

Leitz Reference line

High-precision coordinate measuring machines and gear inspection systems

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CMM

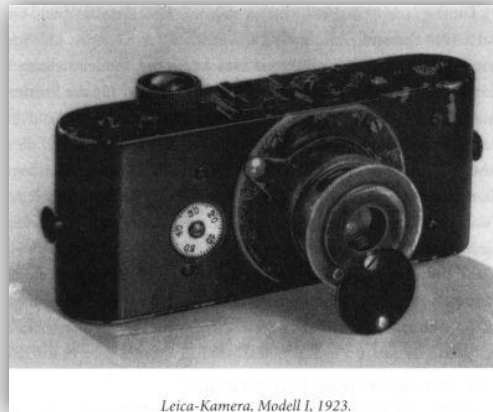
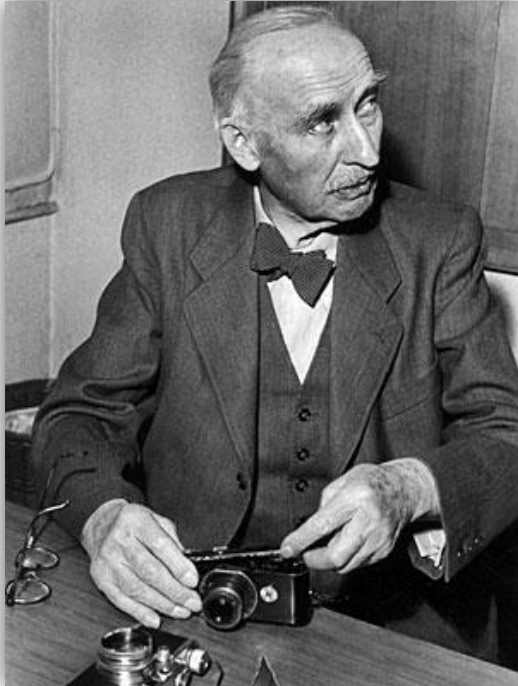


Accessories



Software

Leitz: Origin of Leitz Metrology



Leica-Kamera, Modell I, 1923.



Die Optischen Werke Ernst Leitz GmbH in Wetzlar, 1943.
Auf den Fahrstuhltürmen standen zu dem Zeitpunkt 2cm-Fliegerabwehrkanonen.

1869: Ernst **Leitz** takes over the Optische Institut and calls it Ernst Leitz.

1925: Leitz starts serial production of the first 35 mm **Leitz Camera**

1990: Brown & Sharpe buys IMT division; 1994 renamed to Leitz Brown & Sharpe

2003: Part of Hexagon Metrology; 2005: Re-establishing of Leitz brand

Productportfolio

Productportfolio

Large Components (94m³)
PMM-G/F

Highest Precision (0.3 – 0.6μm)
Infinity, Ultra,
PMM-C, PMM-Xi

High Precision Line (0.9μm)
Reference
(HP/XT/Xi/Xe)

High End Shop Floor (4 Axes)
SIRIO (SX/BX)



Leitz Reference HP – Xi – XT



What matters in quality assurance and production is the efficiency of the machines.

All the models in the Leitz Reference series are economic scanning measuring machines for solving complex measurement tasks.

They guarantee reliability, high throughput and high accuracy – measuring in all dimensions.

Leitz Reference HP – Xi – XT

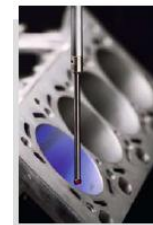


Three units in one – the best price/performance ratio

Coordinate measuring machine

Universal measuring device for high-precision checking of all types of geometries.

High-precision measurements for R&D, production and quality centres.



Gear inspection system

For medium-sized and large gearwheels with diameters of up to 1,175 mm and for tooth segments and any type of cutting tools. No rotary table required



Form validation machine

Quality control of industrial form tolerances (sphericity, cylindricity, flatness, straightness, profile form and 2D / 3D surfaces)



Leitz Reference HP – Xi – XT



Leitz Reference HP: Specialising in high performance.

