




Horizontal-arm measuring machines





The moment you know that you have
purchased much more than just a machine.

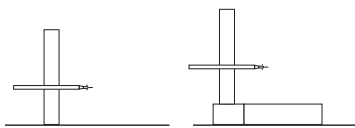
This is the moment we work for.

// FLEXIBILITY
MADE BY ZEISS



Portfolio

Horizontal-arm measuring machines



ZEISS CARMET

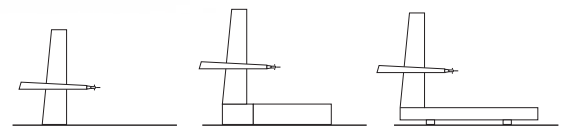
The standard for a wide range of tasks

MPE E from $35 + L/50 \leq 80$ [μm]

For measuring ranges up to

7000 x 3000 x 2500 [mm]

From page 8



ZEISS PRO/PROT advance

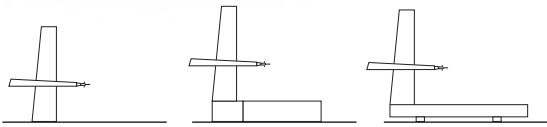
Fully configurable for your convenience

MPE E from $18 + L/125 \leq 50$ [μm]

For measuring ranges up to

10000 x 3000 x 3000 [mm]

From page 14



ZEISS PRO/PRO T premium

The premium design with bundled features

MPE E from $18 + L/125 \leq 50$ [μm]

For measuring ranges up to

10000 x 3000 x 3000 [mm]

From page 20

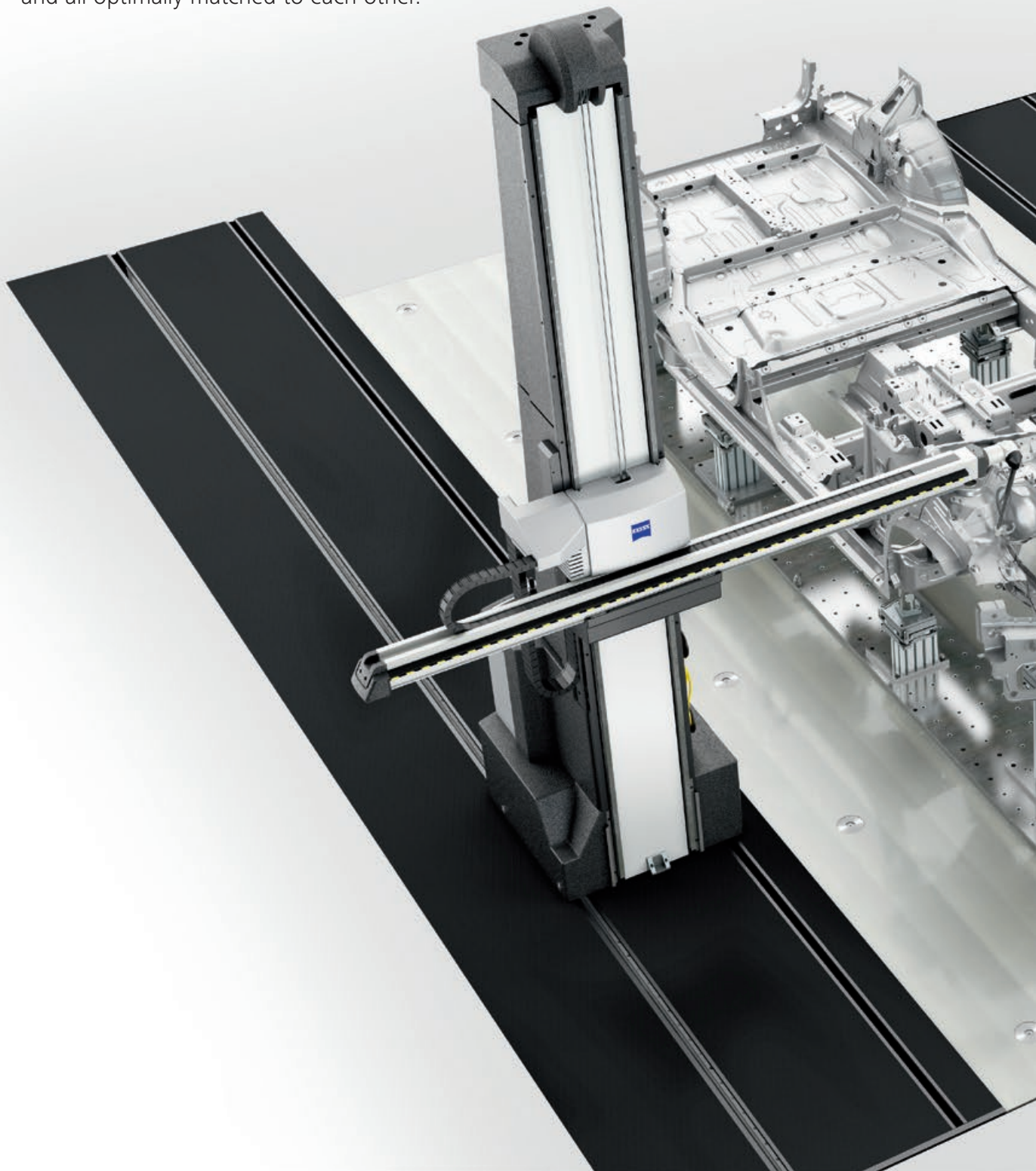
ZEISS CALIGO

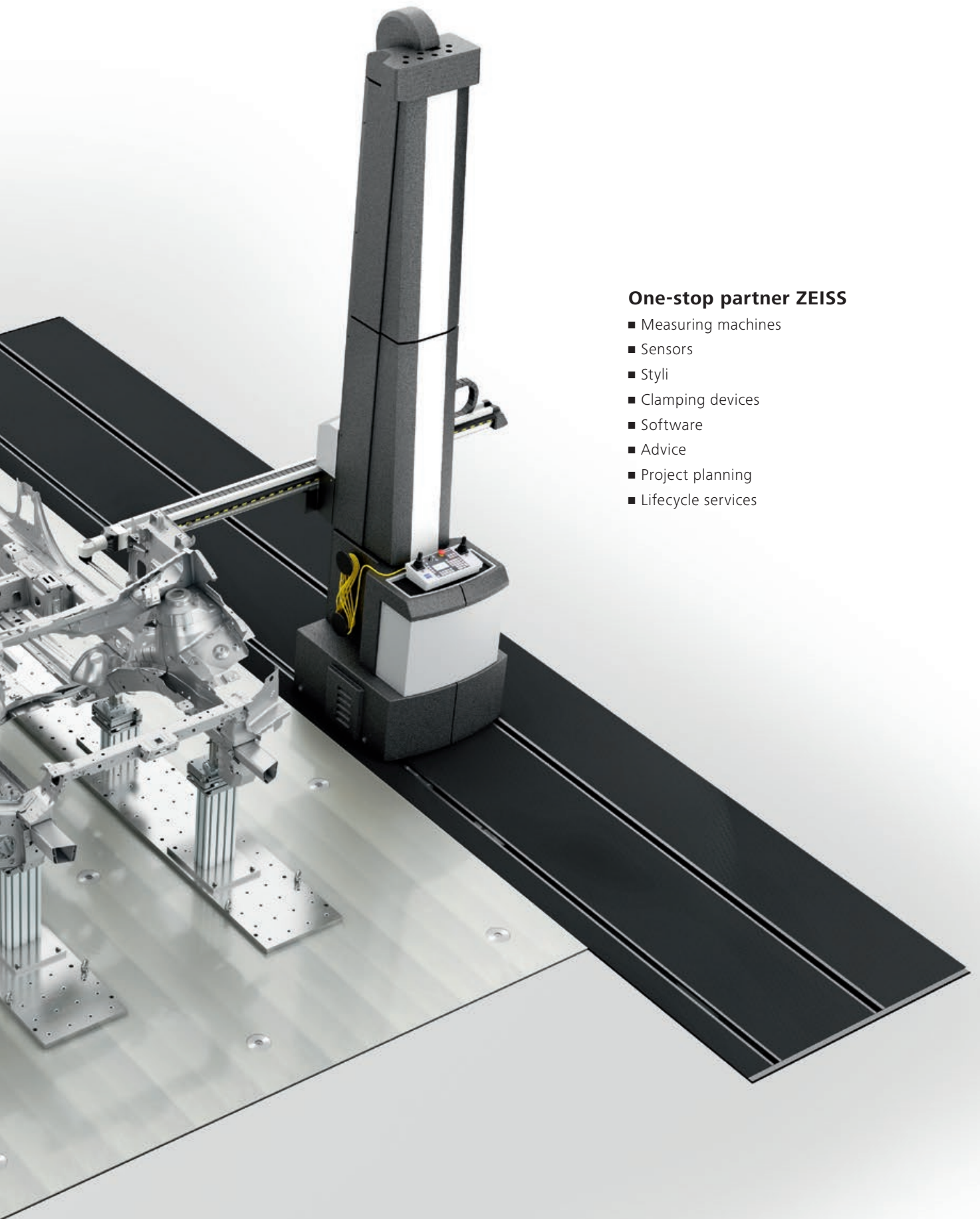
The complete software for measuring car bodies

From page 22

Top performance with a system

As a system provider, ZEISS offers just the solutions for the changing conditions of day-to-day measuring tasks with impressive accuracy, effectiveness, and above all, dependability. From the first consultation on the installation, to the maintenance of your measuring machines, ZEISS takes charge of your metrology. You get all the services and products from the same partner – and all optimally matched to each other.





