ZEISS Rotary tables

Specifications

ZEISS

Seeing beyond

Version: 2020-05

Rotary tables extend the range of applications and simplify the measuring procedure

ZEISS rotary tables provide an additional axis, thus simplifying the measurement of rotationally symmetric or prismatic workpieces, and allowing the use of simple stylus combinations and extending the available measuring range.

Rotary tables are primarily used for the measurement of rotary parts featuring periodically recurring geometries such as gear wheels, gear hobbers, rotors and impellers. They simplify and accelerate the measurement and can simultaneously increase accuracy. Another field of application is form measurement of camshafts and crankshafts by scanning.
They are also highly beneficial when it comes to measuring prismatic workpieces:

More efficient work with rotary tables.

Shorter set-up times, more flexibility and productivity:

- the effective measuring volume of the coordinate measuring machines (CMMs) increases
- stylus configurations become easier
- parts programming is simplified
- fewer stylus systems are needed
- travel paths are shorter leading to a reduction of temperature influences

Complete integration into measuring software.

The rotary table functions are fully integrated into measuring programs in the basic ZEISS software:

- set to angular positions or rotation at constant speeds
- mathematical correction of all alignment errors
- scanning with rotary table

Measuring convenience through computer-guided range of functions.

Computer guidance is provided for a large range of functions:

- positioning to the rotary table zero point
- positioning and zeroing of the angle measuring system to any angle
- adjustment to any angular increment, positive or negative, absolute or incremental
- division of one table revolution into any number of parts
- with measuring probe: continuous rotation with probe contact and vectorial probing force generation, "scanning with a rotary table"
- integration into CNC measuring runs, including all necessary rotary table functions

Specifications

Overview

			ZEISS RT-RB-100-1[7]	ZEISS RT1	ZEISS RT2	ZEISS RT-AB
Design			Roller bearing	Roller bearing	Roller bearing	Air bearings
Installation on	Built-in		-	Standard	-	Standard
coordinate measuring machine	Surface-mounted		Standard	Option	Standard	Option
Drive system			Direct drive	Self-centering, spring-mounted friction-wheel drive	Self-centering, spring-mounted friction-wheel drive	Direct drive
Available torque		in Nm	3.6	20	160	20
Resolution: interpolated		in "	0.0012	0.18	0.18	0.0044
Protection type			IP 52	-	-	IP54

Dynamics

		ZEISS RT-RB-100-1[7]	ZEISS RT1	ZEISS RT2	ZEISS RT-AB
Max. angular velocity	in °/s	30	up to 45 [6]	up to 8 [6]	30 [1]
					50 [2]
Max. angular acceleration	in °/s²	100	50	11	100
Rotation speed	in 1/min	5	up to 7.5 [6]	up to 1.3 [6]	5
					8

Load/permissible moments

			ZEISS RT-RB-100-1[7]	ZEISS RT1	ZEISS RT2	ZEISS RT-AB
Maximum tilt moment		in Nm	20	100	400	40
Max. Loading (axial) [3]		in kg	100	600 [4]	2000	600
Max. mass moment of inertia [3]	J	in kgm²	2	20 [6]	200	20

Accuracy

			ZEISS RT-RB-100-1[7]	ZEISS RT1	ZEISS RT2	ZEISS RT-AB
Deviation of angular position	PW	in "	±1	±1	±1	±0.4 [5]
Angular position repeatability		in "	±0.5	±0.5	±0.5	±0.1
Axial runout		in µm	≤1	≤0.5	≤1	≤0.1
Radial runout (Measurement 50 mm over rotary table)		in µm	≤1	≤0.5	≤1	≤0.2 RT-AB ≤0.1 RT-AB select
Wobble		in "	≤1.4	≤0.7	≤1	≤0.4

1) With permissible mass moment of inertia of >8 kgm²
2) With permissible mass moment of inertia of <8 kgm²
3) Including faceplate
4) ZEISS CenterMax 250 kg
5) Applies to centric loading
6) Depends on CMM type
7) Only for ZEISS CONTURA date of manufacture > March 2020

Requirements for operational readiness

		ZEISS-RT-RB-100-1[3]	ZEISS RT1	ZEISS RT2	ZEISS RT-AB
Operating temperature		1°C - 30°C	5 °C - 35 °C	5 °C - 35 °C	5 °C - 45 °C
Installation position		vertical and horizontal	vertical	vertical	vertical
Relative humidity		40 % - 70 %	40 % - 70 %	40 % - 70 %	10 % - 80 %
Air pressure	in bar	-	-	-	5
Air quality		-	-	-	DIN ISO 8573-1, Class 1.4.2
Air consumption [1]	(l/min)	-	-	-	approx. 10