Complex applications in particular depend on achieving very low levels of measurement uncertainty. Coordinate measuring machines of the Leitz Reference HP **(High Precision)** series are the right choice in this situation. They combine high accuracy with optimum measurement throughput.



Leitz Reference Xi: Economic all-rounder with sophisticated Leitz technology.

The outstanding Leitz scanning performance is again a feature of the new Leitz Reference Xi series. These series also appeal because of their wide range of different probe head systems.

The Leitz Reference Xi name says it all – "Xi" stands for "fleXible".

Leitz Reference HP – Xi – XT

Leitz **Reference XT**:

Economic all-rounder with sophisticated Leitz technology.

In addition, the Leitz Reference XT is also leading in terms of temperature resistance: within the **eXT**ended temperature range of 15 to 30 degrees Celsius, the Leitz Reference XT measures reliably thanks to its temperature compensation system. Indispensable for measuring in a production environment.



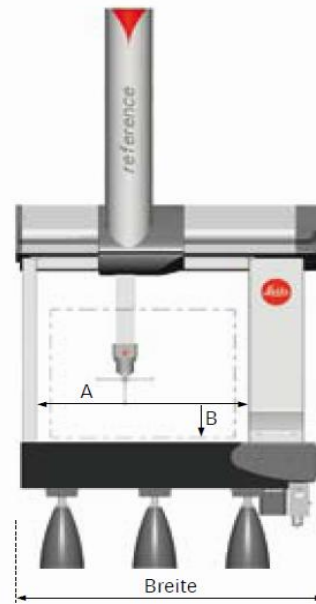
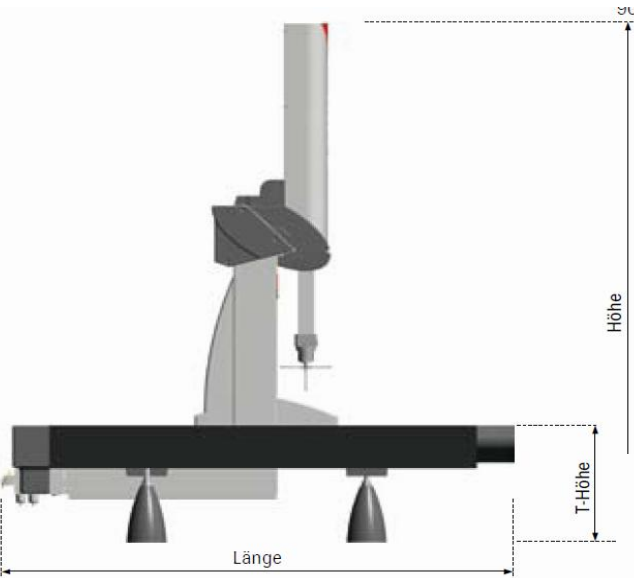
Leitz Reference HP – Xi – XT

Wide performance spectrum

- The universal Reference line measuring machine is offered in the HP & Xi & XT series.

