Overview MMZ family

In the aerospace industry, automotive and mechanical engineering and in many other areas, coordinate measuring machines with large measuring volumes are required that do not compromise on precision. ZEISS offers a large portfolio of gantry and bridge measuring instruments in numerous size variants for this purpose.

Product Presentation // MMZ CMM
Content

01 The portfolio

02 The applications

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

06 Customer benefits and installation examples

Product Presentation // MMZ CMM
Content

01 The Portfolio

02 The Applications

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

06 Customer benefits and installation examples

MMZ Overview
The portfolio at a glance

Specifications	ZEISS MMZ 1 table	ZEISS MMZ T	ZEISS MMZ M	ZEISS MMZ G
Type	Bridge	Bridge	Large Bridge	Large Bridge
Sizes	20/30/15 20/40/15	X: 21 Y: 32; 44; 52 Z: 12; 16	X: 20; 30 Y: 30; 45; 60 Z: 12; 16; 20	More than 200 possible combinations X_{max}: 80 Y_{max}: 100 Z_{max}: 35
Compatible probehead	VAST XT gold, VAST gold, VAST XTR, RDS – VAST XXT (see newest TD)	VAST XT gold, VAST gold, VAST XTR RDS – VAST XXT, LineScan(see newest TD)	VAST XT gold, VAST gold, VAST XTR RDS – VAST XXT. LineScan(see newest TD)	VAST XT gold, VAST gold, VAST XTR RDS – VAST XXT, LineScan(see newest TD)
Accuracy	3,6 + L/250 µm	From 2,4 + L/400 µm	From 2,2 + L/400 µm	From 2,2 + L/400 µm
Max. workpiece weight	5 t	10 t	Depending on foundation thickness	Depending on foundation thickness
Foundation needed	No*	No*	Yes	Yes
Price for basic CMM	From 267.750 EUR	From 384.650 EUR	From 403.750 EUR	From 521.249 EUR

*if the floor can carry the load

MMZ Overview

The portfolio at a glance

MMZ 1 table

Size up to:

X 2.000mm | Y 4.000 mm | Z 1.500 mm

Length measurement error[µm] :

ab 3,6 + L/ 300 (µm)

Form measurement error[µm] :

ab 3.5 µm

MMZ 1

Size up to:

X 2.500mm | Y 6.000 mm | Z 1.800 mm

Length measurement error[µm] :

from 3.3 + L/ 230 (µm)

Form measurement error[µm] :

from 4.0 µm

Actual ony in China available

MMZ T

Size up to:

X 2.100mm | Y 4.400 mm | Z 1.600 mm

Length measurement error[µm] :

from 2,4 + L/ 400 (µm)

Form measurement error[µm] :

from 2,5 µm

MMZ M

Size up to:

X 3.000mm | Y 6.000 mm | Z 2.000 mm

Length measurement error[µm] :

from 2,2 + L/ 400 (µm)

Form measurement error[µm] :

from 2,0 µm

MMZ G

Size up to:

X 8.000mm | Y 10.000 mm | Z 3.500 mm

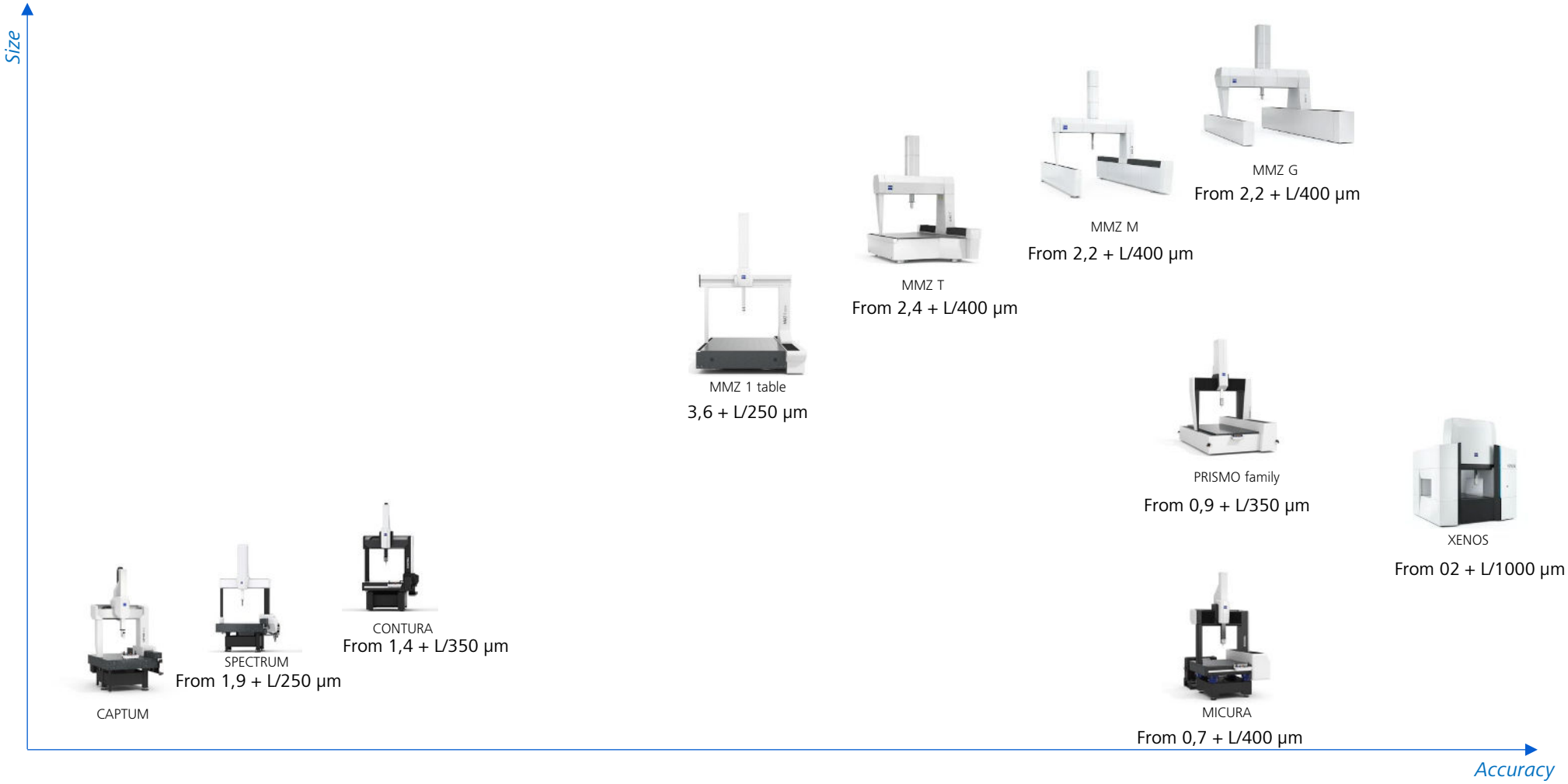
Length measurement error[µm] :

from 2,2 + L/ 400 (µm)

