Quality Organisation Professional Application Systems

NEWLY manufactured by Qopas GmbH, Germany

FORMERLY manufactured by Trapet Precision Engineering

...wenn die µ's Mühe machen...

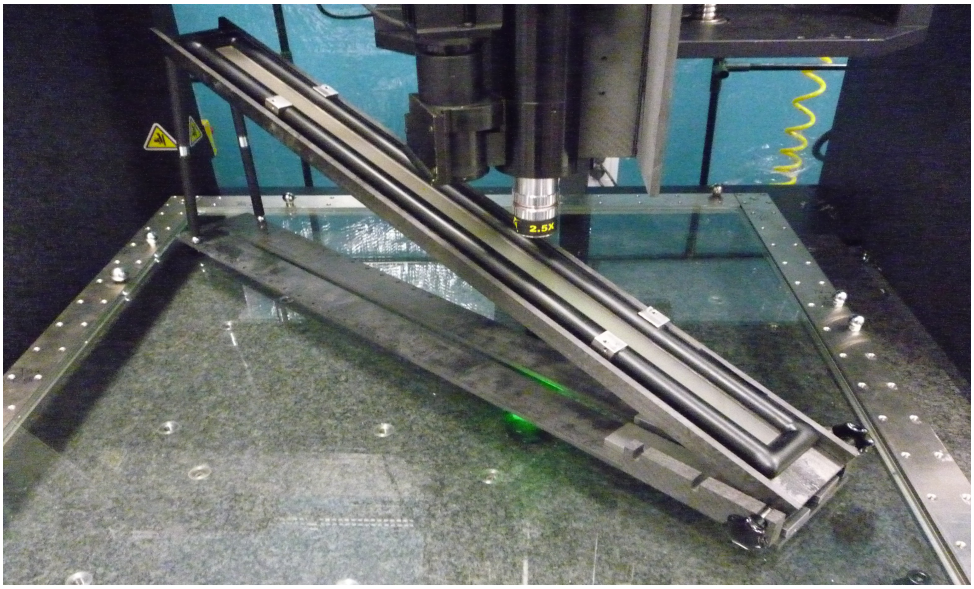
Optical Artefacts

Made in Germany

ESCALON optical line scales are artefacts to perform ISO 10360-7 conform performance verifications of video CMMs. All ESCALON artefacts feature the same two properties:

They have a near zero thermal expansion, allowing for a fast easy use “in the field”

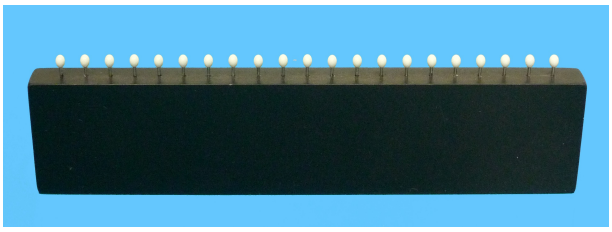
They have the measurement elements in the neutral line, allowing to make them very light weight and make them largely in-sensitive to clamping and orientation.

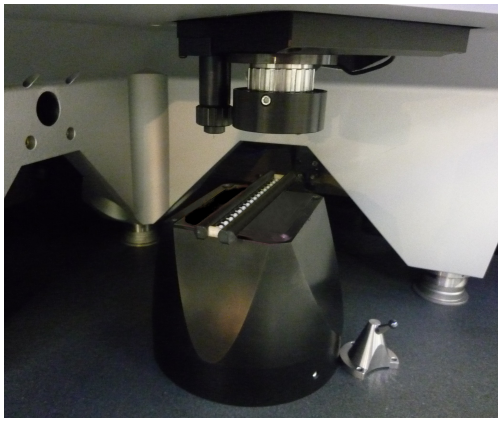


Unlike most line scales the **optical ESCALONs** can be fixed in different inclinations without changing their length, thanks to their neutral line assembly. The uncertainty of calibration can be performed better than U = 0.1 µm + 0.2 µm *L / m.

Optical ESCALONs (for Video CMMs) are available from less than 100 mm to about 1000 mm. Miniature ball ESCALONs can be used as well for video-CMMs' verification according to the standard ISO 10360-7.

The inclination holder is supplied with a window in the centre to allow for backlight illumination. Only this way a volumetric (3D) verification is possible with line scales.





Multi sensor ball beams and multi sensor ESCALONs allow sensing with tactile, video, laser, and tomography measurement systems. Their calibration may be by tactile or video systems. Ball beams are normally used where a 2D or even 3D application exists, e.g. for machine correction parameter measurement.

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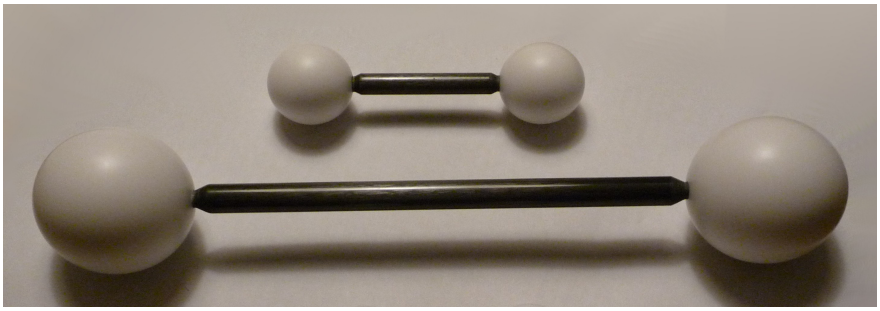

