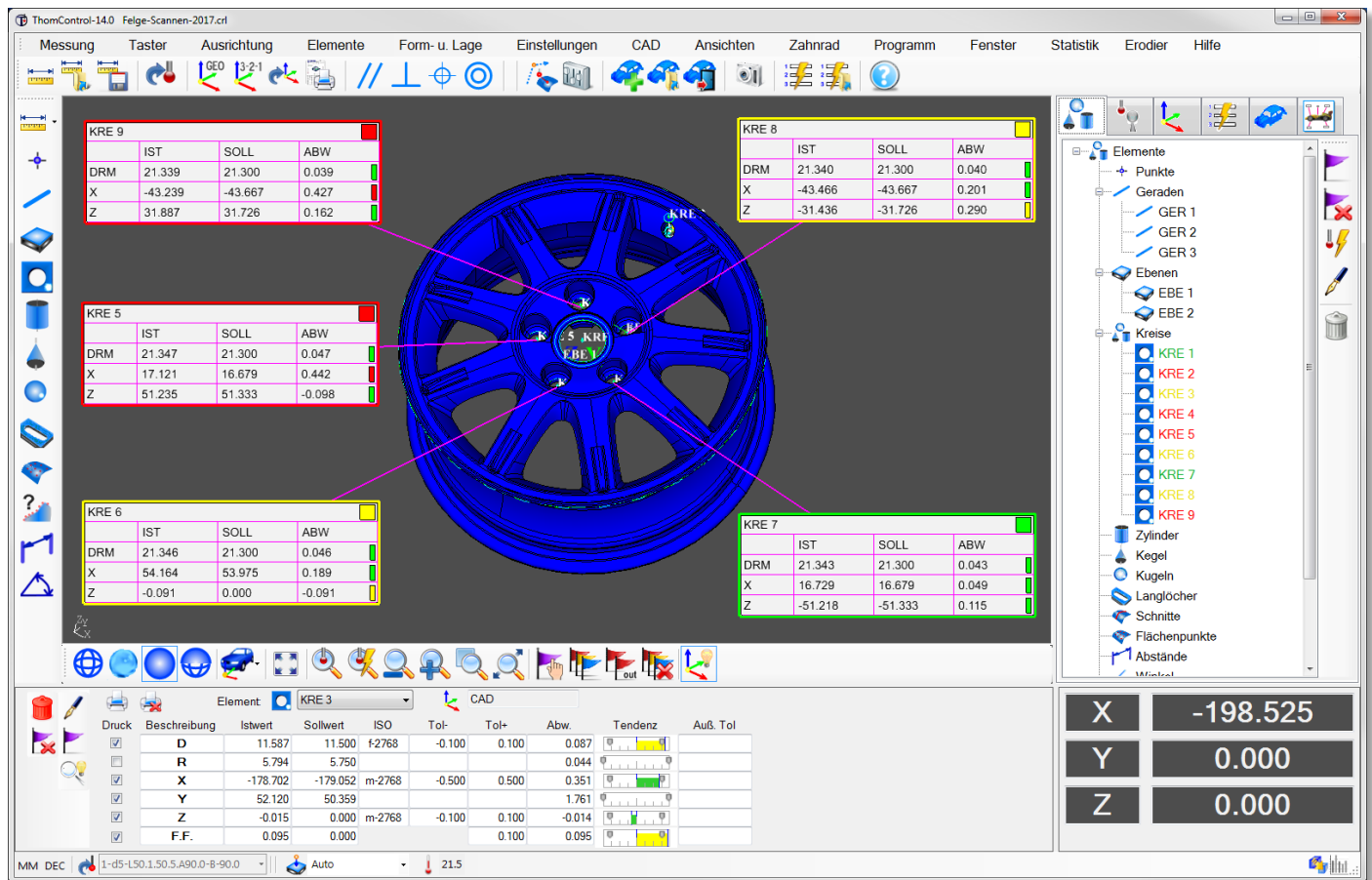


The TETA is a very robust, reliable and precise Coordinate Measuring Machine with an optimized price / performance ratio. In addition to the dimensions mentioned here, we are pleased to create your own individual offer, with the optimal solution for you.