Form measurement error[µm] :

from 1,7 µm

MMZ Overview
Positioning within the ZEISS measuring device portfolio



MMZ Overview

Compact solution for high-volume parts - MMZ 1 table

Stable design for precision

- ✓ Large material cross-sections
- ✓ Large bearing distances for high repeatability
- ✓ CALYPSO VAST Navigator for fast and accurate measurements
- ✓ Air bearings for smooth operation

Flexible

- ✓ ZEISS mass for the use of different measuring heads
- ✓ Ready for long stylus extensions

Economic

- ✓ No foundation necessary
- ✓ Vibration isolation integrated
- ✓ Low operating costs due to ZEISS PowerSaver and ZEISS AirSaver
- ✓ Recuperation in the drive system

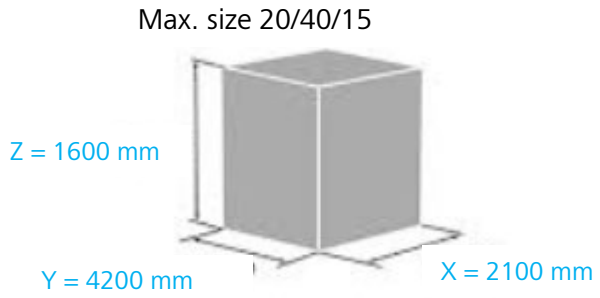
Safe and robust

- ✓ Safety position for loading by crane or robot
- ✓ Covered guideways for increased robustness
- ✓ Laser scanner for operator safety

Ergonomic

- ✓ Clear view of the component
- ✓ User-friendly table height

Max. workpiece weight **5 t**



ZEISS MMZ 1 table

MMZ Overview

Robust measuring - MMZ T

Stable design for precision

- ✓ Large material cross sections
- ✓ Large bearing distances for high repeatability
- ✓ Long-term stable steel welded construction
- ✓ CALYPSO VAST navigator for quick and accurate measurements

Flexible

- ✓ Optional rotary table for extended use
- ✓ Rotary table can be integrated in the base frame
- ✓ Variety of measuring heads
- ✓ Ready for very long and heavy probe extensions

Economic

- ✓ No foundation necessary
- ✓ Vibration isolation integrated
- ✓ Low operating costs

Safe and robust

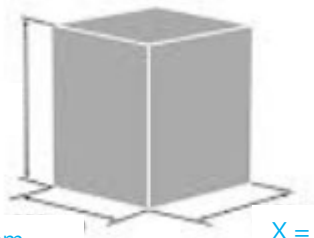
- ✓ Safety position for loading by crane or robot
- ✓ Covered guideways for increased robustness
- ✓ Linear guides for stability and long life
- ✓ Kink protection on the measuring head
- ✓ Laser scanner for operator safety

Ergonomic

- ✓ A clear view of the measurement volume
- ✓ User-friendly table height

Max**.** workpiece weight **10 t**

Max. size 21/52/16 (with NSP)



Z = 1600 mm

Y = 4200 mm

X = 2100 mm

ZEISS MMZ T

MMZ Overview

Economical with high precision– MMZ M

Stable design for precision

- ✓ Large material cross sections
- ✓ Large bearing distances for high repeatability
- ✓ Long-term stable steel welded construction
- ✓ CALYPSO VAST navigator for quick and accurate measurements

Flexible

- ✓ Optional rotary table for extended use
- ✓ Variety of measuring heads
- ✓ Installation site optimized foundation
- ✓ Ready for very long and heavy probe extensions

Economic

- ✓ Minimized footprint
- ✓ Low foundation requirement
- ✓ Low operating costs

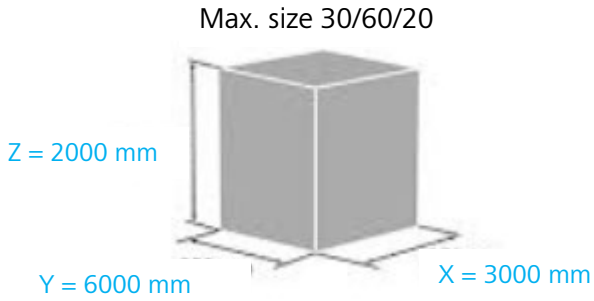
Safe and robust

- ✓ Safety position for loading by crane or robot
- ✓ Covered guideways for increased robustness
- ✓ Linear guides for stability and long life
- ✓ Kink protection on the measuring head
- ✓ Light barrier for operator safety

Ergonomic

- ✓ A clear view of the measurement volume
- ✓ Floor level loadability

No limit.
Determined by the thickness of the foundation.



ZEISS MMZ M

MMZ Overview

Precise measurement in a giant machine – MMZ G

Stable design for precision

- ✓ Biggest material cross sections
- ✓ Very large bearing distances for high repeatability
- ✓ Long-term stable steel welded construction
- ✓ CALYPSO VAST navigator for quick and accurate measurements

Flexible

- ✓ Optional rotary table for extended use
- ✓ Variety of measuring heads
- ✓ Installation site optimized foundation
- ✓ Ready for very long and heavy probe extensions

Economic

- ✓ Good footprint
- ✓ Low foundation requirement
- ✓ Low operating costs

Safe and robust

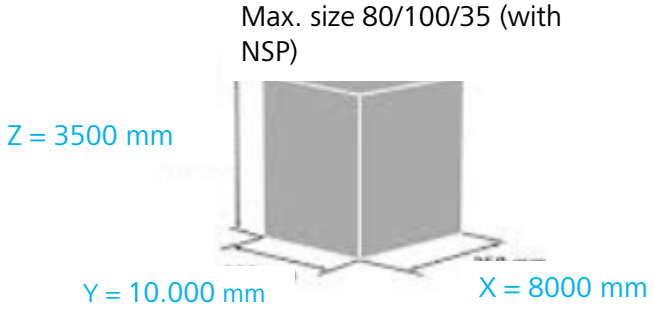
- ✓ Safety position for loading by crane or robot
- ✓ Covered guideways for increased robustness
- ✓ Linear guides for stability and long life
- ✓ Kink protection on the measuring head
- ✓ Light barrier for operator safety

Ergonomic

- ✓ A clear view of the measurement volume
- ✓ Floor level loadability

No limit.
Determined by the thickness of the foundation.