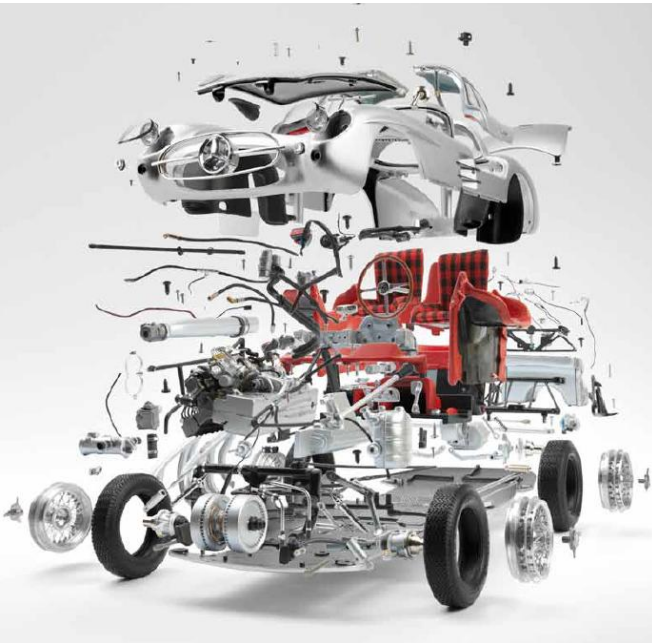
- Reference line measurement range

5.4.3	500 x 400 x 300mm
10.7.6	1000 x 700 x 580mm
15.9.7	1500 x 900 x 700mm
20.9.7	2000 x 900 x 700mm
22.12.9	2200 x 1200 x 900mm
30.12.9	3000 x 1200 x 900mm
45.12.9	4500 x 1200 x 900mm



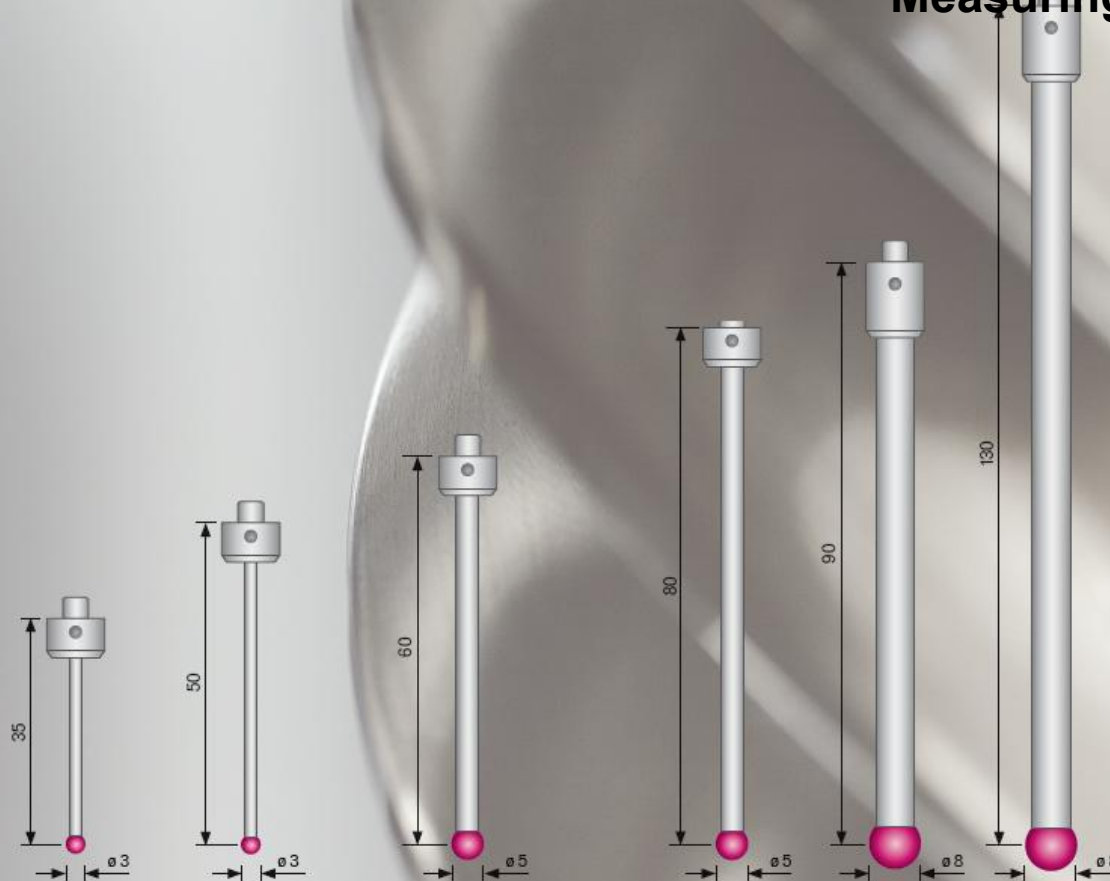
Leitz Reference HP – Xi – XT

Variety of applications.