# ThomControl

The user-friendly measuring software for Coordinate Measuring Machines



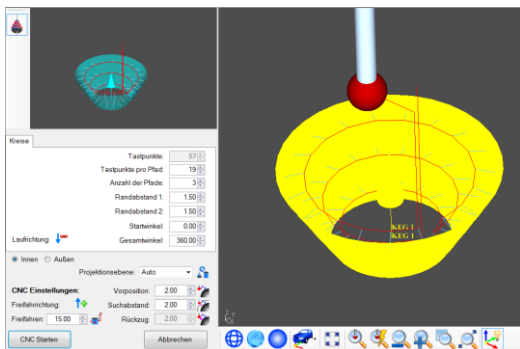
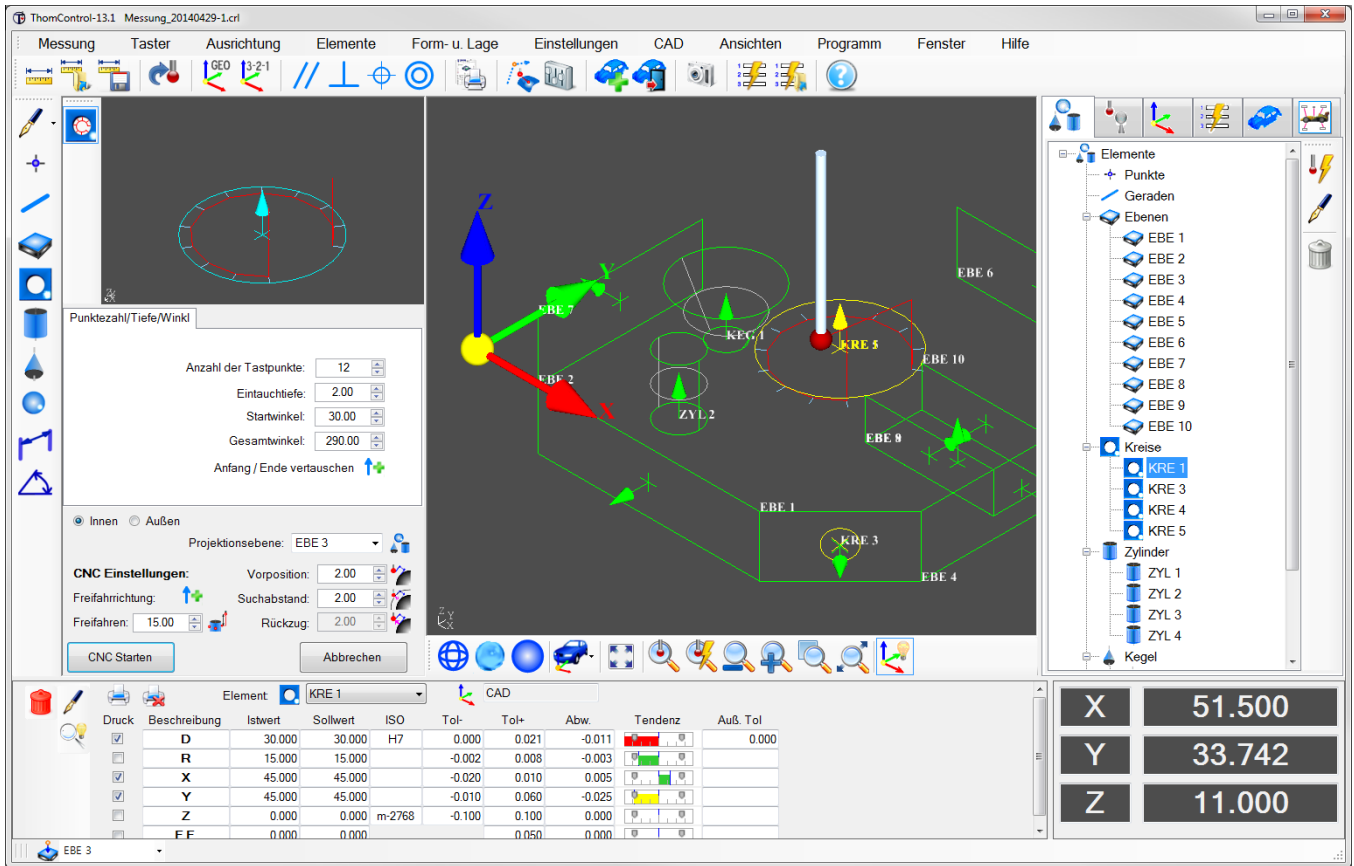
ThomControl impresses with its simple operation. Extensive graphical support allows inexperienced operators to measure efficiently and quickly after a few days. With the teach-in method, measuring programs can be taught in with a joystick. On a CAD model, the elements can be clicked directly and automatically measured. The measuring program is created automatically in the background. For all elements, CNC probing strategies are available. These strategies are displayed and can be modified as needed.

ThomControl is based on the I++ DME communication interface and can be used with all hardware components that support this interface. As a result, the modernization (RETROFIT) of old measuring machines of any manufacturer is possible very cost-effectively.

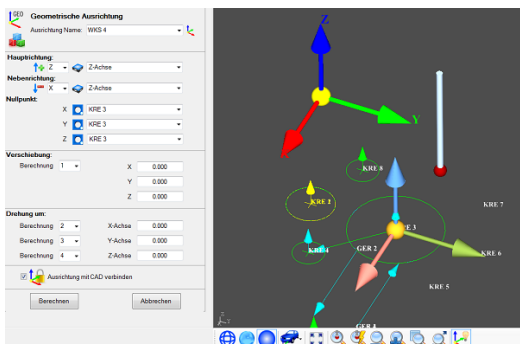
ThomControl is subject to constant further development. The most important modules of ThomControl are briefly presented below. Our engineers are also happy to answer any questions you may have.