Max. size 80/100/35 (with NSP)



ZEISS MMZ G

Product Presentation // MMZ CMM
Content

01 The portfolio

02 The application

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

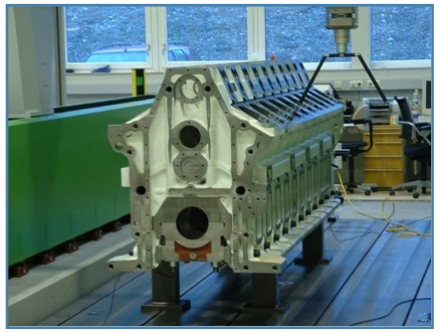
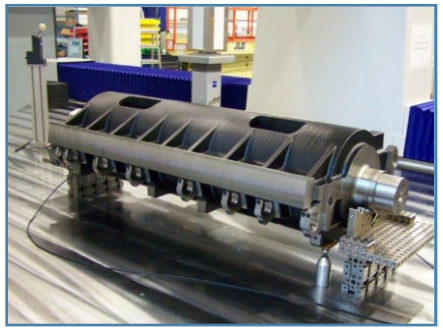
06 Customer benefits and installation examples

MMZ Overview
Applications by industry

Industry
- ✓ Precision bearings
- ✓ Carbide tipped drills
- ✓ Molds
- ✓ Machine beds
- ✓ Hydraulic parts
- ✓ Housings
- ✓ CNC machined parts

Drives(Ships)
- ✓ Motor
- ✓ Powertrain
- ✓ Gear wheels
- ✓ Valves
- ✓ Connection rods
- ✓ Manifolds




Aerospace
- ✓ Turbine blades/blisks
- ✓ Turbine housing
- ✓ Shafts
- ✓ Gears
- ✓ Precision machined parts

Wind Energy
- ✓ Bearing Ring
- ✓ Planet Carrier
- ✓ Gears

Very small tolerances - Very deep-seated features - Tactile active scanning

Product Presentation // MMZ CMM
Content

01 The portfolio

02 The applications

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

06 Software

MMZ Overview

The measuring heads – (release device-specific)

Probehead facts – mass (multi application sensor system)

Only after prior NSP approval

MMZ Overview

The measuring heads and their usability

Description	RDS	VAST XXT	LineScan	DotScan	VAST gold	VAST XTR	VAST XT	ROTOS
Measuring principle	Carrier system	Tactile Passiv Scanning	Optical Laser Triangulation	Optical White light sensor	Tactile Aktive Scanning	Tactile Aktive Scanning	Tactile Aktive Scanning	Profilemethod. Skidless
MMZ T	RDS – D	usable	usable	NSP	usable	usable	usable	NSP
MMZ M	RDS – D	usable	usable	NSP	usable	usable	usable	NSP
MMZ G	RDS – D	Z <= 2,5 m	Z <= 2,5m	NSP	usable	usable	usable	NSP
MMZ 1 table	RDS – D	usable	Currently No	Currently No	usable	usable	usable	No

Flexibility for today and tomorrow

ZEISS VAST Gold

- Active scanning tactile technology
- Minimum measurement force 50 mN
- Maximum probe weight: 800 g
- Smallest probe diameter: 0,3 mm
- Maximum probe extension: 800 mm, longer possible when using ZEISS reach CFX probe extensions
- Self centering probing

Benefits for the customer:

- Highest accuracy
- Large measuring range enables the measurement of large displacement deviations

Flexibility for today and tomorrow

ZEISS VAST Gold XTR

- Integrated rotary axis with 15° step around Z-ram axis
- Active scanning tactile technology
- Minimum measurement force 50 mN
- Maximum probe weight: 500 g
- Smallest probe diameter: 0,5 mm
- Maximum probe extension: 350 mm
- Self centering probing

Benefits for the customer:

- Best ratio between accuracy / flexibility
- Reduction of probe configuration and measuring time

Flexibility for today and tomorrow

ZEISS RDS with VAST XXT.

Highest flexibility with tactile probes

- Passive scanning tactile technology
- More than 20.000 angle combinations (2,5° step)
- Low measurement force (ca. 8-10 mN – depending on VAST XXT module)
- Maximum probe weight: 15 g
- Smallest probe diameter: 0,3 mm
- Maximum probe extension: 250 mm (depending on VAST XXT module)
- CNC changeable on RDS

Benefits for the customer:

- Flexibility
- Base for the usage of all optical sensors
- Entry level scanning accuracy

Flexibility for today and tomorrow

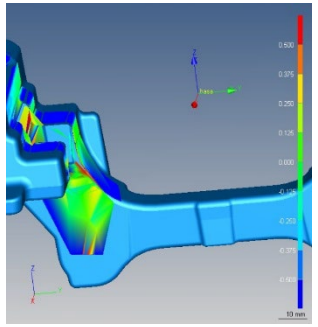
ZEISS RDS with LineScan 2.

- Laser triangulation principle
- Automatic probe change on RDS
- 4 different probes (different measurement line length/resolution)
- Totally integrated in CALYPSO

	LineScan 2-8	LineScan 2-25	LineScan 2-50	LineScan 2-100
Line Width [mm]	8	25	50	100
Working Distance [mm]	32	63	94	220
Measuring rate [points/s]	700K	700K	256K	700K
Resolution/line [points]	1280	1280	640	1280

Benefits for the customer:

- Fast comparison with the CAD model
- Point cloud for reverse engineering
- Measurement on soft and sensitive materials



Flexibility for today and tomorrow

ZEISS RDS with DotScan.