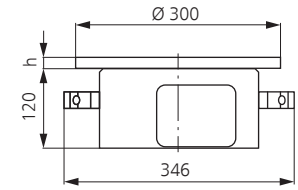
Rotary table dimensions, weight

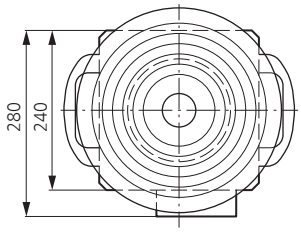
			ZEISS-RT-RB-100-1[3]	ZEISS RT1	ZEISS RT2	ZEISS RT-AB
Weight without faceplate	Fixed installation	in kg	-	85	345	56
	On-table	in kg	36	85	345	73

Faceplate dimensions, weight

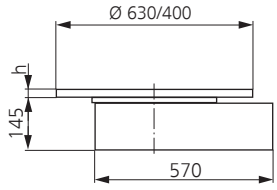
Diameter		in mm	dia. 300	dia. 300	dia. 400	dia. 630	dia. 1000	dia. 1300
Weight		in kg	9	12	22	58	262	429
Mass moment of inertia		in kgm²	0.1	0.2	0.5	2.3	31	87
Height	h	in mm	19	26	26	36 [2]	60	60
Use	ZEISS RT-RB-100-1[3]		■	-	-	-	-	-
	ZEISS RT-AB			■	■	■	-	-
	ZEISS RT1		-		■	■	-	-
	ZEISS RT2		-		-	-	■	■

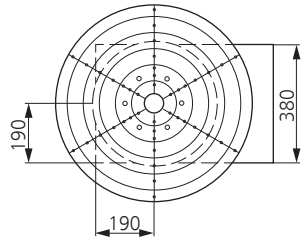
ZEISS RT-RB-100-1





ZEISS RT1





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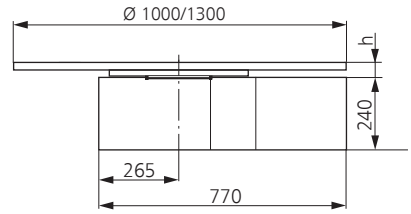
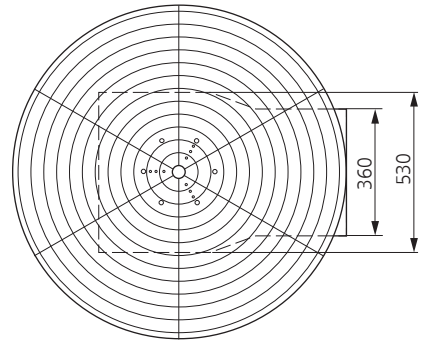
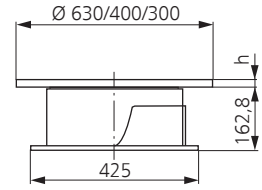
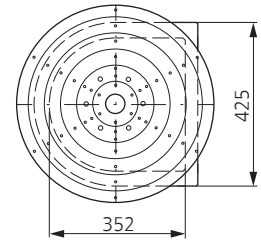




ZEISS RT-AB





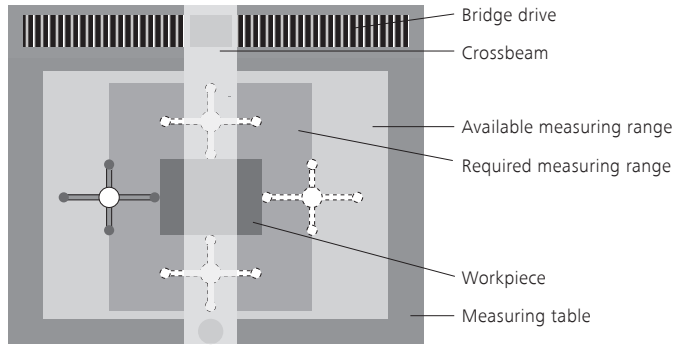
Note: the given dimensions and weights are approximate values. Subject to change.

1) Used air consumption V_n in norm liter.
2) RT1 with ø 630 mm faceplate: Height = 60 mm
3) Only for ZEISS CONTURA date of manufacture > March 2020

Rotary tables increase the usable measuring range and versatility of your coordinate measuring machine

Rotary tables enable better utilization of the available measuring range.