## ThomControl | Basic geometry



CAD strategies for already measured or defined elements are available.



When creating an alignment, you get a real-time graphical preview.

Simple, intuitive operation with graphic support through a clear user interface.

All elements are displayed graphically in 3D and can be displayed graphically in the measurement report for better interpretation of the measurement results.

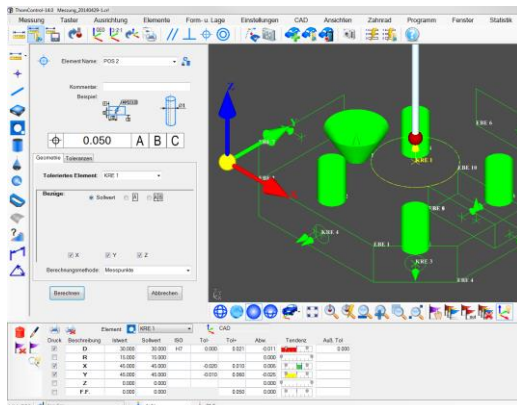
The nominal values of the elements can be entered in clear windows and then the actuals can automatically be measured by using a CNC strategy.

A tolerance database with ISO tolerances according to DIN ISO 286 is integrated.

The last measurement result is displayed directly in the result window with a graphical trend bar. So the operator sees all deviations at one view.

Easily create alignments using 3-2-1 orientation or geometric orientation, each with a graphical preview.

The alignments can be rotated and moved as desired.



Simple operation due to clear arrangement and easy-to-understand dialogues.

<b>THOME PRÄZISION</b>	Benennung: Demoteil	Zeichn. Nr.: 123
	Kunde: THOME Präzision	Ser. Nr.: 001
	Bediener: M. Thome	Kommentar: Demoteil

## ERGEBNISSE

ABST 1							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
ABST-1	58.990	58.955	-0.300	0.300	0.035		
X	17.137	16.679	-0.200	0.200	0.458		0.258
Z	51.216	51.333	-0.300	0.300	-0.117		
KRE 4							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
DRM	415.266	414.800	-0.800	0.800	0.466		0.031
X	0.131	0.000	-0.100	0.100	0.131		
Z	0.095	0.000	-0.100	0.100	0.095		
POS 1							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
POS	0.324	0.000		0.500	0.324		
RUNDH 1							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
RUNDH	0.043	0.000		0.050	0.043		

Part of a measurement protocol in tabular form.

Extensive shape and position evaluations such as parallelism, squareness, position, coaxiality, concentricity, symmetry, concentricity, total runout, flatness, straightness, roundness and cylindricity are available.

The measuring programs can be created very easily and changed by double-clicking on a program line.

Both CNC and manual measuring programs can be generated. All measurement results are saved and can be running again at any time.

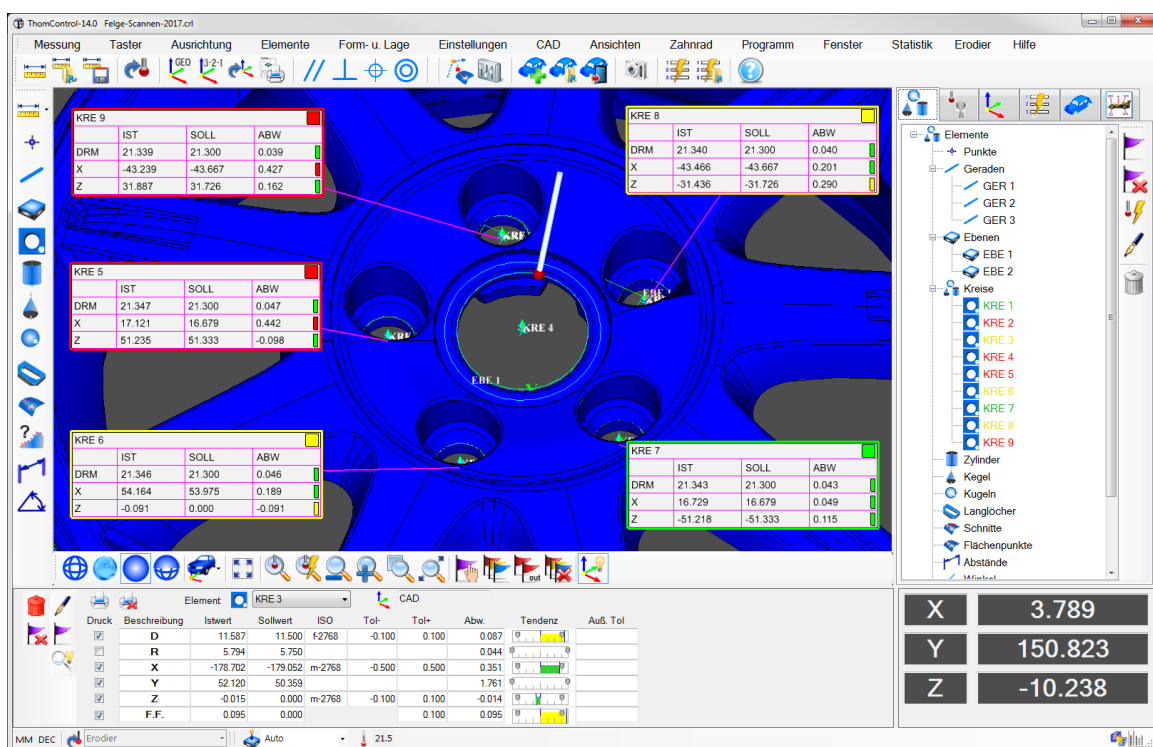
In addition to the internal file format of ThomControl, the measurement protocols can also be saved in Word, Excel and PDF format.