Leitz Reference HP – Xi – XT

Measuring system specifications

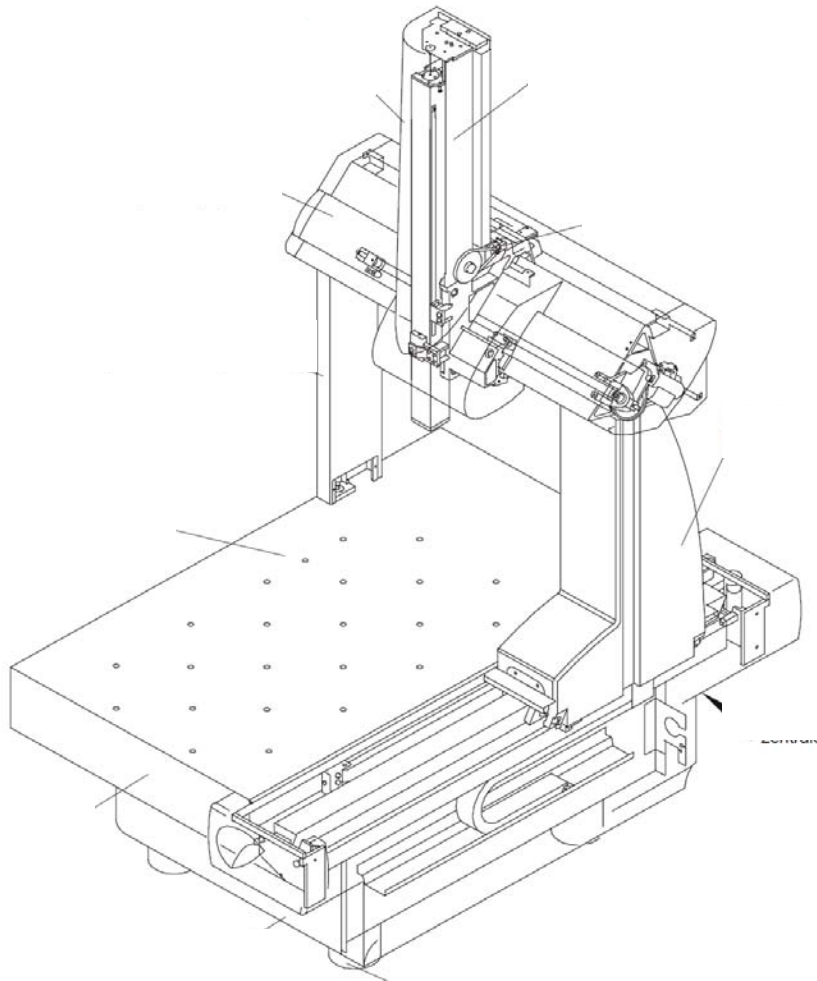


Spezifikationen von Leitz KMGs gelten für alle Leitz Taster von $\varnothing 3 \times 35$ mm bis zu $\varnothing 8 \times 130$ mm.