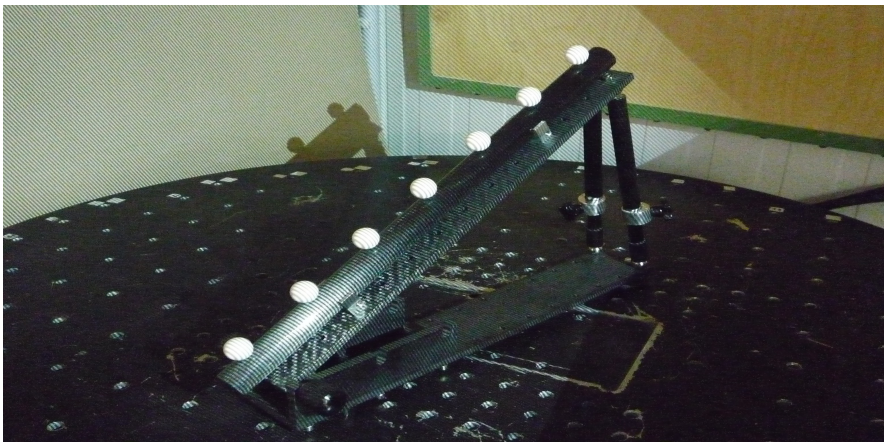

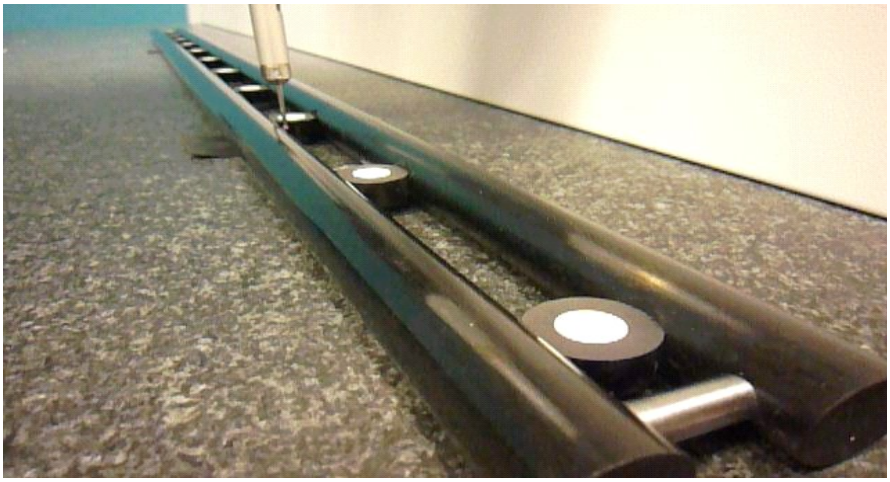

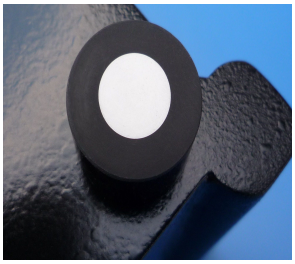

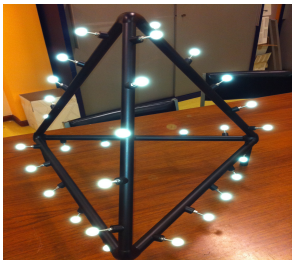

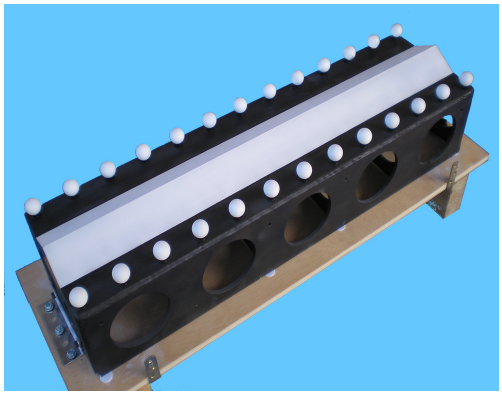

Our ball bars for the verification of laser scanners (VDI/VDE 2617-6) **and fringe projectors** (VDI/VDE 2634-1/2) have extremely dense mat ceramic balls. "Normal" industrial ceramic introduces systematic errors by "volume scattering" i.e. any pattern projected on the surface of a "normal" ceramic ball etc. is shifted in "downhill" direction and the measured diameter, position and form are affected.

This is most disturbing when testing the performance of fringe projection systems. The here-used high density ceramics reduces this effect to practically not- disturbing levels. Very few competitors offer such artefacts.

We make ball bars of the dumbbell type, the ESCALON type and the one-sided ball bar type (diameters up to 50 mm), as well tetrahedrons with such balls can be supplied, flats and bigger balls up to 150 mm diameter on order

ESCALON photogrammetry bars
bring traceability to photogrammetry.
We use two kinds of targets, allowing for an accurate optical or tactile calibration and use.

One available target is a black cylinder with flat ends and with a concentric and co-planar white dot.

The other target is a mat black sphere in front of a retroreflecting disc.

The length of the photogrammetry ESCALONs ranges between 100 mm and 2000 mm.

Diverse special optical artefacts
have been made to customer specifications (examples below: multi-ball tetrahedron with retrorreflecting balls and combination of ball arrays with inclined flats).

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