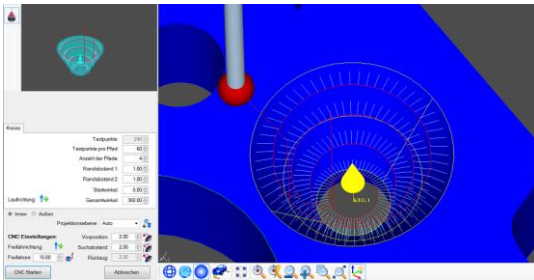
The measurement protocols are easily adaptable to individual needs. Several standard protocol templates are included.

Various constructions of geometric elements allow extensive calculations of theoretical dimensions. Thus, best-fit elements can be generated from points or midpoints.

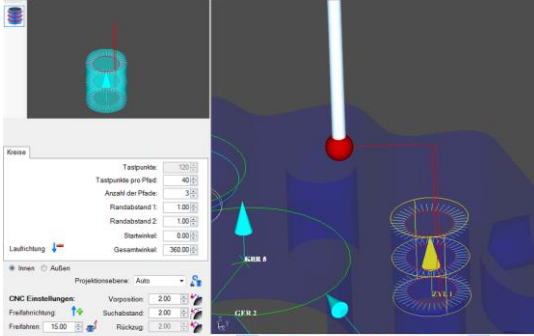
The constructions of intersections, middle elements and parallel elements are also available.

## ThomControl | Basic geometry with CAD

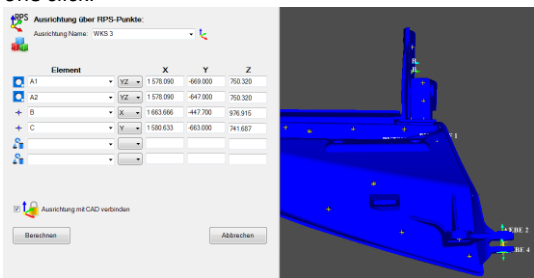




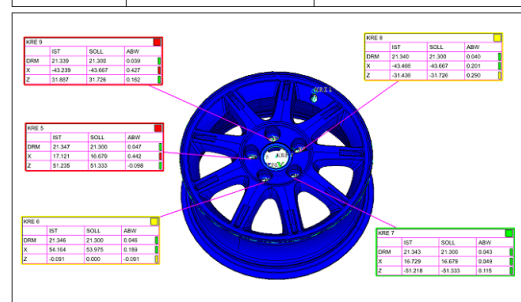
For all elements, CNC strategies are displayed.



The CAD models can be switched to transparent with one click.



With the RPS-alignment the operator can align the workpiece very quickly and accurately against CAD.



ABST 1							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
ABST-1	58,990	58,955	-0,300	0,300	0,035		
X	17,137	16,679	-0,200	0,200	0,458		0,258
Z	51,216	51,333	-0,300	0,300	-0,117		

KRE 4							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
DRM	415,266	414,800	-0,800	0,800	0,466		
X	0,131	0,000	-0,100	0,100	0,131		0,031
Z	0,095	0,000	-0,100	0,100	0,095		

POS 1							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
POS	0,324	0,000	0,500	0,324			

RUNDH 1							
Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz	Auß.Tol.
RUNDH	0,043	0,000	0,050	0,043			

Measurement protocols can be designed individually.

In addition to the functionalities of the basic geometry module, CAD files in IGS and STEP format can be imported with the CAD module.

Geometry elements can be selected via the CAD file with a mouse click and automatically measured. ThomControl proposes a measuring strategy and displays the travel paths graphically in advance. The measurement strategy can be changed as needed.

The measuring program is created by simply clicking on the CAD elements. The nominal values are generated automatically and taken over from the CAD file. The optimal vectorial approach of the measuring points is thereby ensured. Any number of measuring points can be approached also in difficult areas.