Accurate and flexible optical distance sensor

- White Light Interferometer principle
- Automatic probe change on RDS
- 3 different probes (different range/resolution)
- 4 axis measurement with rotary table
- Totally integrated in CALYPSO

	DotScan 1mm	DotScan 3mm	DotScan 10mm
Measuring Range [mm]	1	3	10
Working Distance [mm]	10	20	50
Vertical Resolution [µm]	0,028	0,036	0,060
Spot Diameter [µm]	8	9	16
Measurement Angle Range	90° +/- 30°	90° +/- 24°	90° +/- 17°

Benefits for the customer:

- Fast comparison with the CAD model
- Point cloud for reverse engineering
- Measurement on soft and sensitive materials

ZEISS REACH CFX® MMZ - 3 extensions
Key Characteristics

Property for a good extension:

- ✓ LIGHT WEIGHT: Build complex stylus systems and be conform with the probe weight restrictions.
- ✓ THERMALLY STABLE: No thermal expansion of the material and associated loss of precision
- ✓ STATICALLY STIFF: Maximum stiffness allows for faster scanning without loss of precision.

How you benefit

- ✓ Carbon fiber technology includes all characteristics
- ✓ Best CMM performance with all complex probe configurations
- ✓ Designed for serial measurement on shop floor machines
- ✓ High end carbon fibre for high end machines

Product Presentation // MMZ CMM
Content

01 The portfolio

02 The application

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

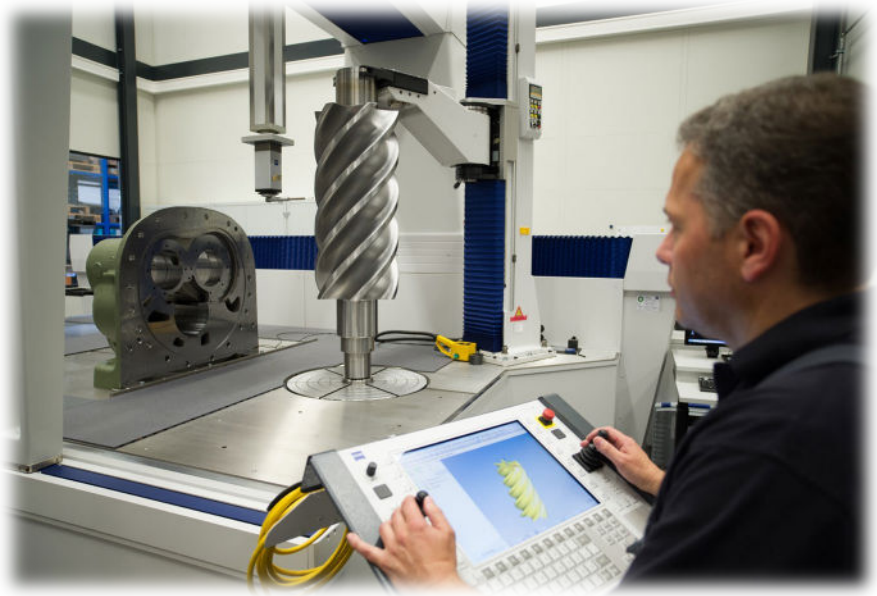
06 Software

MMZ Overview
The Rotary Tables

Rotary table as an optional addition

Technical explanation and example

ZEISS rotary tables provide an additional axis, which simplifies the measurement of rotationally symmetrical or prismatic workpieces, enables the use of simple probe combinations and extends the available measuring range.



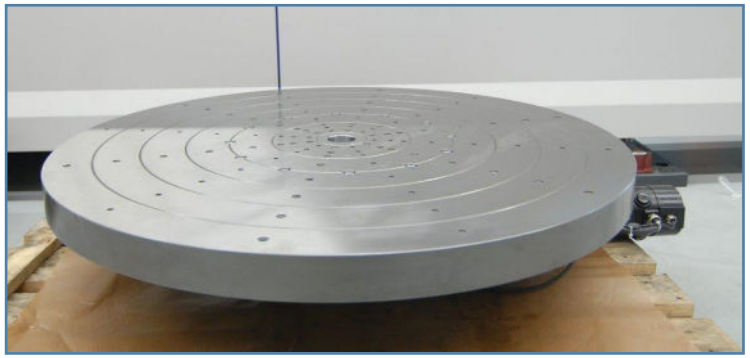
How you benefit

- ✓ Shorter makeready times, more flexibility and productivity
- ✓ Cost savings due to fewer and simpler stylus configurations (fewer adapter plates)
- ✓ Small positioning error
- ✓ The effective measuring volume of coordinate measuring machines is increasing
- ✓ Shortened "driving distances" lead to a reduction in temperature influences
- ✓ Part programming is simplified

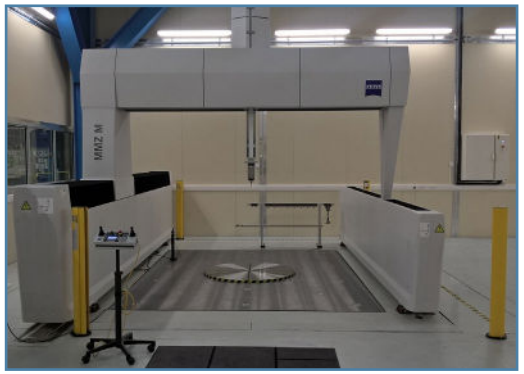
MMZ Overview
The Rotary Tables

Actual: RT-RB-3000 - size of surface plate 1000 mm /1300 mm / 1500 mm - Load capacity upto 3000 kg	**Available for MMZ T/M/G**	**Actual no rotary table available for MMZ 1 table**
• Set-up • Integrated into baseframe		
• Set-up • Integrated into foundation or measuring plate	 	

RT-RB-3000-1	601050-9005-000 Integrated	601050-9005-710 Surface mounted		MMZ T/M/G
Rotary table	601050-8050-000		With Heidenhain RON886 (incremental measuring system)	
Electronic kit	in STRG			
Option "Clamping elements"	601050-8000-000			
Option "Covers"	-	601050-8001-000		
Faceplates in price list	627202-3828-000 1000 mm		1000 mm, 370 kg	MMZ T/M/G
	627202-3491-000 1300 mm		1300 mm, 625 kg	MMZ T/M/G
	627202-3639-000 1500 mm		1500 mm, 840 kg	MMZ T/M/G
Mounting plate on steel (price list)	--	627202-2529-000	on the measuring table of the MMZ T, on the clamping plate of the MMZ M/G	MMZ T/M/G
Mounting plate on concrete (price list)	~~627202-3698-000~~ 601050-8002-000	~~627202-3698-000~~ 601050-8002-000	Installation in a foundation hole, construction on the concrete surface of the foundation	MMZ M/G
Rotary table preparation of base frame(price list)	627202-9799-001		Installation of the rotary table in the MMZ T measuring table	MMZ T



