
Calibration
system – an
optical reference



Particular requirements are placed on reference standards to calibrate optical measurement systems. Saphirwerk has developed materials and machining methods specifically for this purpose. The optical properties are excellent. Combined with the unique roundness accuracy of a Saphirwerk precision ball, it gets extremely efficient checking measurement standards.

TOPIC material – ideal for optical sensors in measuring devices.

Ball material	Comparison of sensors				
	Tactile	Laser	Image processing	Chromatic white light sensor	Light stripe projection
Alumina-ceramic (tactile measurement)	XX	●	X	X	●
TOPIC white	●	XX	XX	XX	XX
TOPIC black	X	XX	XX	XX	X

(XX = very good; X = ok; ● = not good)

TOPIC balls standard diameter (mm)

Deviation of roundness general max 500 nm

Ø mm	0.4	0.8	1	2	3	6	10	15	20	25	30	45	60
TOPIC white						X	X	X	X	X	X	X	X
TOPIC black	X	X	X	X	X	X	X	X	X	X	X		

TOPIC calibration ball on shaft

This shares the same design as a tactile calibration ball.



TOPIC calibration system "Arena"

This calibration system has been developed to test the dimensional accuracy of micro-coordinate measuring machines and is suitable for both optical and tactile systems.

By systematically arranging optically cooperative balls, the error parameters of the measuring device are calibrated by using distance measurements on a light-transmissive base.





TOPIC series
calibration
system "baseplate"

TOPIC calibration system "baseplate" – a series

A pair of balls of the same diameter is built onto a baseplate and available in different sizes. The optical measuring device calculates the distance between the centres of the balls and calibrates the measuring system.

Description	Model	Ball diameter	Distance between ball centres	Baseplate	Spare baseplate
D06_X20	TW	6	20	100 x 50	
D10_X30	TW	10	30	100 x 50	
D15_X50	TW	15	50	100 x 50	
D25_X75	TW	25	75	150 x 85	
D45_X120	TW	45	120	170 x 50	240 x 120
D60_X200	TW	60	200	300 x 50	400 x 200
D60_X320	TW	60	320	420 x 50	520 x 200
D60_X520	TW	60	520	620 x 50	720 x 200

TW = TOPIC white

The distance between the two ball centres is designed for long-term stability.



Other designs, such as "dumbbells", are available on request.

We would be delighted to draw up the right quotation for your particular application on request.



saphirwerk ●

swiss precision in ceramics

Saphirwerk AG • Erlenstrasse 36 • CH-2555 Brügg/Biel
Phone +41 (0)32 374 25 85 • info@saphirwerk.com
saphirwerk.com