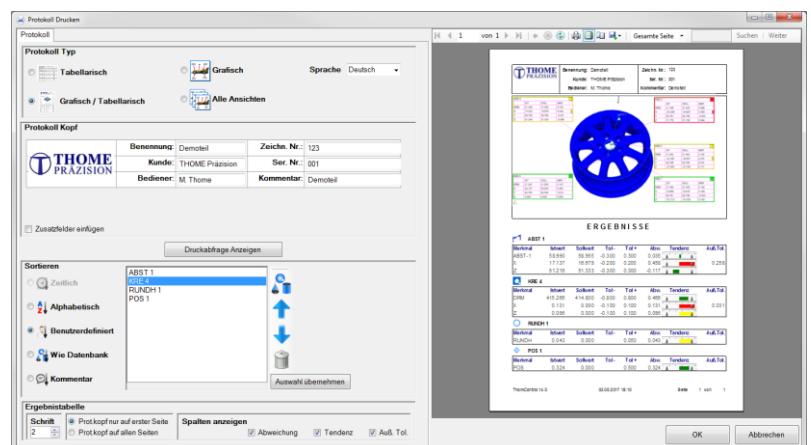
The offline programming and simulation of the program sequences allows a better utilization of your measuring machine.

The RPS alignment allows quick and easy alignment against CAD.

The graphical view of the CAD models can be switched with one click between the various display options (mesh, transparent, solid).

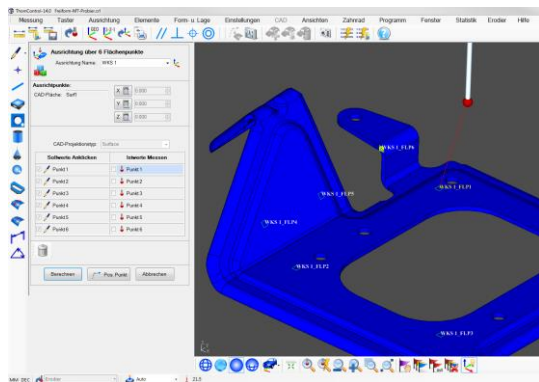
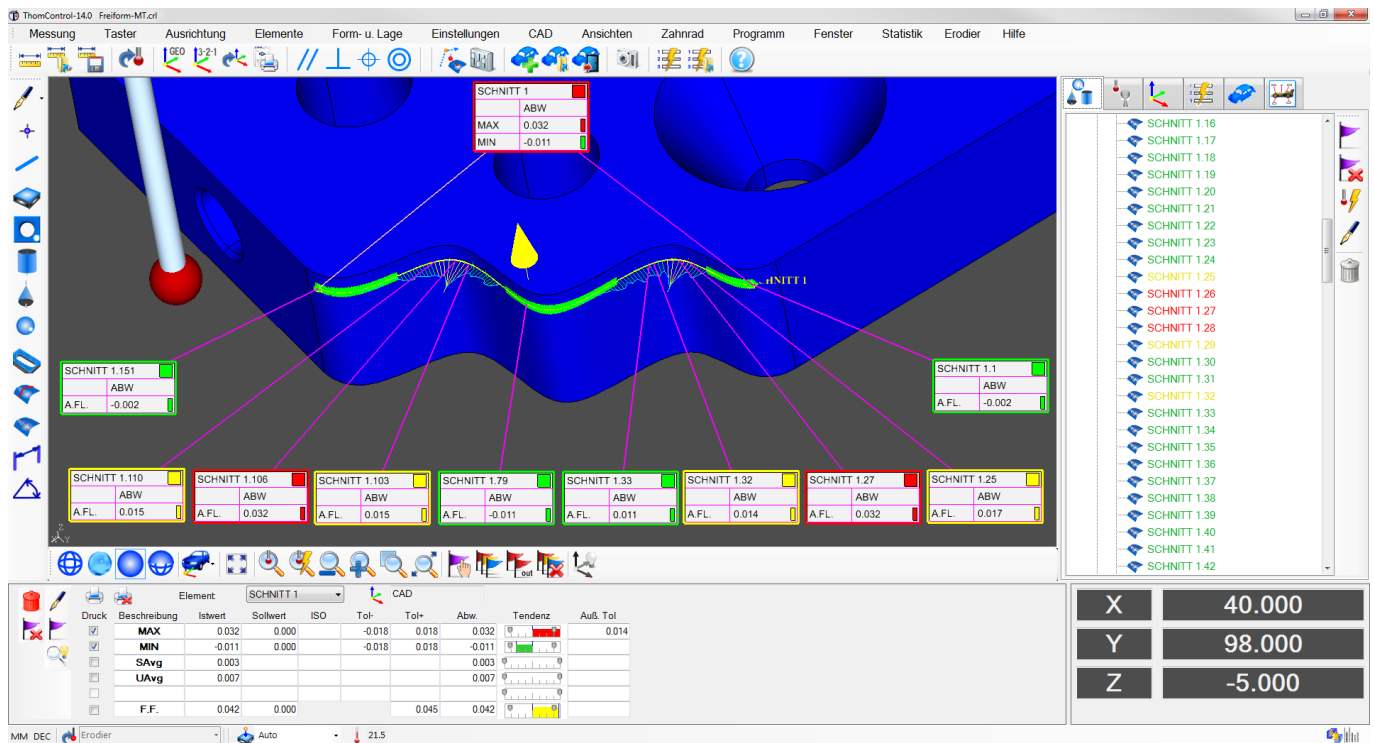
When printing the measurement reports, the output can be sorted according to different criteria. The operator can also specify the printout of an element individually.