**For the Reference,
the same accuracy
details (E and P)
apply as for all
Leitz probes from
the standard set.**

Scale 1 : 1

Leitz Reference HP – Xi – XT



Thought-out design – Clever construction

Mobile gantry with particularly rigid light metal frame

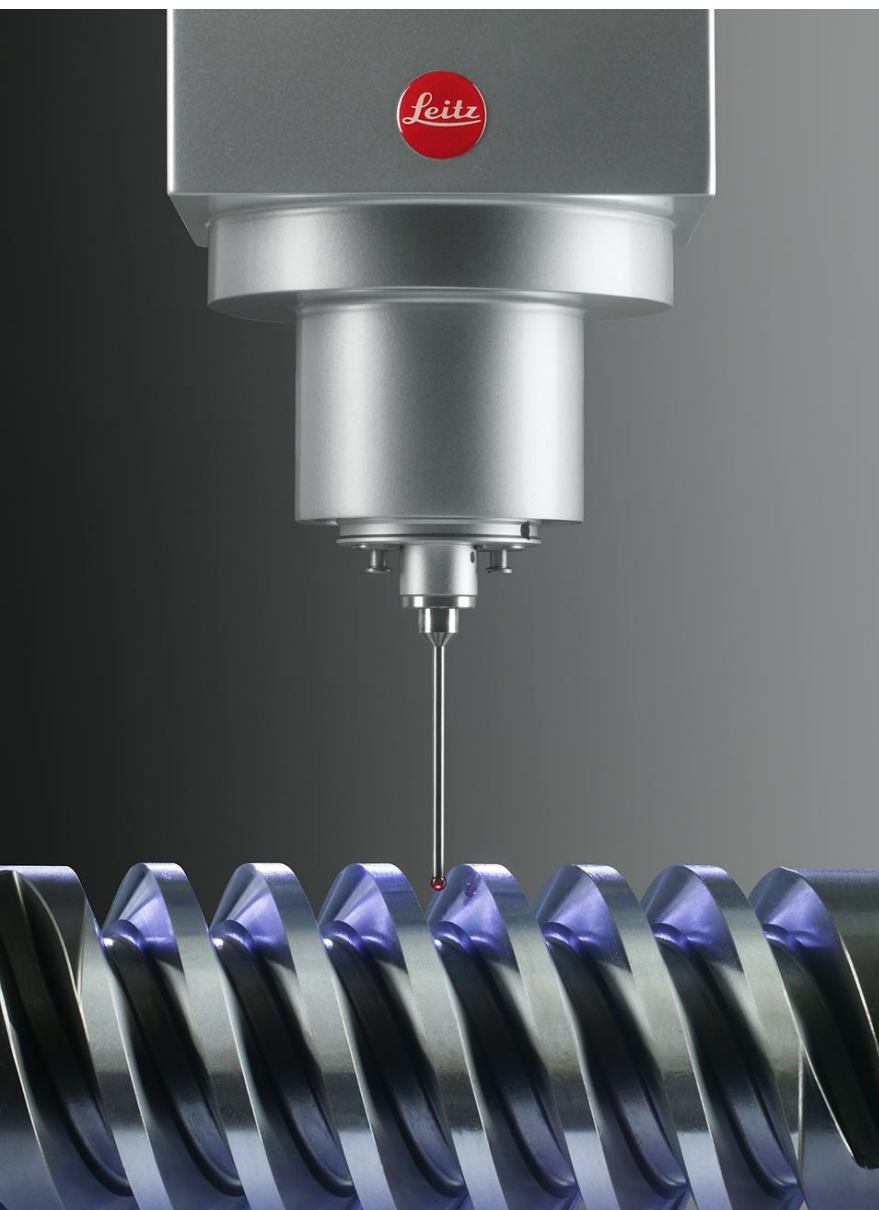
The patented TRICISION™ gantry design provides an optimum rigidity/mass ratio to achieve unique precision and long-term stability.

The granite table has been made from one piece. Patented dovetail guides have been inserted with top precision.

Patented weight compensation for the Z spindle.

High-performance servo motors with electronic drive monitor.

Leitz Reference HP – Xi – XT



High-precision sensors

The probe heads of the LSP-S & X series which are used in the Leitz Reference coordinate measuring machine were developed with high-precision sensors for fast and accurate measuring.

The LSP-S & X series offer the following functions:

- dynamic single-point probing
- self-centering probing
- variable high-speed scanning
- self-centering scanning

The probe head has a measuring touch probe system. All axes of the touch probe system are unrestrained during measuring. This makes it possible to use the touch probe system to measure a part surface in any orientation in space, from any measuring position with consistent accuracy.