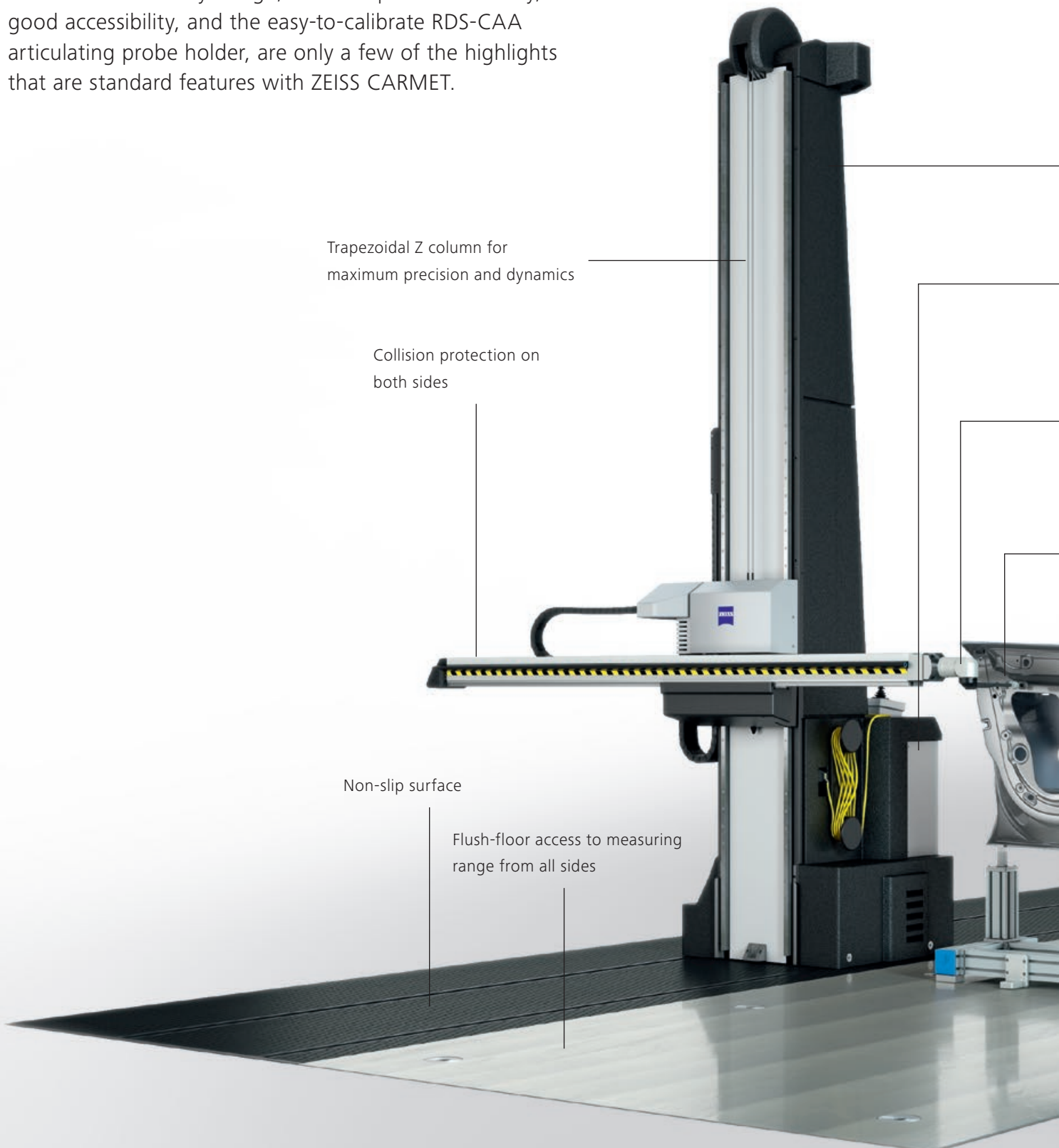
One-stop partner ZEISS

- Measuring machines
- Sensors
- Styli
- Clamping devices
- Software
- Advice
- Project planning
- Lifecycle services

ZEISS CARMET

Exclusive features for a wide range

ZEISS CARMET is an economical, all-inclusive package that leaves nothing to be desired and offers ZEISS quality throughout. The trapezoidal Z column, the user- and maintenance-friendly design, reliable operational safety, good accessibility, and the easy-to-calibrate RDS-CAA articulating probe holder, are only a few of the highlights that are standard features with ZEISS CARMET.



Trapezoidal Z column for maximum precision and dynamics

Collision protection on both sides

Non-slip surface

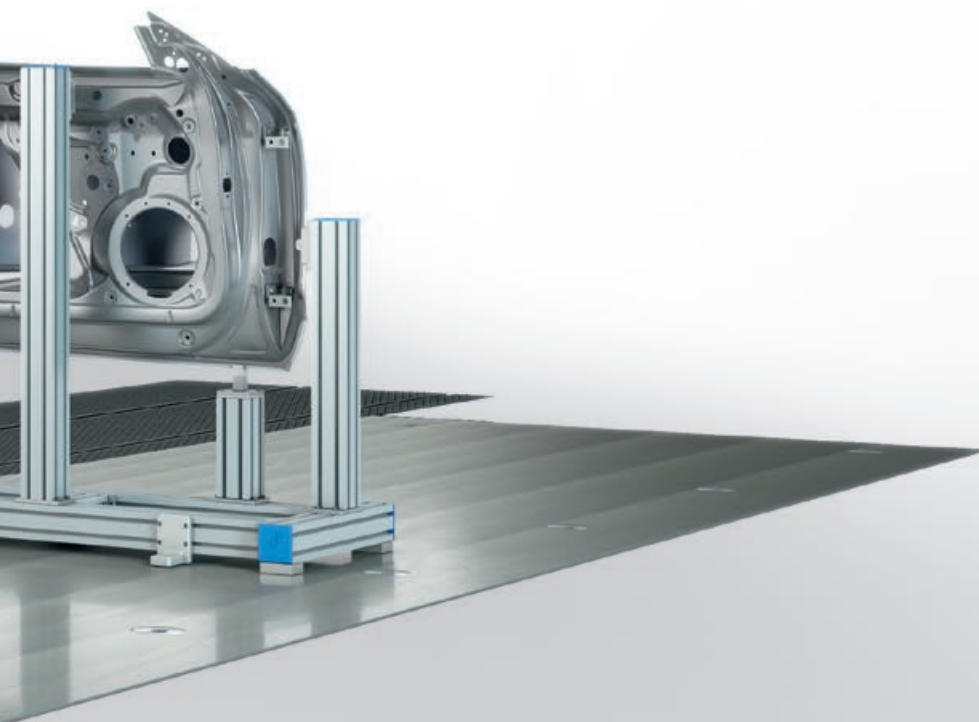
Flush-floor access to measuring range from all sides

Cover with insulating F.I. technology for temperature stability and easy access for maintenance

Integrated control: saves space and speeds up the installation

RDS-CAA articulating probe holder for fast calibration

ZEISS ThermoFit extension, available up to 400 mm



Single measuring ranges [mm]

Type	X	Y	Z
40/16/25	4000	1600	2500
50/16/25	5000	1600	2500
60/16/25	6000	1600	2500
70/16/25	7000	1600	2500

Duplex measuring ranges [mm]