The measurement protocols can be saved in PDF, WORD and EXCEL format. The clearly arranged protocol editor enables quick and easy creation of measurement reports in various individually designed variants.

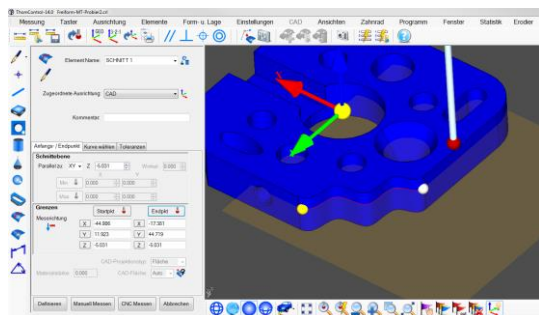


The print and save command can be integrated into the measuring program so that the printout is created automatically. In doing so, user queries can also be generated.

## ThomControl | Basic geometry with CAD and freeform surfaces



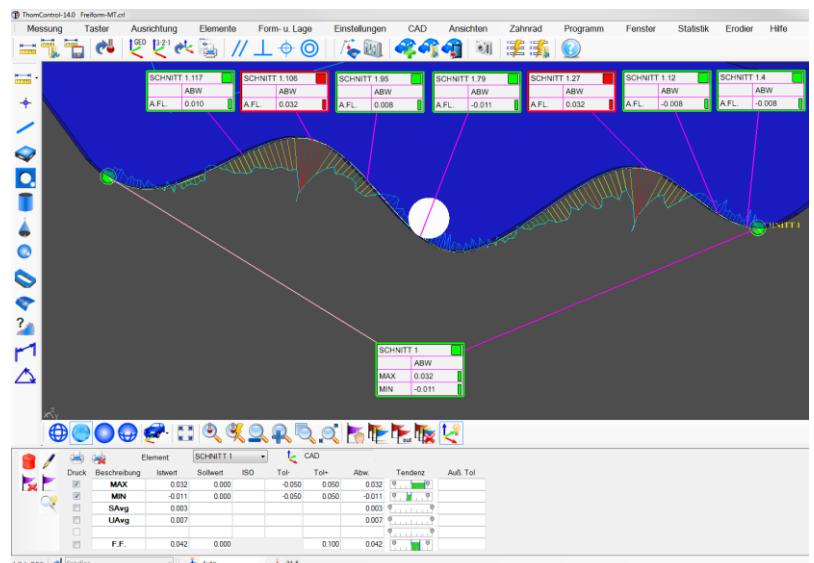
The workpiece can be aligned very quickly at first over a 6-surface-points-alignment. Then all elements can be measured by clicking on the CAD model.



During the definition of a section the cutting plane is shown and the start and end points are clearly visible.

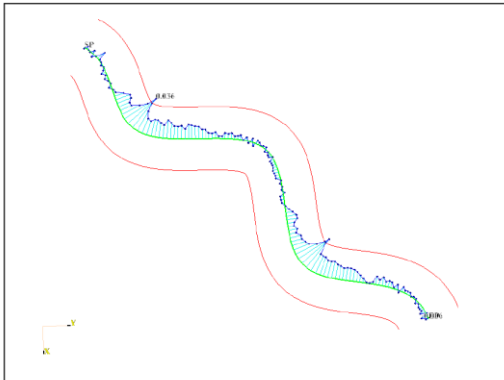
The 6-surfacepoint alignment, the RPS alignment, and the Best-fit alignment can be used for a quick and accurate alignment against a CAD-Part.

The measurement of sections is done simply by clicking Start and End points. The point density can be set individually. The cutting plane is displayed graphically and the cutting process is previewed and can be changed if necessary.



The analysis of the sections can be done directly in the CAD representation.

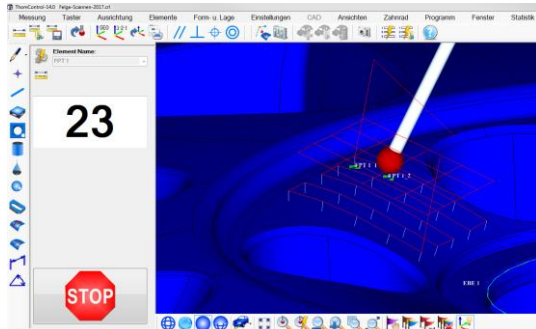




ERGEBNISSE

Merkmal	Istwert	Sollwert	Tol -	Tol +	Abw.	Tendenz
MAX	0,036	0,000	-0,100	0,100	0,036	
MIN	-0,006	0,000	-0,100	0,100	-0,006	
F.F.	0,042			0,200	0,042	

Detail of a section. The point with the smallest and the largest deviation are marked and labeled with the actual value.