RT-RB-3000 before delivery



RT-RB integrated into measuring plate

MMZ Overview
The measuring plate

Leveled, clean support surface for the workpiece

Top plate, consisting of 50 mm steel plate

Substructure made of gray cast iron

Requirement-specific fixing

Flatness according to DIN 876 / II

T-slots, threaded holes for mounting workpieces

Load capacity with 4 t / m^2

✓ **Only for MMZ M and MMZ G usable**

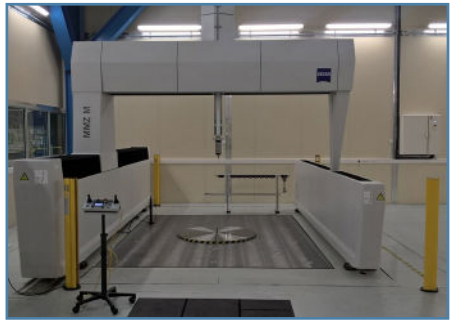
Delivery and installation made possible by ZEISS!

Possibility of installation 1:

- Without measuring plate
- Workpiece and clamping stands directly on the foundation

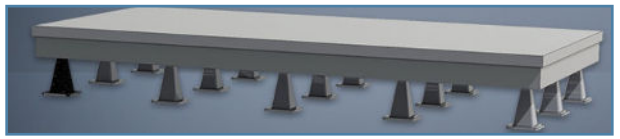
Possibility of installation 2:

- Measuring plate is installed in the foundation on adjustment anchors



Possibility of installation 3:

- Installed directly on the floor
- Step at the back and front is created
- A kick guard should be provided on the side of the machine



Produkt Präsentation // ZEISS MMZ G
Inhalt

01 The portfolio

02 The application

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

06 Customer benefits and installation examples

MMZ Overview

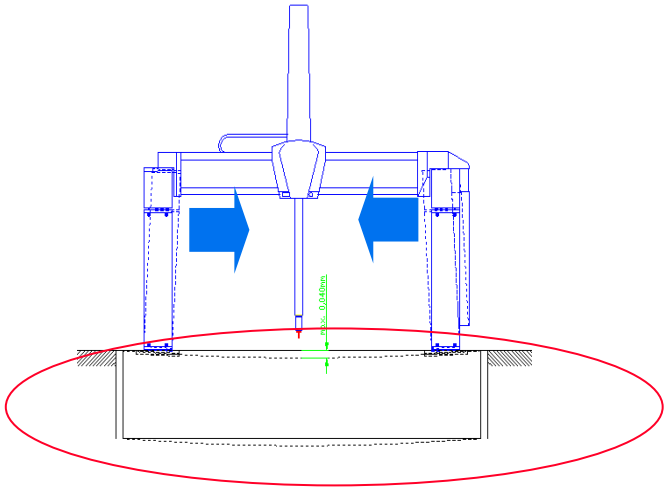
To the foundation – what do changing loads do?

Effects of workpiece / clamping device / loading system

The **changing** weight affects the geometry of the foundation block and consequently of the coordinate measuring machine.

The consequences:

In the case of measuring instruments without a common rigid base, the right and left guide sides incline inwards.

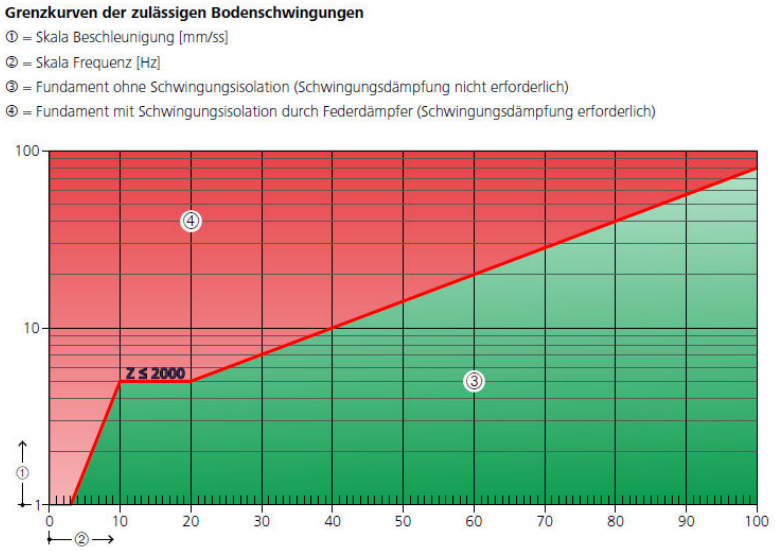


Effects of vibrational exciters

Cranes, forklifts, milling machines, etc. guide vibrations to the CMM.

The consequences:

- Scattering in the measurement results.
- Mechanical excitation of the CMM



MMZ Overview
The requirements for the foundation?

Subsoil and Foundation Requirements

In the gantry model range, the **foundation is integrated in the overall concept** as an integrated mechanical component.

The calculation and planning of the foundation is performed by experts authorized by Carl Zeiss to ensure compliance with the technical data.

The properties of the subsoil must be known before the foundation is planned.
For this purpose, the coefficient of subgrade reaction must be known or a geological expertise must be provided.

The excavation pit floor must be a bedding module of **10 MN/m³.**
The permissible soil pressure is min. **250 kN/m²**
If none of these values special foundation measures are required.
This can be a pile foundation or a soil replacement. (Monitoring by geologists).

In the first few years after completion, concrete foundations and structures are subject to a shrinkage process that manifests itself as shortening, bending and torsion.
For this reason, within the first 3 years after the construction of foundations, an increased readjustment or recalibration effort is to be expected in order to be able to operate the CMM with the basic accuracy offered.

Readjustment or recalibration is recommended once a year.

Carl Zeiss Industrielle Messtechnik GmbH therefore assumes no liability for defects that are based on a shrinkage process or similar cases mentioned above. In such cases, the readjustment is subject to a fee.

MMZ overview

Which device needs a foundation?