Leitz Reference HP – Xi – XT

High-precision sensors



Reference HP (LSP-S2)



Reference HP 5.4.3 (LSP-X3)



Reference Xi & XT
(LSP-X3 & X5 / Tesastar + LSP-X1)

Leitz Reference HP – Xi – XT

High-precision sensors – very long probes

Performance data



Leitz LSP-S2



Leitz LSP-X5



Leitz LSP-X3

Max. probe weight	1000g	500 g	150 g
Max. probe length	800mm	500 mm	360 mm
Scanning / VHSS	Y, Y	Y, Y	Y, Y
Probing frequency	40/min	35/min	35/min
Data rate (scanning)	1000pts/sec	1000pts/sec	1000pts/sec
Collision protection	Yes	Yes	Yes
Measuring force	0.1 to 1.2 N, for continuous selection	0.1 to 1.2 N, for continuous selection	0.1 to 0.6 N, for continuous selection

Leitz Reference HP – Xi – XT

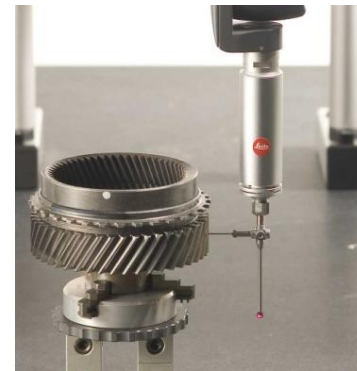
High-precision sensors – very long probes



Leitz LSP-X1

Performance data

Max. probe weight	33 g
Max. probe length	Axial 20 – 225 mm Laterally up to 50 mm
Scanning / VHSS	Y, Y
Probing frequency	35/min
Data rate (scanning)	1000pts/sec
Collision protection	Yes
Measuring force	1.2 N



Leitz Reference HP – Xi – XT

Performance data

Head

Motorised indexable turning
and swivel head

Connection interface

TKJ "Tesa Kinematic Joint"

Angle steps

5° 7.5°

Number of positions

2,952

Repro. of positions

0.5 µm

Torque

0.6 Nm

Length

70 mm

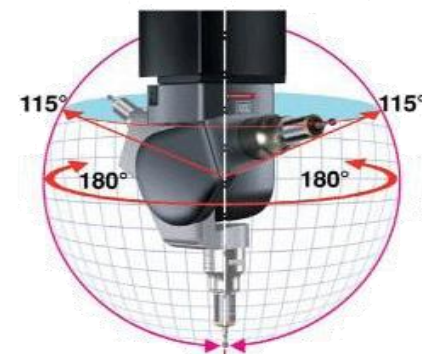
A angle

+90° to -115°

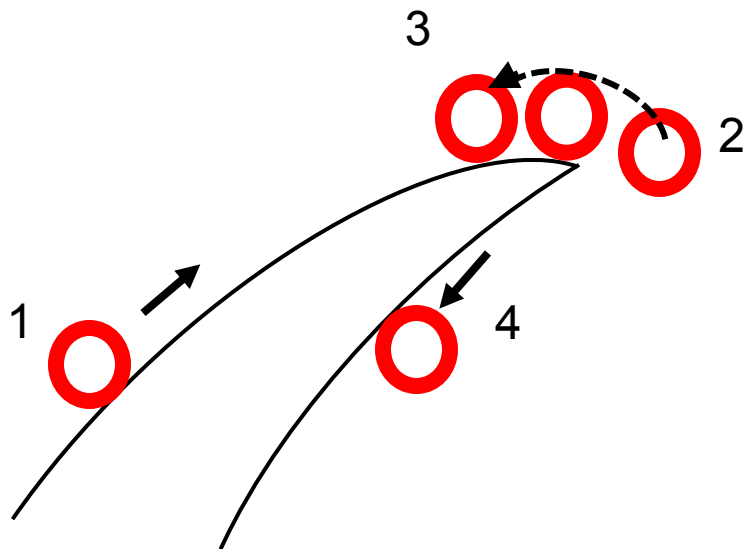


Tesastar-m

High-precision sensors – very long probes



Leitz Reference HP – Xi – XT



Scanning - ScanCatch

1. Scanning a known contour
 2. After losing contact
 3. ScanCatch goes back to the last position with correct immersion depth and continues from there (with reduced speed)
 4. Accelerates to resume high-speed scanning
- ➔ Important for pallet measurements and BLISK measurements