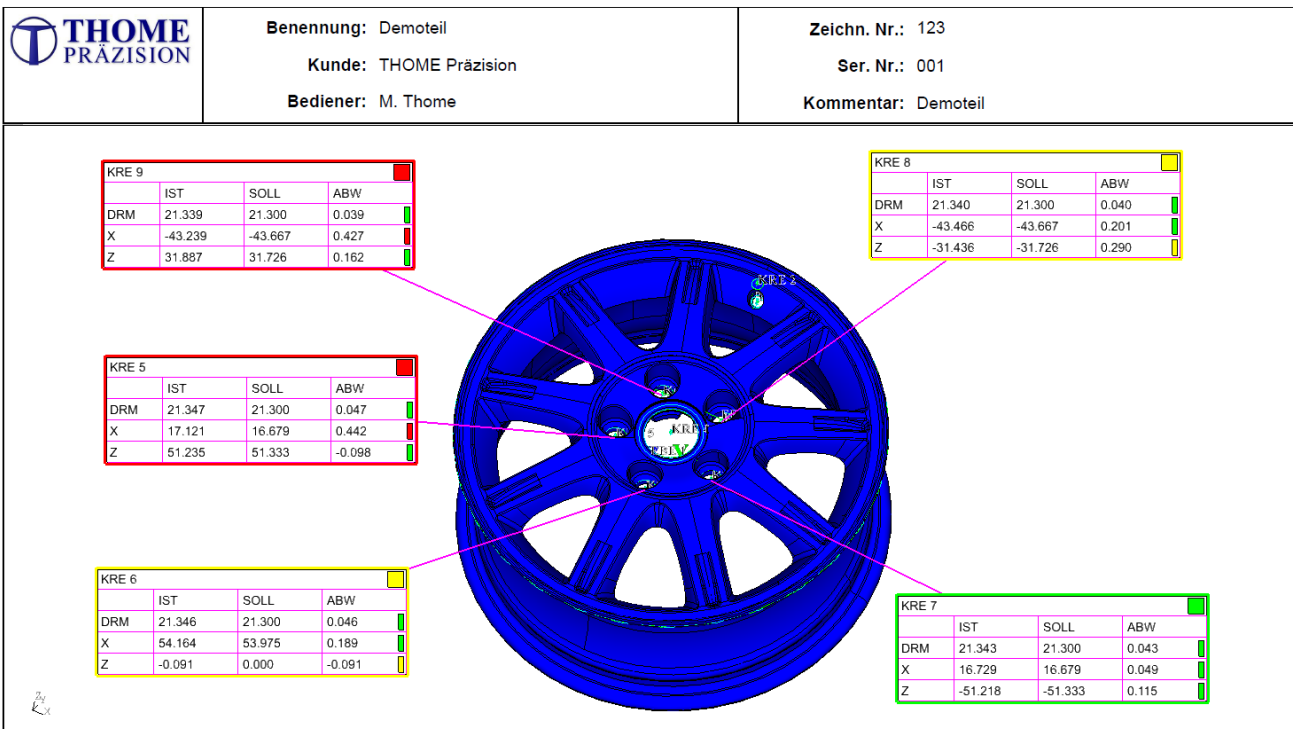
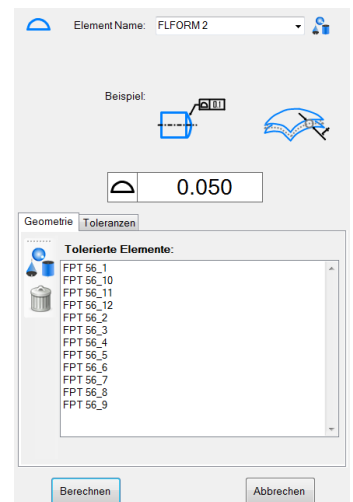
A grid of surface points can be generated automatically and placed over a CAD surface.

Any views in the graphic can be saved. These views are listed in a database and can be reactivated if required or printed out in the measurement report. Deviations can be represented graphically by deviation vectors and by color mapping.

But you can also get a detailed view of the section via a one-click button. In this detailed view, the highest and lowest points are marked and labeled with their deviations.

Surface points can be measured using automatically generated point grids. To create the grid, the user clicks 3 points on the CAD-Part. The number of measuring points can be set individually for the grid. All measuring points are first displayed in a graphical preview and can then be adjusted individually.

Line and surface tolerances can be calculated quickly and easily from the measured surface points. In the form of graphic result windows, all form and position tolerances can be displayed in the graphic window.