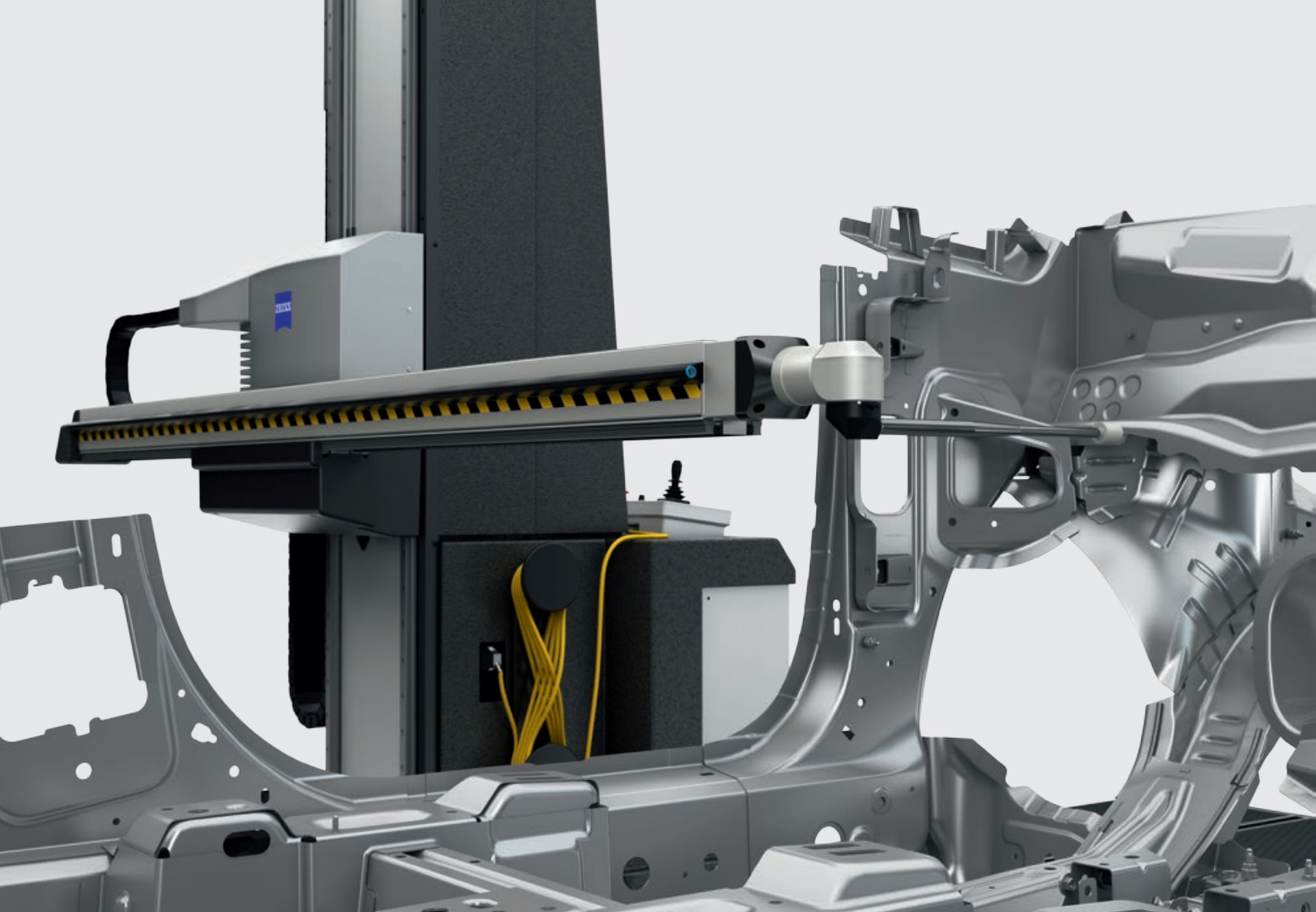
Type	X	Y	Z
40/30/25	4000	3000	2500
50/30/25	5000	3000	2500
60/30/25	6000	3000	2500
70/30/25	7000	3000	2500

MPE E

From $35 + L/50 \leq 80$ [μm]
At 16-24°C

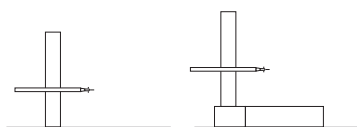
Options and accessories

- On-floor machine
- Wireless control panel
- Swiveling control unit with TFT monitor, keyboard, trackball and control panel holder for programming directly at the measuring point
- ZEISS FalconEye optical sensor system



Flush-floor access

With the flush-floor model, ZEISS CARMET offers free access from all sides. An on-floor version is available for use with an existing foundation.



Flush-floor level

On-floor

Precision and dynamics

The ZEISS CARMET Z column has a trapezoidal shape. A wide base provides stability and rigidity for maximum precision. The upward taper saves on weight, which benefits the dynamics. In this way ZEISS CARMET combines precision and dynamics in a superior design.

Linear guideways with ball chains

ZEISS sets in all axes linear guides with ball chains, which are characterized by high rigidity, smooth operation and low maintenance.

Integrated control

ZEISS CARMET is controlled by a moving control unit integrated in the measuring machine. This reduces the number of interfaces, speeds up the installation process, and reduces space requirements. The control unit housing also serves as a holder for the control panel.

Safety

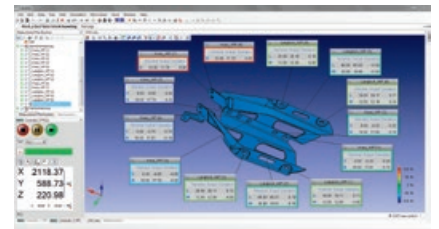
The horizontal arm of the ZEISS CARMET is equipped with space-saving collision protection on both sides to protect people and material from injury and damage. The proven friction drives in the ZEISS machines that simply slip through when there is a blockage also contribute to safety.

Temperature stability

For all structurally relevant components, ZEISS consistently uses steel, which allows for even, controlled heat expansion. In addition, the Z column is also thermally insulated by F.I. technology. The result: The machine can be used in a broad temperature range from 16 to 24°C within the specified measuring error. Furthermore, the machine does not have to be cooled, and temperature compensation is not required. In addition, the light insulation cover can be removed quickly and easily for maintenance.

ZEISS CALIGO Measuring and evaluation software

With ZEISS CALIGO, users in car body construction receive a complete solution for analysis measurements, serial measurements, simulations and reporting. The software offers simple operation with a short orientation period. Optimum use of the available system resources means that extensive measurement data is available more quickly with ZEISS CALIGO. More on page 22.

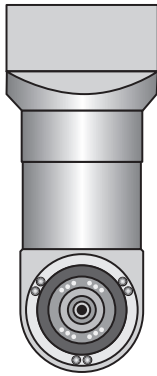


The scale of the Y axis is located between the guideways for optimal protection (marked in blue).



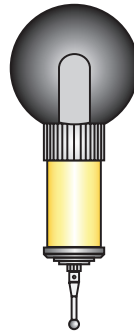


ZEISS CARMET sensor



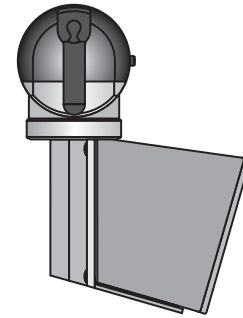
ZEISS RDS-CAA articulating probe holder

The ZEISS RDS-CAA is the standard of reference among articulating probe holders. It reaches up to 20,736 positions in 2.5-degree increments. This is made possible by the rotary axes with rotational ranges of plus/minus 180 degrees. The special feature of the ZEISS RDS-CAA is its short calibration time. Calibration for all angular settings takes only six minutes. Because both the ZEISS RDS-CAA and the Y arm of the ZEISS CARMET have a very slim and compact design, features that are otherwise difficult to access are easier to reach. For the ZEISS RDS-CAA, ZEISS offers length extensions of up to 400 mm with the company ThermoFit technology – adequate for almost all car bodies.



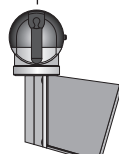
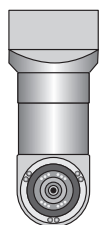
ZEISS RST-P Touch-trigger sensor

The ZEISS RST-P touch-trigger sensor holds styli up to 10 g in mass and 90 mm in length. It incorporates the dual principle: First, piezoelectric elements located in front of the trigger point deliver the actual probing pulse. Second, a three-point bearing also serves as a mechanical trigger point that verifies the probing and protects the ZEISS RST-P from damage. Deflection forces caused by the bearings and direction do not affect the measuring result. The ZEISS RST-P delivers the same accuracy in all probing directions.



ZEISS FalconEye Optical sensors

The ZEISS FalconEye triangulation sensor significantly accelerates the analysis of car bodies that have many features to be checked such as bores, sections or threaded bolts. By using an additional manual rotary axis, it can be positioned in three angular settings with very accurate repeatability, permitting the laser line to be aligned relative to the component. ZEISS FalconEye is ideally integrated into the ZEISS CALIGO software package.