Foundation necessary:

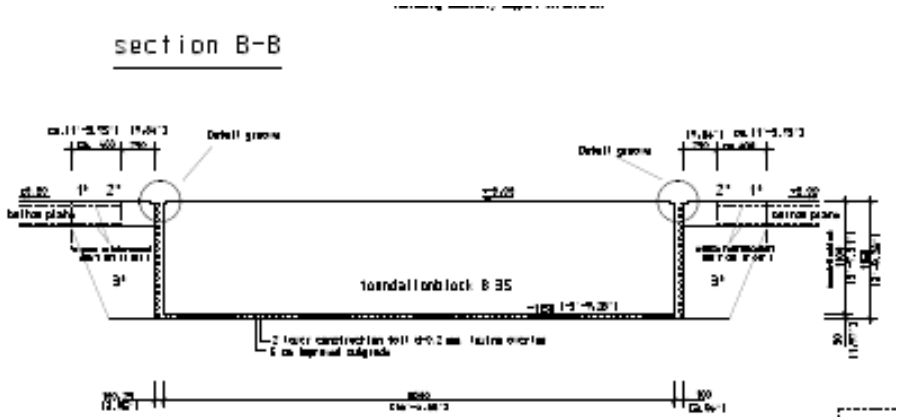
Foundation not necessary. (*)

* Prerequisite:
The floor must be designed to support the weight of the machine including workpiece. In any case, the permissible soil parameters must be checked!

MMZ Overview

The foundation and the distinction?

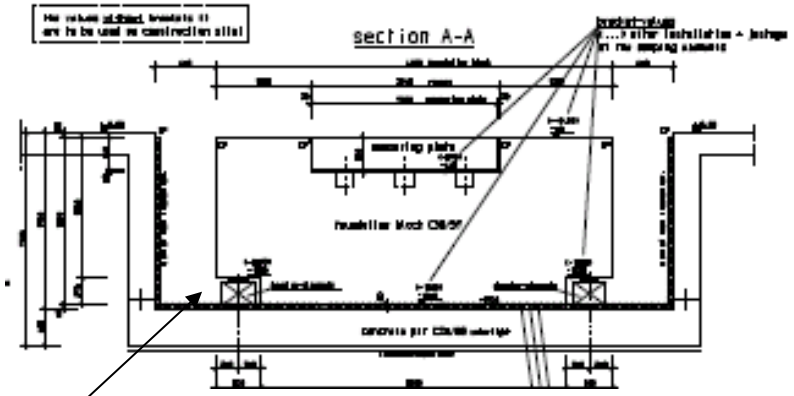
No vibration iolation present:



Consists of:

- ✓ Construction site equipment
- ✓ Excavation
- ✓ Foundation block including steel reinforcement

Vibration-isolated foundation:



Consists of:

- ✓ Construction site equipment
- ✓ Excavation
- ✓ Foundation block including steel reinforcement
- ✓ Foundation pit including steel reinforcement
- ✓ Vibration isolators

MMZ Overview

The foundations – which ZEISS variants are available?

foundations are the basis for ensuring precision.

The ZEISS solution:

- ✓ **Is always a customer-specific solution.**
- ✓ No standard, so in every project the minimum necessary solution can be realized.
- ✓ Supported by ZEISS Product Manager
- ✓ Supervised by ZEISS Project Manager
- ✓ Provision of the implementation planning by Zeiss

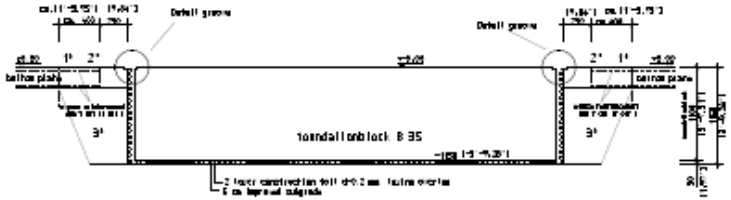
ZEISS guarantees the specification of the measuring CMM during the construction of the foundation in accordance with the ZEISS plan sets.

1. No foundation is needed

After checking the statics, the CMM is installed directly on the floor. **This is very rarely possible.**

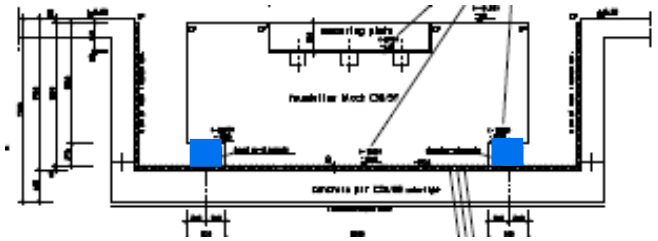
2. Non-vibration-isolated foundation

The CMM is installed directly on the Foundation block installed.



3. Vibration-isolated foundation

Consists of a foundation pit with vibration isolators and a Foundation block.
steel springs or air springs as vibration isolators



MMZ Overview

The possible insulation systems?

Isolation material	Vibration isolation (Steel springs)	Vibration isolation (Pneumatic springs)
▪ Machine foundation supported by polyurethane elastomer plates. ▪ Plates completely cover the foundation, in stripes or spread out at specific points.	▪ Machine foundation supported by spring elements and Visco dampers. ▪ Elements configured through underlay of fabric pads or steel plates of varying thickness.	▪ Machine foundation supported by pneumatic insulators. ▪ Level control enables the machine to always remain at the same height. ▪ Elements configured through underlay of fabric pads or steel plates of varying thickness.
▪ **ZEISS does not use this design. Too expensive and not maintainable. Not tested in combination with the CMM's**	▪ **ZEISS standard design when vibration isolation is needed**	▪ **ZEISS design when vibration isolation is needed and part loading on heavy carriages is used**

MMZ Overview

The foundation variants in comparison?

Foundation type (Damper)	No foundation	No vibration isolation	Vibration isolation (Steel spring)	Vibration isolation (Air spring)
Cost	*cheapest*	+	++	+++
Effektive isolation	*No*	- - -	++	+++
Pit needed	*No*	*No*	*Yes*	*Yes*
Block needed	*No*	*Yes*	*Yes*	*Yes*
Damping elements needed	*No*	*No*	*Yes, steel spring*	*Yes , air spring*
Level adjustment	*No*	*No*	*No*	*Yes, automatically*
Part loading with carriages and heavy weight	*Yes*	*Yes*	*Attention*	*Yes*
Price / Performance			Best price / performance ration	

MMZ Overview

The foundations – safe approach!

Offer phase → Budget phase

Accompanied by ZEISS Product Manager

Cost calculation of a suitable foundation

+ Foundation sketch of the MMZ with external dimensions
+ Determine steel quantity and their cross sections
= Basis for querying the foundation costs
at construction companies by prospective customers.