Accessories

Leitz Reference HP – Xi – XT



The Reference temperature sensor (replaceable)

Replaceable temperature sensor (optional)

makes it possible to carry out automatic part temperature measuring. The temperature sensor is automatically or manually changed using a special probe stylus mount.

This is held at the Leitz probe head by a spring-tensioned gripper which is pneumatically operated.

The angle position can be adjusted to suit.

Several temperature probes can be used in different positions.

The temperature probe is deposited in the probe depository.

Leitz Reference HP – Xi – XT



Leitz rotary tables, iRT & oRT

- Table diameter up to 600mm
- Permissible table load up to 550 kg
- 3-point bearing for unambiguous measurements
- long-term precision through separating the structural part from the metrological part
- thermally symmetrical design prevents temperature from affecting the accuracy of the table
- the parts pallet can be adapted to customer requirements.

Leitz Reference HP – Xi – XT



Leitz rotary tables, iRT & oRT

Versions

oRT: "On top" version, removable

iRT: integrated into the machine table

Dimensions

	oRT / iRT2	oRT / iRT4
Table diameter	185 mm	415 mm
Permitted table load (centrally applied mass)	50 kg (optionally 90 kg)	250 kg
	oRT / iRT6	
Table diameter	600 mm	
Permitted table load (centrally applied mass)	550 kg	

Leitz Reference HP – Xi – XT

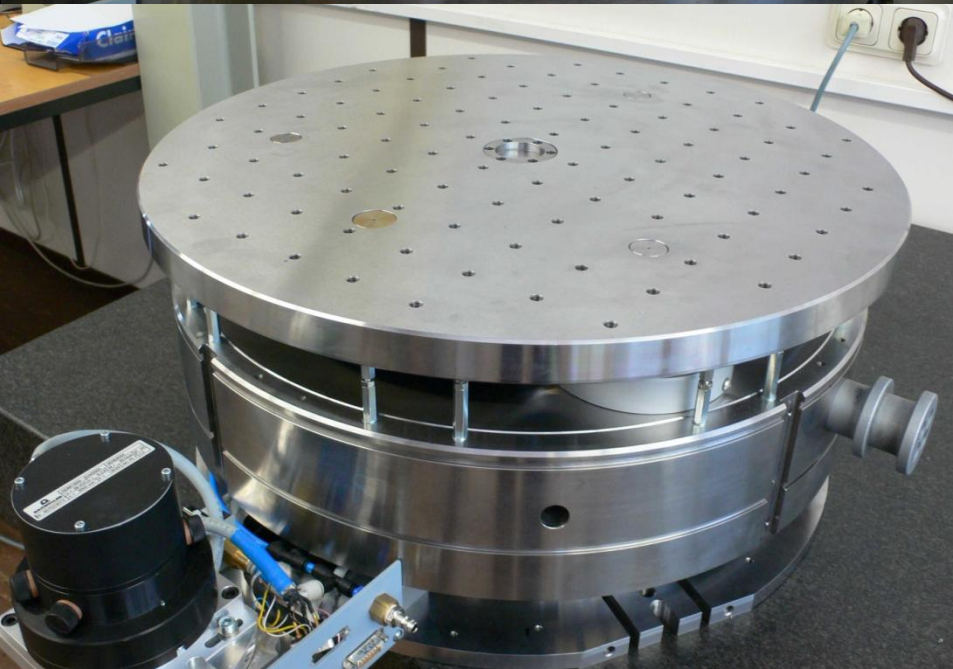
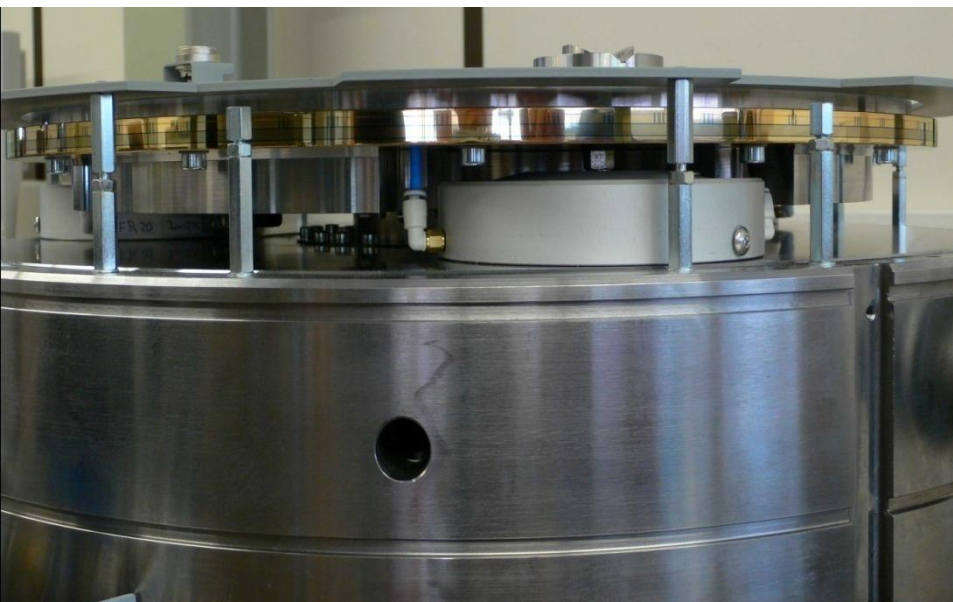