ZEISS RDS-CAA
Articulating probe
holder

ZEISS
RST-P

ZEISS
FalconEye

Renishaw
TP6

Renishaw
TP20

ZEISS PRO/PRO T advance

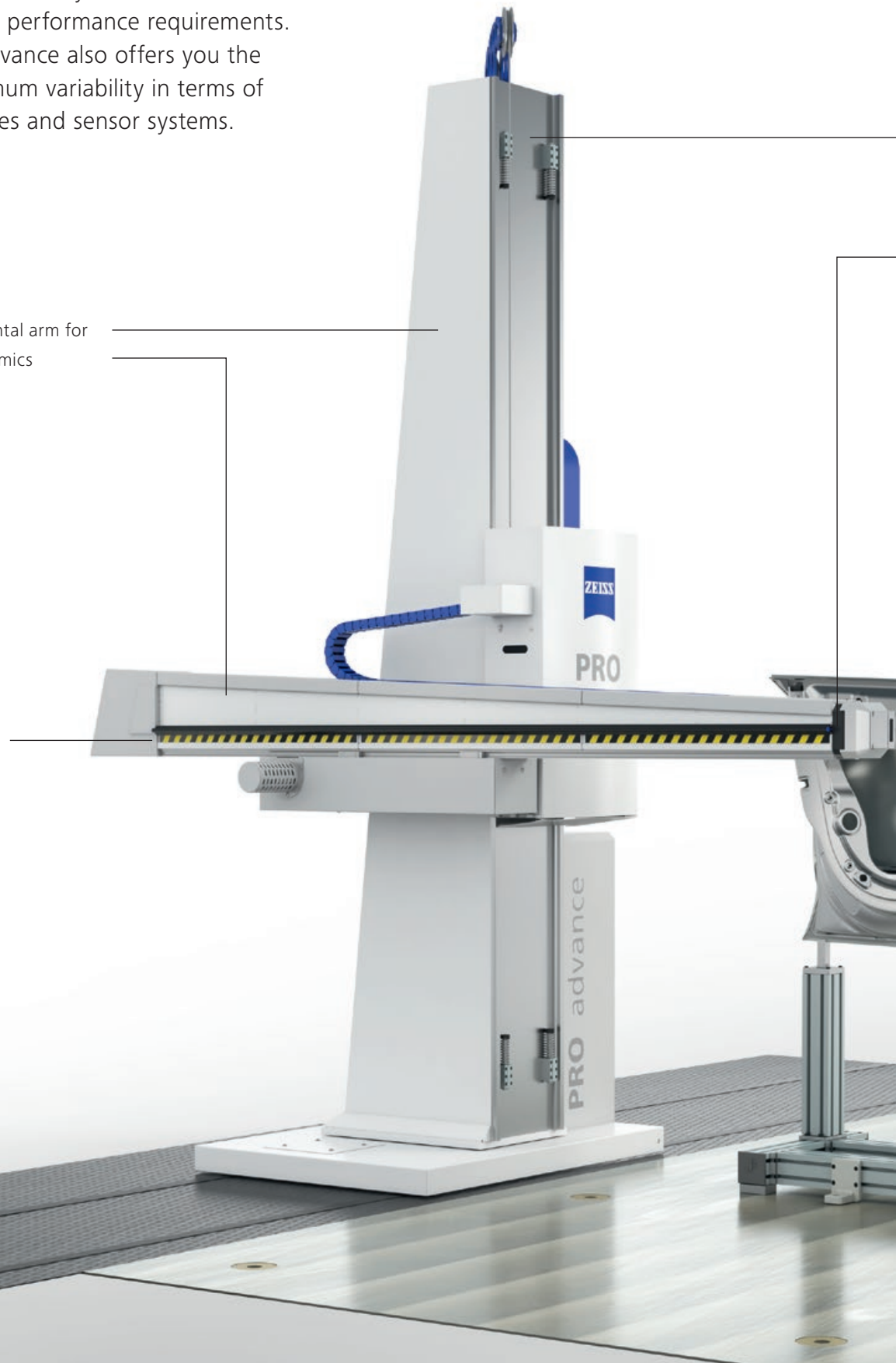
Fully configurable for your convenience

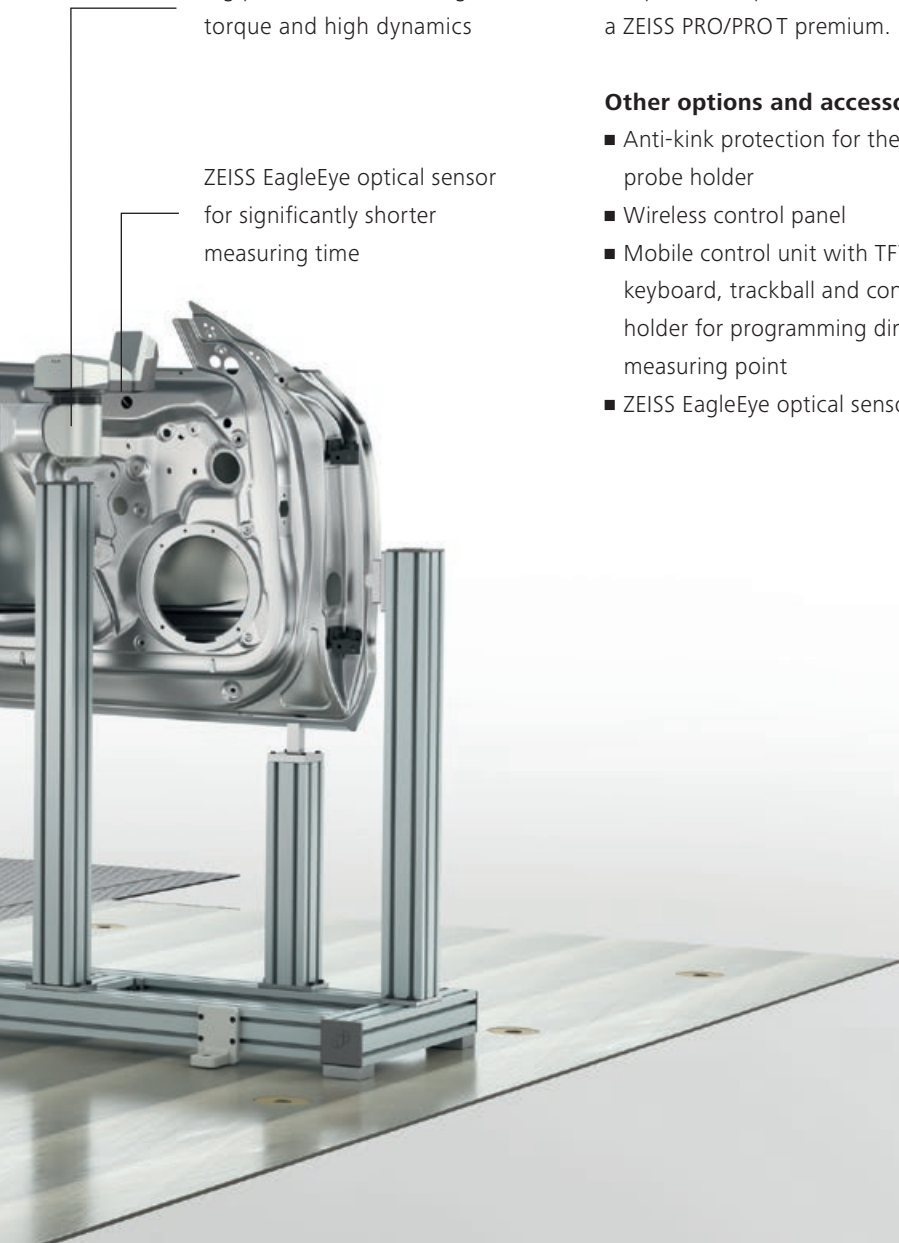
The ZEISS PRO/PRO T advance is a modular horizontal-arm measuring machine that is very easy to configure. This means that it can be ideally tailored to meet your cost efficiency and performance requirements. The ZEISS PRO/PRO T advance also offers you the advantage of the maximum variability in terms of measuring ranges, shapes and sensor systems.

Trapezoidal stand and horizontal arm for maximum precision and dynamics

Collision protection on both sides

Flush-floor access to measuring range from all sides





Easy access to maintenance-relevant parts

Anti-kink protection for sensor carriers, optional

Continuous CSC articulating probe holder with high torque and high dynamics

ZEISS EagleEye optical sensor for significantly shorter measuring time

Premium options

These premium options can be added to the ZEISS PRO/PROT advance as required:

- Full enclosure to protect against dirt and for thermal insulation
- Temperature compensation for greater accuracy in the event of variations in temperature
- "Performance option" for 50% greater maximum acceleration
- "High accuracy" option for approximately 30% less measuring error (in combination with full enclosure and temperature compensation)

A ZEISS PRO/PROT advance with all the premium options is identical to a ZEISS PRO/PROT premium.

Other options and accessories

- Anti-kink protection for the articulating probe holder
- Wireless control panel
- Mobile control unit with TFT monitor, keyboard, trackball and control panel holder for programming directly at the measuring point
- ZEISS EagleEye optical sensor system

Available measuring ranges

ZEISS PRO advance single arm [mm]

X	5000/6000/7000/10000
Y	1600/1800
Z	2100/2500/3000

ZEISS PRO advance dual arm [mm]

X	5000/6000/7000/10000
Y	3000/3500
Z	2100/2500/3000

ZEISS PROT advance single arm [mm]

X	2200/3200/4200/5200/ 6200/7200
Y	1200/1600
Z	1500/2000/2100/2500

ZEISS PROT advance dual arm [mm]

X	3200/4200/5200/6200/ 7200
Y	2800
Z	1500/2000/2100/2500

For all available combinations, please refer to the technical data.