Alternative 1: Budget calculation by product manager based on German architect database
Alternative 2: Creation of a service specification for Mass determination by ZEISS

Price of a vibration isolation

+ Request workpiece and fixture weights
+ Loading concept description to select the appropriate solution
= Information on the pricing of vibration isolation by ZEISS (Product Manager).

Project phase → Implementation phase

Accompanied by ZEISS Projekt Manager

Design planning

+ Provision of formwork, reinforcement plans, steel lists
possibly the statics by ZEISS commissioned structural engineer
= Implementation planning for the construction of the foundation by a suitable contractor commissioned by the customer

Best price-performance ratio as no surcharge is necessary!

Vibration isolation

+ Delivery and installation of the spring elements during the CMM installation by ZEISS

More details, as well as foundation sketches and calculations → juergen.dussling@zeiss.com

MMZ Overview
How is the required foundation determined?

Step 1: Perform the vibration measurement

Decides whether vibration isolation is needed or not.

Specifies the foundation type.

Step 2: Information about the maximum load change

Decides whether a foundation block is needed or the existing floor slab is sufficient.

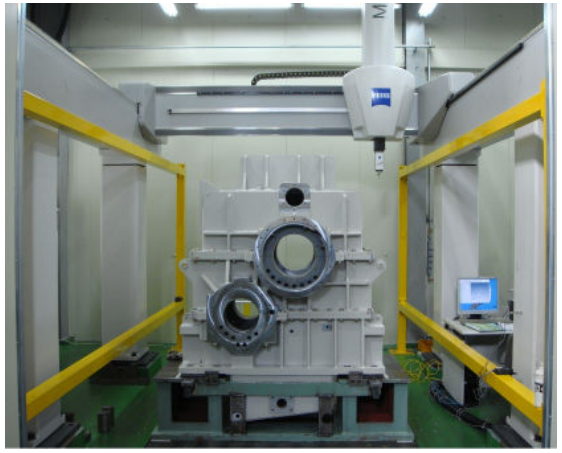
Needed to calculate the thickness of the foundation block.

Step 3: Further information needed to determine the type of foundation

- Geological data of the installation area. (Soil characteristics)
- Layout information. (Location of all components)
- CMM specifications such as size, type...
- Information on the loading concept.

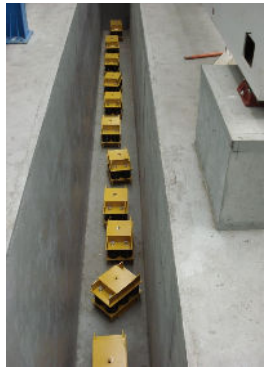
MMZ Overview
The Foundation Example!

Foundation without vibration isolation



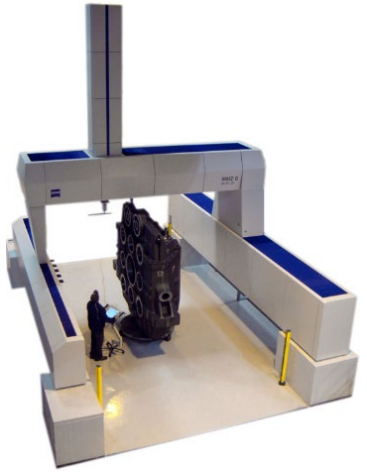
Foundation with vibration isolation

Foundation pit



Steel springs

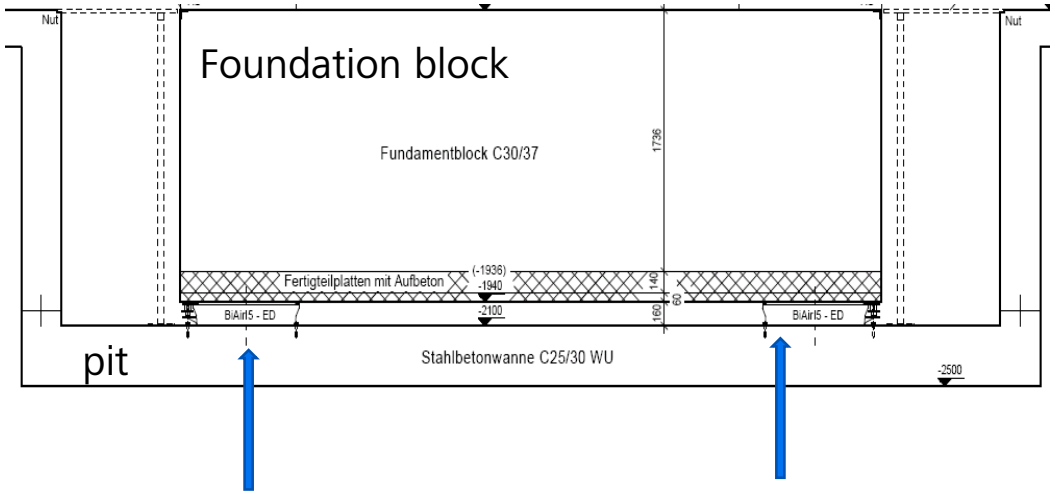
Foundation block and foundation pit



MMZ Overview

The Vibration Isolated Solution – Example!

Air spring isolation.

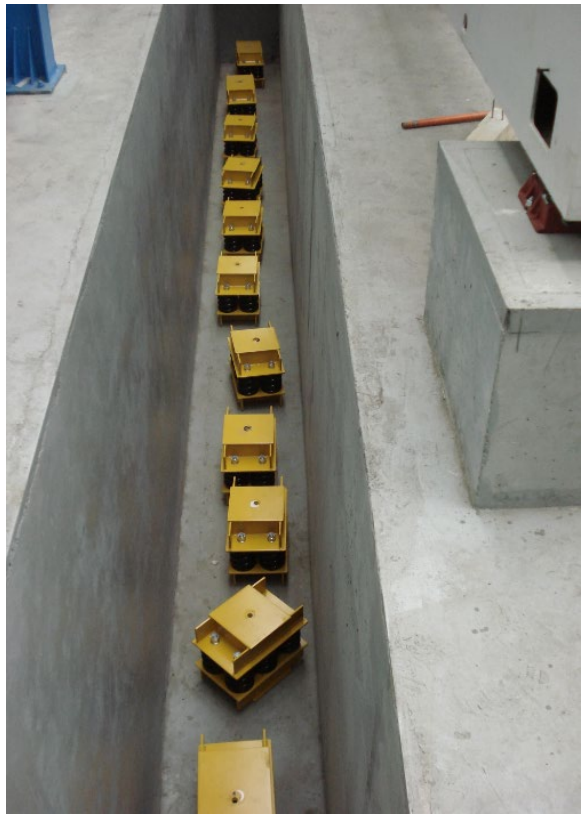


Air spring

Steel spring isolation.