Leitz rotary tables, iRT & oRT

As an option, the **Reference HP** and **Reference Xi** can be fitted with rotary table as per the Table.

Reference HP & Xi	oRT 2	iRT 2	oRT 4	iRT4	oRT 6	iRT 6
5.4.3	X	X				
10.7.6	X	X				
15.9.7			X	X		
20.9.7			X	X		
22.12.9			X	X	X	X
30.12.9			X	X	X	X
45.12.9			X	X	X	X

Leitz Reference HP – Xi – XT



Leitz rotary tables, iRT & oRT

- High-precision angle measuring system with a resolution of 0.035 angle seconds.

- Max. revolutions

oRT / iRT 2

3 revolutions/min

oRT / iRT 4

12 revolutions/min

oRT / iRT 6

8 revolutions/min

- Mass moment of inertia

oRT / iRT 2

5 kgm²

oRT / iRT 4

15 kgm²

oRT / iRT 6

20 kgm²

Leitz Reference HP – Xi – XT



Reference probe change stand

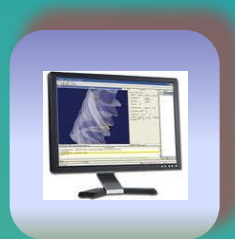
TravelRack

The TravelRack with the magazine spaces is attached at the left-hand gantry support.

- On in combination with Tesastar & LSP-X1
- Change of probes at any desired position
- Shorter probe changing times
- No restriction of the measurement volume

The automatic probe changer is equipped with 3 deposit stations and 3 mounts as standard.

Additional deposit stations can be added as an option.



Software

Leitz Reference HP – Xi – XT



Quindos



PC-DMIS

Intelligent software

The entire system is rounded off with intelligent, comprehensive software.

Two versions are available:

QUINDOS or PC-DMIS.

Both systems are user-friendly and CAD-based and ensure efficient programming as well as highly efficient evaluation of measured data.