MPE E

(Y = 1600 mm, Z = 2100 mm)

Base configuration

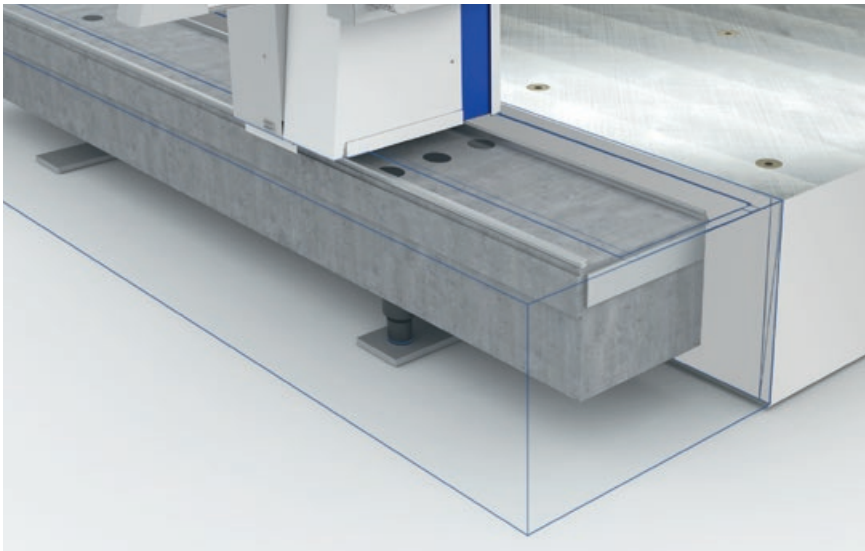
From $27 + L/80 \leq 70$ [μm]

At 16-24°C

Premium equipment

From $18 + L/125 \leq 50$ [μm]

At 18-22°C



*The measuring beam has a large cross section and only three contact points
(Applies to flush-floor and on-floor models)*

Precision and dynamics

Both the Z column and the horizontal arm of the ZEISS PRO/PROT have a trapezoidal design. The trapezoidal shape allows for greater rigidity with less weight compared to square components. This benefits both the accuracy and the dynamics of the machine.

Measuring beam with three-point bearing and large cross section

The measuring beam (X axis) is the critical connection to the foundation. In the ZEISS PRO it has bearings only at three points. This simplifies the alignment and improves the long-term stability compared to bearings with more contact points. The large square cross section of the measuring beam gives it high inner rigidity, which also benefits the long-term stability.

Temperature stability

For structurally relevant components, ZEISS consistently uses steel, which allows for even, controlled heat expansion. Furthermore, the machine does not have to be cooled. As an option, temperature compensation is available with five temperature sensors that improve the measuring accuracy of the machine when there are variations in the ambient temperature.

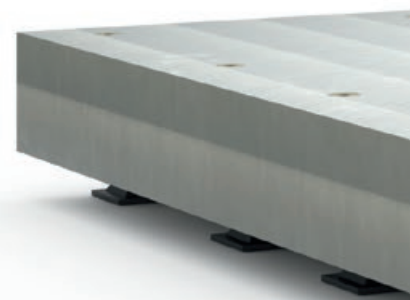
Linear guideways with ball chains

ZEISS sets in all axes linear guides with ball chains, which are characterized by high rigidity, smooth operation and low maintenance.

Safety

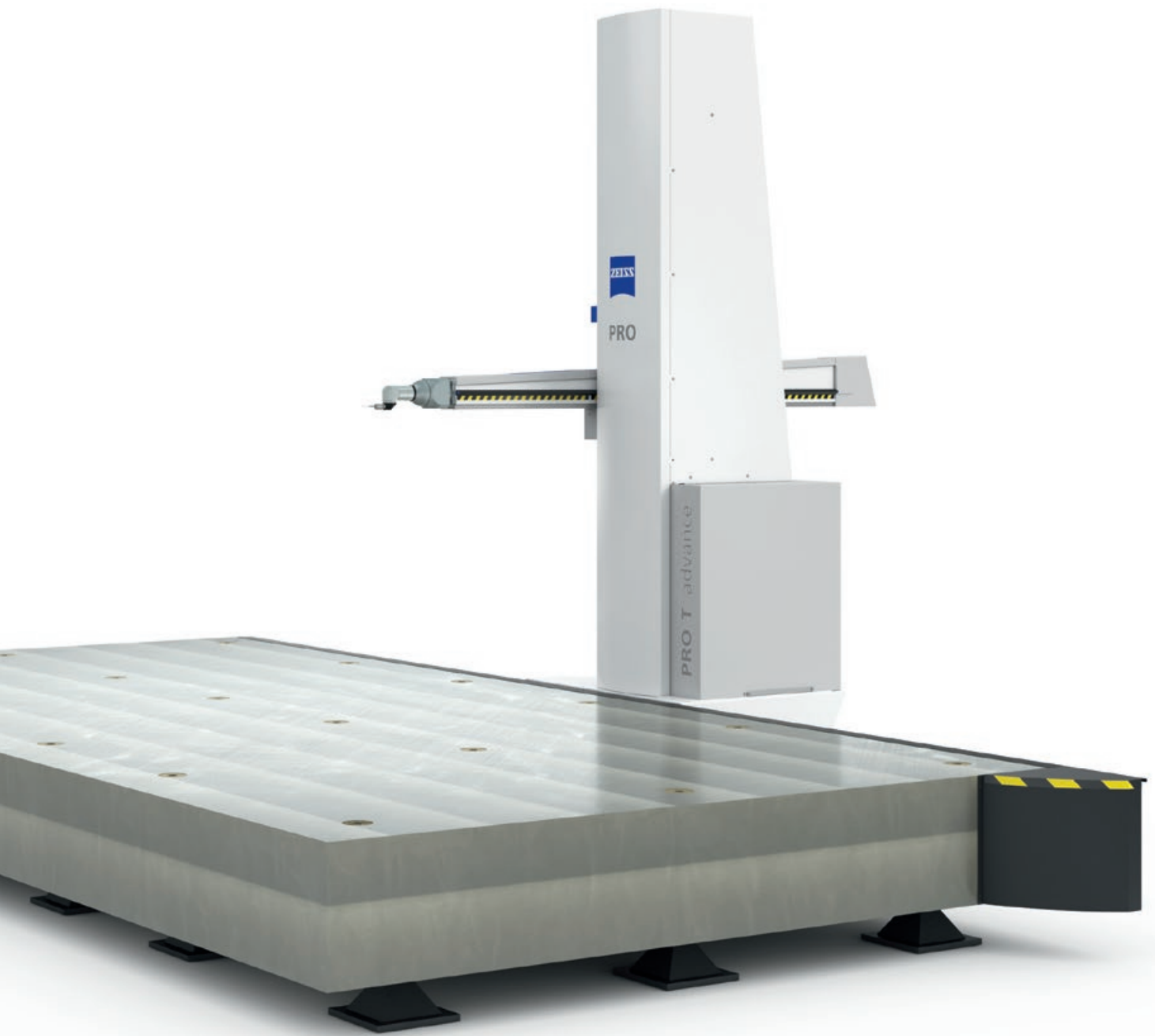
ZEISS PRO/PROT comes with many standard safety features that protect both the user and the machine.

Friction drives in all axes already limit the maximum force purely by mechanical means. In addition, the horizontal arm is equipped with contact-sensitive collision protection on both sides. Because of its space-saving engineering, access to low-lying measuring points is not obstructed.



In the ZEISS PRO/PROT, the particularly vulnerable scale of the Y axis is located safely between the guideways on the bottom of the horizontal arm. Here the guideway rails simultaneously protection against collision.

A special feature of the continuous CSC articulating probe holder is the collision-protected bearing of the sensor plate. As an option, both available articulating probe holders, CSC and RDS, can be equipped with anti-kink protection.

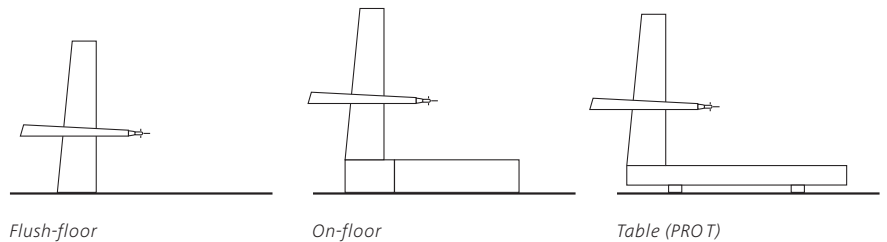


Model versions

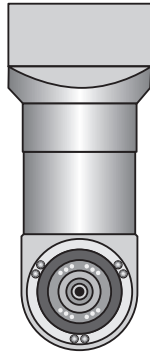
ZEISS PRO is available in three models:

- The flush-floor version allows safe, unobstructed access from all sides.
- The on-floor version can be placed on an existing foundation.
- The table model (PRO T) offers the best independence from a foundation because the table itself provides a rigid, stable base.