Foundation pit

Foundation pit and foundation block



Steel springs

MMZ Overview

Air spring insulation – pay attention to the production!

Provides a pad for precast panels
Protects the air spring in the event of compressed air failure

Course of the construction project:

1. Construction of the foundation pit
2. The bottom of the pit must be very flat and should therefore be smoothed out on the impeller.
3. Setting of the steel girders including their leveling. Adjust the height according to the foundation plan. All beams must be at the same height.
4. Now the correct basis for further construction of the foundation has been created and construction can be carried out according to the foundation plans

Represents a flat surface on the Range of damping element as well as in the entire pit floor Available.

Product Presentation // MMZ CMM
Content

01 The portfolio

02 The application

03 The measuring heads, sensors

04 The rotary tables and measuring plates

05 The foundation and vibration isolation

06 Customer benefits and installation examples

MMZ Overview

Your advantages with ZEISS

Accessories

Systems, Service

ZEISS Quality

Performance and precision through system integration

Probehead

Software

MMZ Overview

Your advantages with ZEISS

How you benefit

- Hundreds of systems installed across the globe
- ZEISS know-how & application technicians available globally.
- Service & support very close to the customer means fast reaction times.
- Less downtime and more security.

MMZ Overview
Your advantages with ZEISS

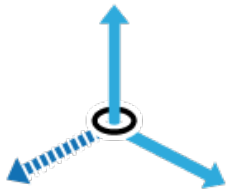
Technical details and example

- ZEISS CALYPSO enables a consistency and compatibility across all ZEISS CMMs with additional features like ZEISS GEAR PRO measurements.
- Operate various ZEISS CMMs with one training.

How you benefit

- Cost saving because of fewer training hours.
- More efficient operation thanks to a familiar user interface.
- A CNC will run on different ZEISS CMMs immediately.
- Optimized software for specific applications.

CALYPSO



ZEISS CMMs

ZEISS X-Ray

ZEISS Sensors

MMZ Overview
Your advantages with ZEISS

Precision even with large measuring volumes

✓ Rigid machine design. Visible in the very small scanning error

✓ Bearing technology designed for low cost of ownership and longevity

✓ VAST scanning technology for high repeatability and accuracy!
Visible in small dimensional deviations.
(Also without special gage calibration.)

MMZ Overview
Your advantages with ZEISS

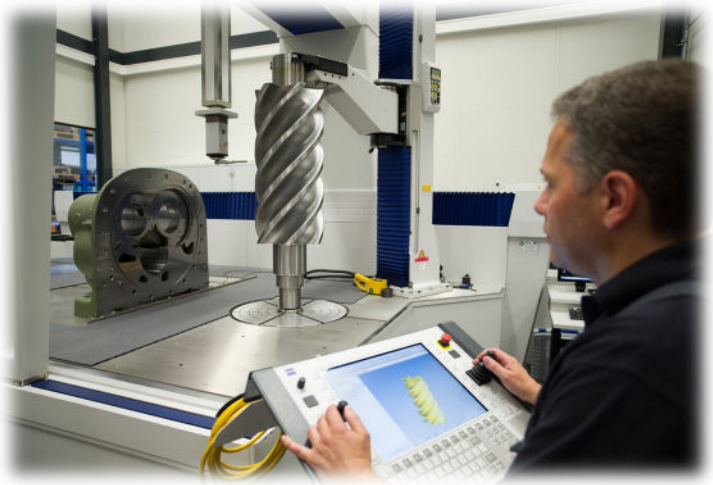
Flexible in use

- ✓ REACH CFX® 3,MMZ for use with very long stylus extensions for measuring low-lying features
- ✓ Bearing technology designed for low cost of ownership and longevity
- ✓ Integration into automation systems by using the CALYPSO Automation measurement software and its AAI interface
- ✓ Simple, fast and structured operation of the intelligent object-oriented measuring software CALYPSO.

MMZ Overview
Your advantage with ZEISS

Effective utilization of the measuring volume

- ✓ Effective utilization of the measuring volume
- ✓ Integration of rotary tables as fourth measuring axis
- ✓ Full utilization of the measuring volume
- ✓ Full integration into the Scanning Software CALYPSO and their options
- ✓ Supply of tailstock for MMZ T for easy holding of shafts or rotors



MMZ Overview
Key characetistic

Long-term stability, variety of suppliers, high static and dynamic stiffness with low weight
- ✓ ZEISS stress relieved welded steel design
- ✓ Inherently stiff Y-beams to minimize foundation bending influences
- ✓ Less foundation requirement
- ✓ Vibration isolation within foundation design possible

Mechanical rigidity with robustness for precision
- ✓ Large bearing distance, large material cross sections
- ✓ Linear guides and recirculating ball guide shoes in all axes

User friendly - mass (multi application sensor system)
- ✓ Versatility, MASS system allows use of different Zeiss probe heads
- ✓ Active scanning with ZEISS VAST familiy
- ✓ Flexible scanning with ZEISS RDS VAST XXT family
- ✓ Laser Triangulation Scanner
- ✓ Optical white light sensor
- ✓ Roughness probe
- ✓ Ergonomical operator station
- ✓ Free view in measuring volume

Highest accuracy with optimum speed
- ✓ ZEISS VAST CALYPSO navigator-Technology
- ✓ ZEISS VAST CALYPSO performance
- ✓ Gradient Temperature compensation of scale in all axes
- ✓ Avoiding of material mix to make compensation easy
- ✓ Low an automatically controlled probing forces
- ✓ Dynamic probe calibration

Reach probe extension with smallest temperature influence
- ✓ REACH CFX® 3, MMZ for VAST (1200mm)

Operator and machine protection
- ✓ Kink protection for measuring head
- ✓ Light curtain around quill
- ✓ Light Curtain around measuring volume (MMZ M/G) Laserscanner (MMZ T)
- ✓ Safety position for bridge

Less lifecycle costs due to low maintenance intervall
- ✓ Inherently stiff y-beam only fixed on two bearing points on the floor
- ✓ No air consumption needed

Seeing beyond