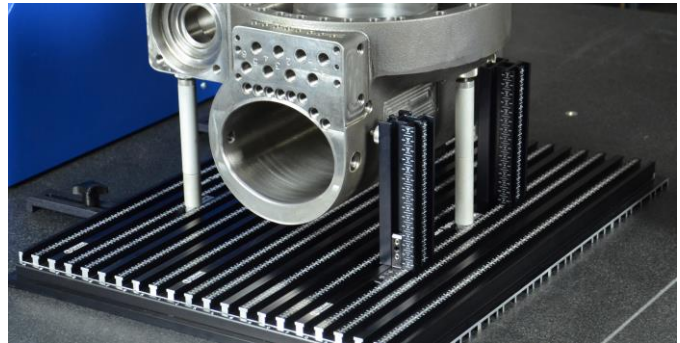
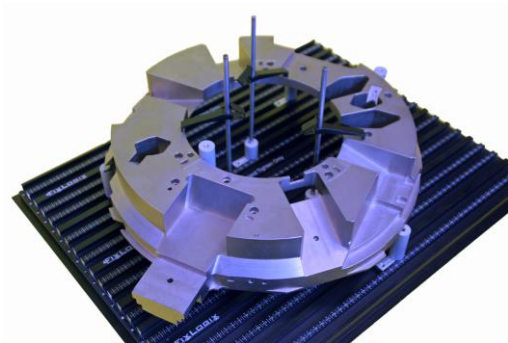
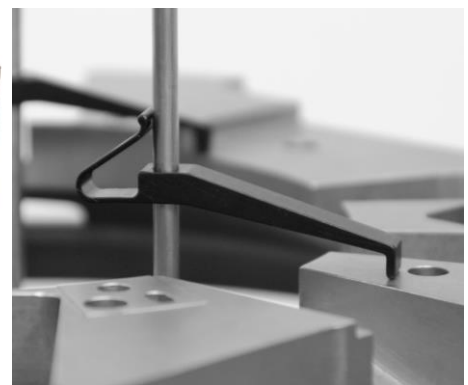
Graphical inspection protocols can be easily created and evaluated clearly.



## Clamping system SPANNFIX

The modular clamping system from THOME Präzision is a highly effective and simple clamping system. A wide range of components, such as pillars and swivel brackets, allow quick, flexible and easy assembly of devices. This allows the most diverse parts economically to clamp.

All SPANNFIX components are compatible with the T-slot clamping plates and all other plates that have an M6 thread. All items are made of corrosion-resistant materials such as stainless steel and anodized aluminum.



All clamping plates have T-slots and engraved markings at a distance of 25 mm. They serve as an orientation aid in the construction of reproducible devices.

## Flexible touch probes from RENISHAW

As a competent partner of RENISHAW we rely on the highest quality standard of the market leader.

The range of touch probes is so comprehensive that the RENISHAW systems meet all customer requirements. From the simple, inexpensive entry-level model to the complex 5-axis scanning probe with automatic probe changer.

Our engineers will be pleased to support you when choosing the most suitable clamping system for your application.



## PH10T / PH10M motorized rotary head

Motorized Rotating probehead.

Moving in 2 axis in 7.5°-steps (Max. 720 positions).

Reproducibility of position  $\pm 0.5 \mu\text{m}$  at about 100 mm turning radius.

Max. Length of extension 300 mm.

**PH10T:** Can be combined with touch probes TP20 and TP200. (No Scanning probes!)

**PH10M:** Can also be combined with the scanning probe SP25.

## PH20 stepless five-axis touch-trigger probe with "Head Touch"

PH20's infinite positioning capability guarantees optimal feature access, minimising stylus changes. The 5-axis simultaneous motion allows larger parts to be measured on the CMM by minimising the space required around the part for head rotation. PH20 automatically aligns itself with the part coordinate system, avoiding stylus collisions and the requirement for accurate fixtures..

Each angular position in the room is adjustable with an angular resolution of 0.08 arcseconds (0.04  $\mu\text{m}$  in relation to 100 mm radius).

Adjustment ranges: A-axis +/- 115 ° B-axis continuous.

Max probing speed: 50 mm/s.



## REVO 5-axis scanning technology

Unlimited positioning capabilities with REVO™ and high-speed scanning with 5-axis technology make this scan head a superstar in this discipline.

Our engineers will gladly advise you on your application requirements.

## Services for our Coordinate Measuring Machines

Customized service solutions for our Coordinate Measuring Machines. We are pleased to offer you allround support or even individual support components for your Coordinate Measuring Machine.

- Machine maintenance contract, for the maintenance and calibration of your measuring machine every year or every two years.
- Software maintenance contract, includes regular new updates and expert support from our service team.
- Modernization of older Coordinate Measuring Machines. Make your old "sweetheart" fit for the future by modernizing with new electronics and modern measurement software.

Contact us. We would be happy to explain you the individual components in a personal conversation.

## THOME Precision GmbH: The enterprise

THOME Precision is a family business. We develop and manufacture Coordinate Measuring Machines and the userfriendly measurement software **ThomControl** in-house.

Since 1996 we develop and produce high-precision Coordinate Measuring Machines at our company location near Frankfurt / Germany.

The development and production takes place exclusively in Germany.

For the probes and controllers, we rely on the high quality from RENISHAW.

As a medium-sized company, our customers like our high level of flexibility, good service and the willingness to implement special requests. Our experienced developers are happy to create a customized solution as well for you.

We look forward to seeing you!

Your THOME precision team.

### THOME Precision GmbH

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