Each version can be equipped with one arm or a dual arm.

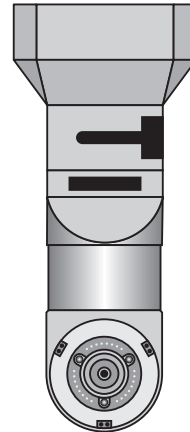


Sensors for the ZEISS PRO/PRO T series



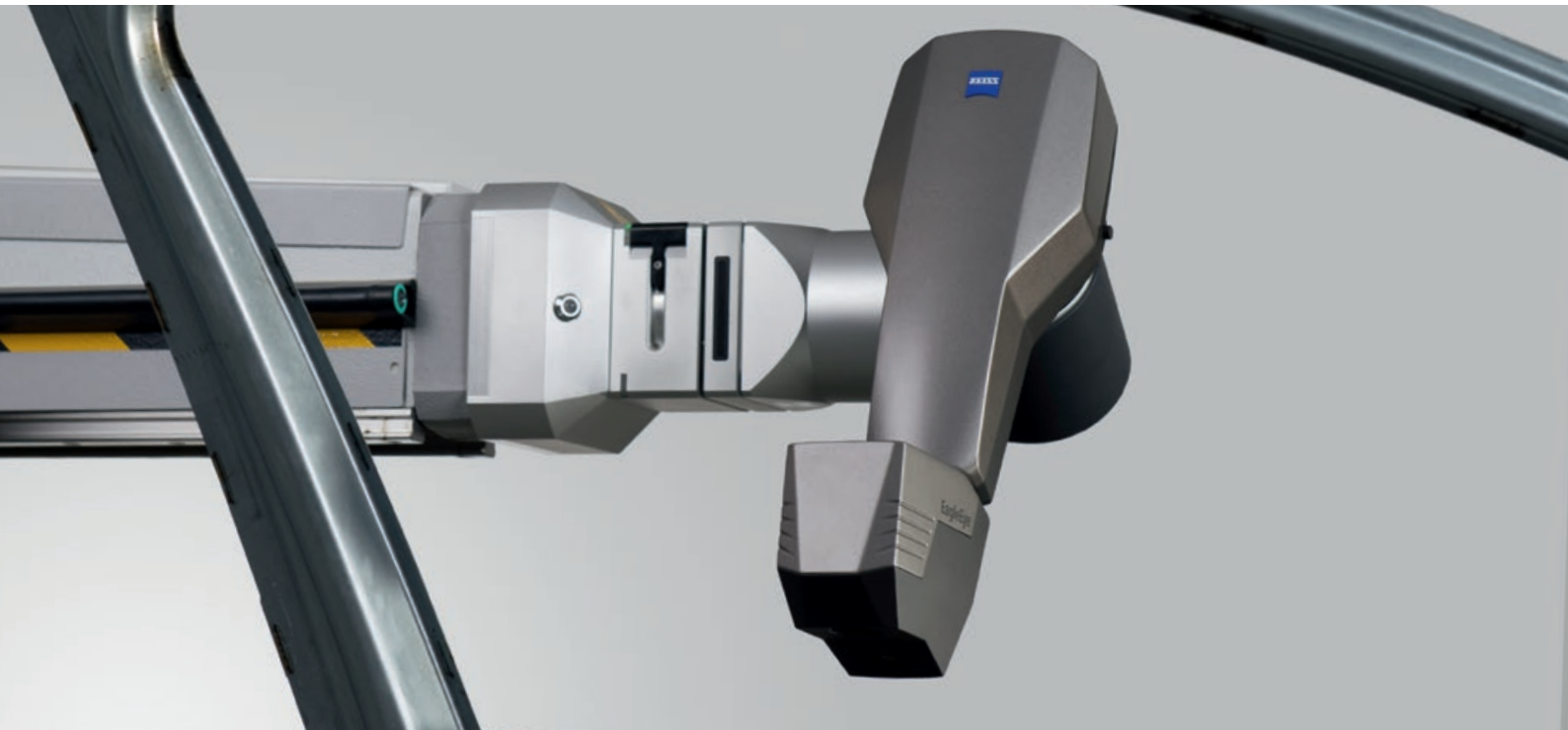
ZEISS RDS-CAA articulating probe holder

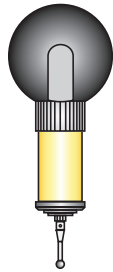
The ZEISS RDS-CAA is the standard of reference among articulating probe holders. It reaches up to 20,736 positions in 2.5-degree steps. This is made possible by the rotary axes with rotational ranges of plus/minus 180 degrees. The special feature of the ZEISS RDS-CAA is its short calibration time. Calibration for all angular settings is finished in only six minutes. Because both the RDSA and the Y arm of the PRO have a very slim and compact design, features that are otherwise difficult to access are easier to reach. For the RDS-CAA, ZEISS offer length extensions of up to 400 mm with ZEISS ThermoFit technology – adequate for almost all car bodies.



Continuous ZEISS CSC articulating probe holder

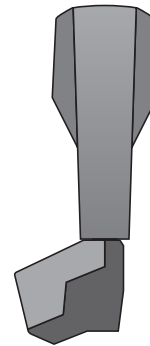
The ZEISS CSC offers ideal conditions for optimum positioning of the sensors and for accessing measuring points that are otherwise difficult to reach. This is because of the substantial torque reserves combined with maximum resolution and precision. This allows the use of ZEISS ThermoFit length extensions of up to 800 mm. The high dynamics of the ZEISS CSC considerably reduce the measuring time – without compromising safety. In the ZEISS CSC, a collision-protected bearing for the sensor has been added to the familiar collision protection of the articulating probe holder. This prevents sensor damage in the event of a collision with the part.





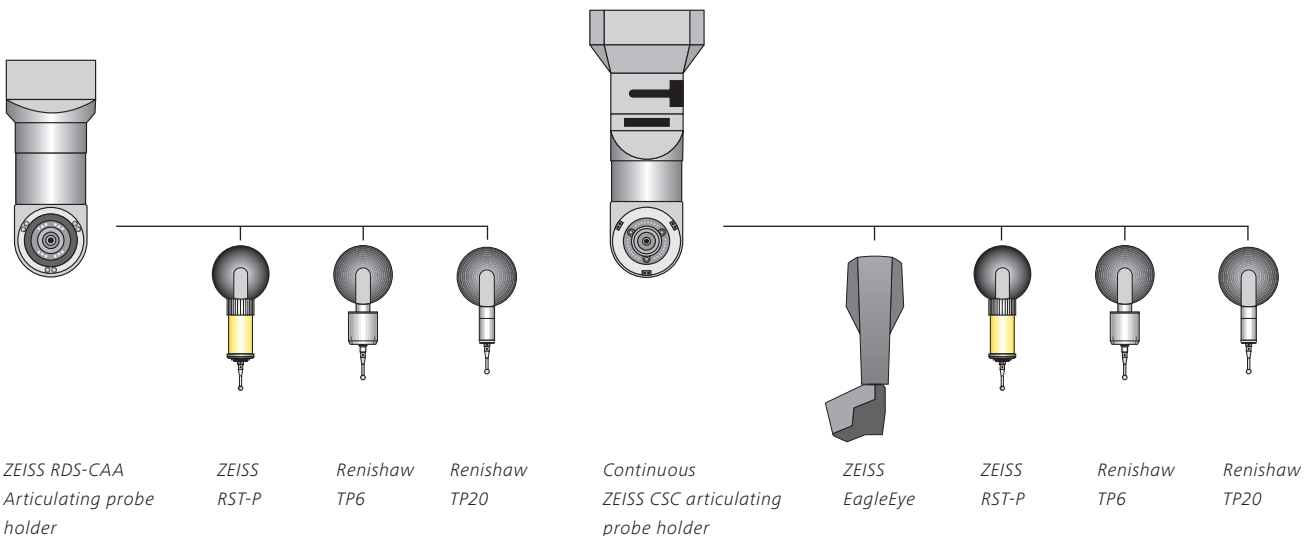
ZEISS RST-P touch-trigger sensor

The ZEISS RST-P touch-trigger sensor holds styli up to 10 g in weight and 90 mm in length. It incorporates the dual principle: First, piezoelectric elements located in front of the trigger point deliver the actual probing pulse. Second, a three-point bearing also serves as a mechanical trigger point that verifies the probing and protects the RST-P from damage. Deflection forces caused by the bearings and direction do not affect the measuring result. The ZEISS RST-P delivers the same accuracy in all probing directions.