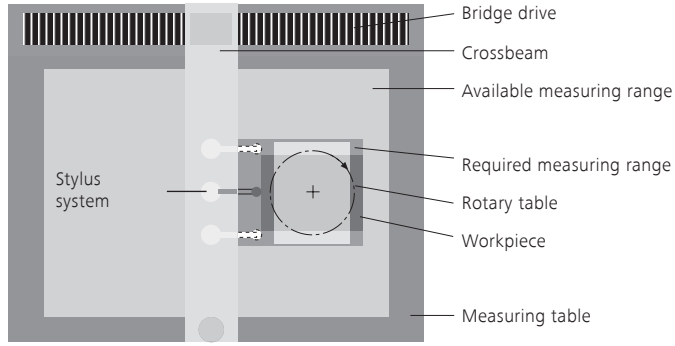
Voluminous styli systems are usually required to measure a workpiece from all sides without a rotary table (top right). This requires either a coordinate measuring machine with a relatively large measuring range, or measurement of relatively small workpieces only with the existing measuring range. A large portion of the measuring range is required to ensure collision-free movement around the workpiece.



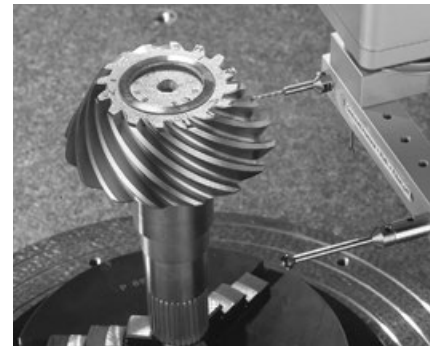
Measuring a workpiece without a rotary table requires a large measuring range.

The use of a rotary table delivers the following advantages (bottom right):

- Larger workpieces can be measured in relation to the available measuring range
- A significantly smaller measuring range is required
- A simple stylus system is sufficient
- The stylus system no longer needs to move around the workpiece



Using a rotary table drastically reduces the required measuring range.

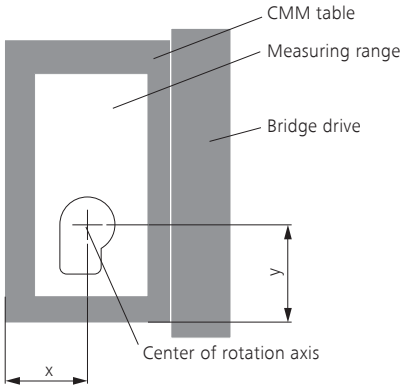


Standard installation positions for rotary tables

Standard installation positions exist for installed versions of rotary tables for the CMMs mentioned below.
The table plate can be prepared for later installation of a rotary table if the cutout is ordered together with the CMM.

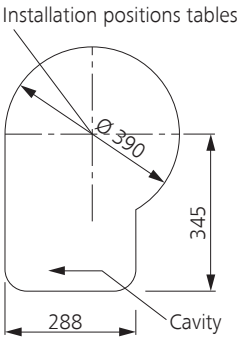
Standard positions have not yet been defined for additional CMM types and sizes.

It is not permitted to place any weight on, or clamp parts to, the area of the CMM table cutout or the rotary table cover.



Drawn in standard installation position (front cavity)

ZEISS RT-AB



ZEISS RT-AB: Standard installation position (material: granite)

		X x Y (mm)
ZEISS PRISMO ZEISS PRISMO verity	7/9/5 9/yy/7 12/yy/10 16/yy/10	527,5 x 370 605 x 370 780 x 521,5 942,5 x 521,5
ZEISS PRISMO ultra	7/10/5 9/13/7 12/yy/10	527,5 x 390 [1)] 605 x 390 [1)] 780 x 521,5
ZEISS PRISMO fortis	7/12/7 9/15/7 12/18/10	527,5 x 390 [1)] 605 x 390 [1)] 780 x 521,5
ZEISS ACCURA	9/16/8 12/yy/8 (10) 16/yy/10 16/yy/15 20/yy/15	755 x 577 905 x 577 1174 x 677 1174 x 677 1405 x 677

1) Installation position rotated 90° clockwise (cavity left)

EN_60_022_0329XIII Printed in Germany. CZ-X/2018
Subject to change in design and scope of delivery and as a result of ongoing technical development.
Printed on chlorine-free bleached paper.

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