ZEISS EagleEye optical sensor

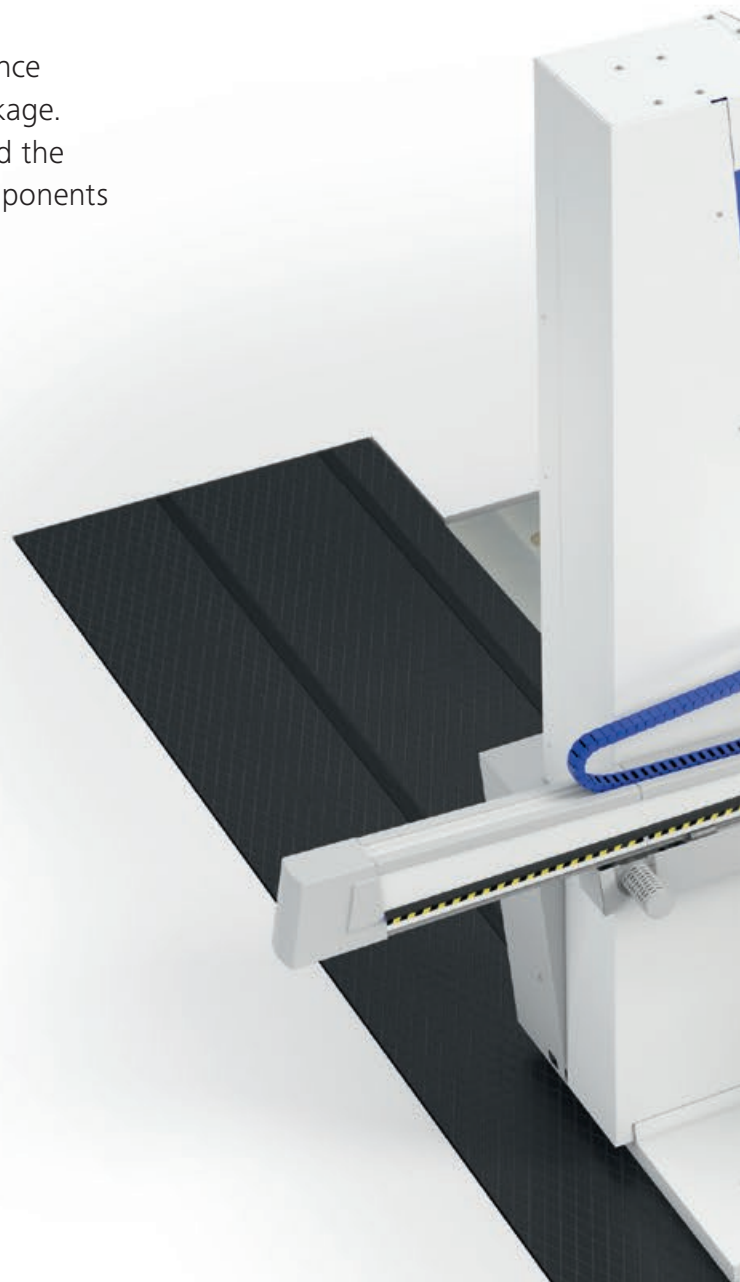
In the automotive industry, not only countless boreholes, but also edges, gap and alignment and large surfaces have to be measured. The ZEISS EagleEye saves almost half the measuring time for an entire car body. Typical, labor-intensive steps in traditional measuring methods are completely eliminated: no assembly and disassembly of threaded adapters, no material and storage or handling costs. Use of the ZEISS EagleEye navigator immediately reduces the measuring cycle time and increases the quality of pressed parts at the same time. Ultimately this produces a result with a quality that can be evaluated exactly with information on the diameter, the position and the shape of the feature – with high precision.



ZEISS PRO/PRO T premium

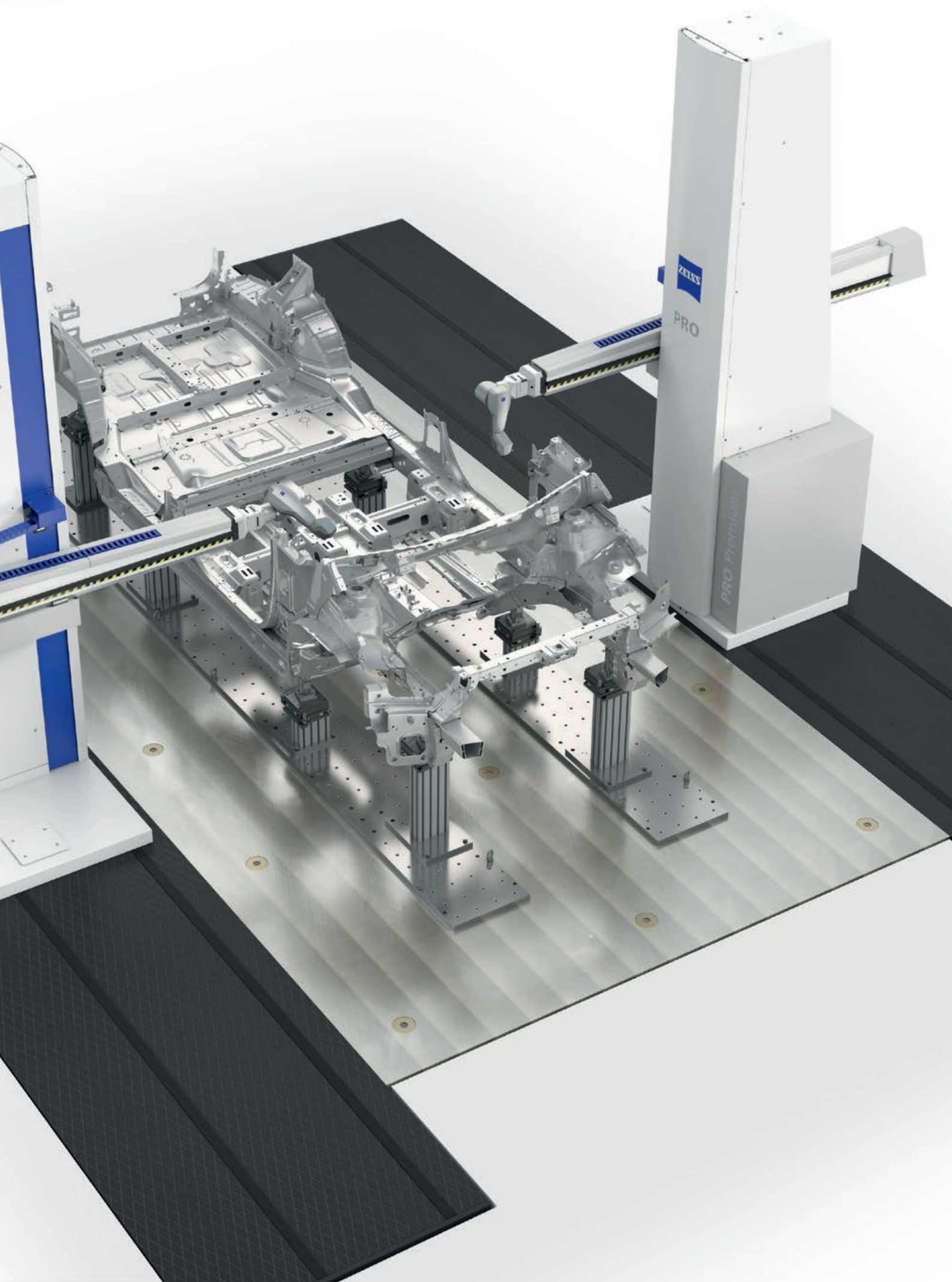
The premium design with bundled features

The ZEISS PRO/PRO T premium bundles all the performance features that are available for the PRO series in one package. Full enclosure, automatic temperature compensation and the best possible accuracy and speed are indispensable components of the ZEISS PRO/PRO T premium.



A “premium” machine is a ZEISS PRO/PRO T advance for which all the premium options have been selected. There is no difference between the models in terms of the measuring ranges, construction, accessories and sensors.

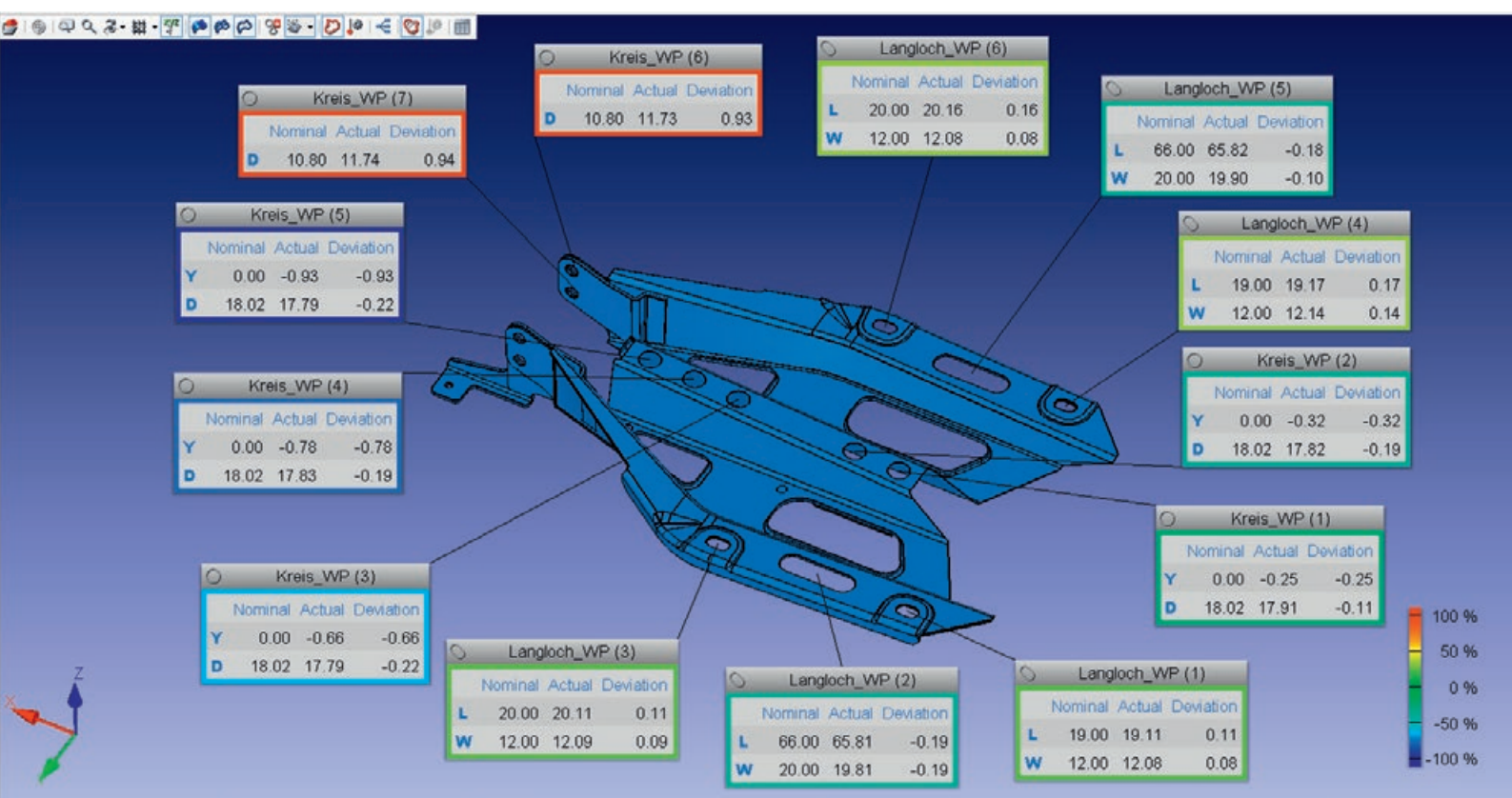
	advance basic equipment	premium
MPE E [μm] (Y = 1600 mm, Z = 2500 mm)	$27 + L/80 \leq 70$	18 + L/125 \leq 50
Maximum acceleration [mm/s^2]	1000	1500
Complete casing	optional	standard
Temperature compensation	optional	standard
“High precision” option	optional	standard
“Performance” option	optional	standard

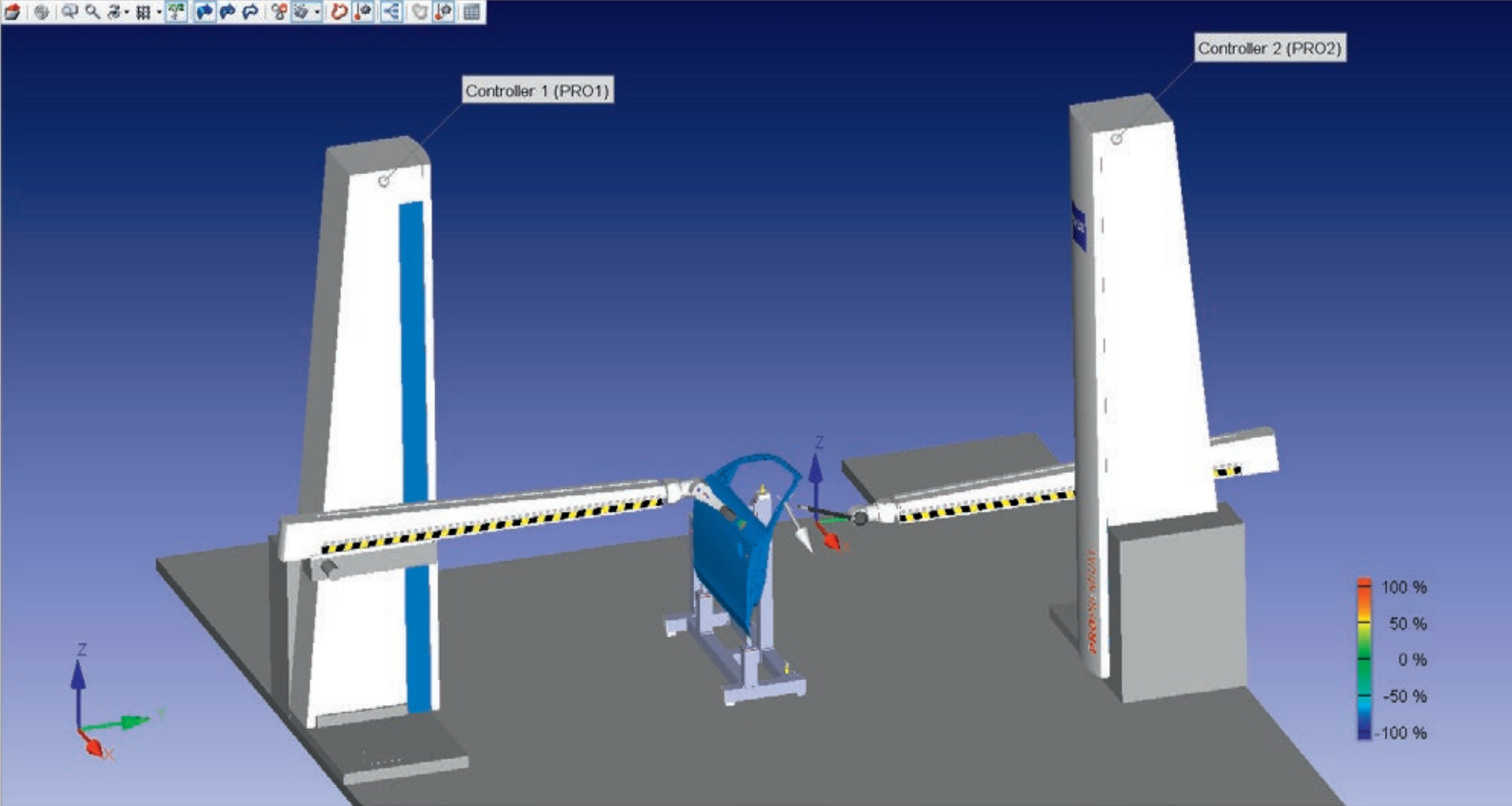


ZEISS CALIGO

The complete solution for measuring car bodies

ZEISS CALIGO makes the measurement of car body components easier and faster than ever. The innovative software architecture provides highly efficient tools for analysis measurements, serial measurement, simulation and reporting.





ZEISS CALIGO is measuring software for analysis and series measurements that is easy to operate, is learned fast, and that leaves nothing to be desired. For example, it offers the user numerous additional tools to improve the entire measuring process, including reporting.

Change management

If a feature list changes, the “synchronization” function allows the user to compare it with the current measurement plan and to adjust it point by point.

Simulation function

Simulation functions available in ZEISS CALIGO open the door to countless possibilities for the user to create and analyze measuring programs offline before the real process starts in the machine. To do this, the measuring process is displayed and simulated in a virtual machine in the CAD window, saving valuable time in the real measuring machine.

Automatic travel paths

To prevent collisions with the workpiece, ZEISS CALIGO can generate travel paths automatically to create a safety zone around the component. The software finds the path from feature to feature itself. Furthermore, the new “Path in/ Path out” navigation function is integrated into ZEISS CALIGO. This enables users to program a safe path into and back out of an interior space.

Analysis

ZEISS CALIGO makes it possible to incorporate CAD result displays as false-color illustrations or with result flags in the measurement plan in a measurement report. The software offers different standard templates for fast protocol printout. But the protocols and templates can also be structured and designed individually in ZEISS CALIGO.

Reporting

With the PiWeb Reporting Plus extension available in ZEISS CALIGO it is possible to create a single workstation analysis with up to 200 measurements.

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