

TESA IMICRO INTERNAL ANALOGUE MICROMETER

Self-centring and self-aligning internal analogue micrometer. The high-precision thread machined into the measuring cone, combined with the measuring bolts specially arranged to provide 3-line contact, make it the only micrometer in the world that respect the ABBE principle.

Also available in digital version (see page D-5 in the TESA catalogue)



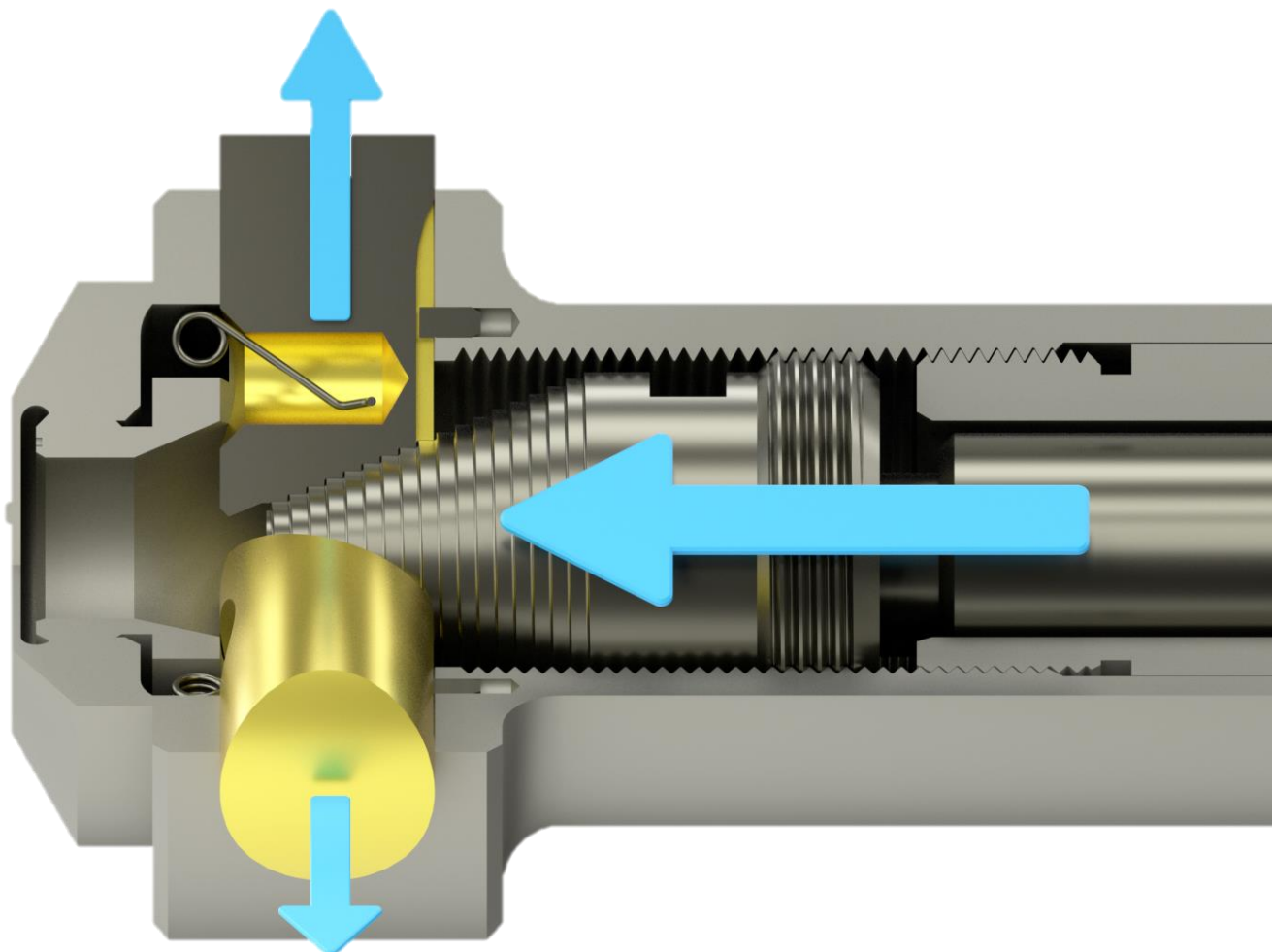
THE ABBE PRINCIPLE

Ernst Abbe, one of the founders of the Carl Zeiss company in Germany formulated, in 1893, the following principle :

“The length to be measured on the workpiece and that of the material measure to be used for comparison must be lying on a same axis.”

Respecting the Abbe principle allows to:

- Avoid errors of the first instance to occur
- Guarantee that the entire measuring force of the instruments is transmitted to the measuring bolts

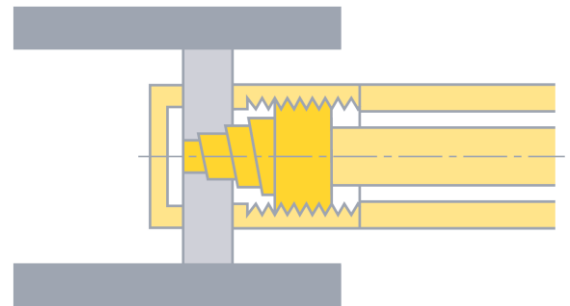


THE CHALLENGES OF INTERNAL MEASUREMENT

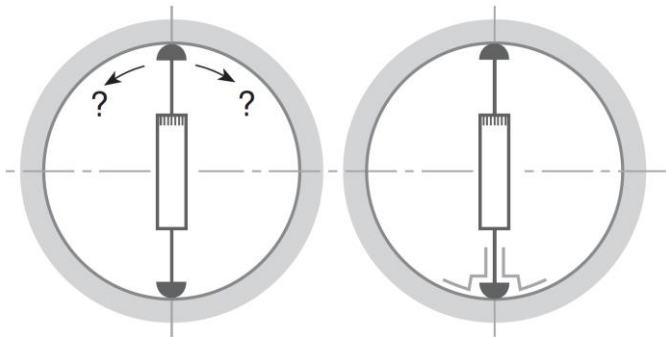
Bore measurement is more difficult than external measurement of components. Apart from the very tight tolerances specified, all measuring elements having a direct influence on the uncertainty of measurement must be designed in such a way that they can fit into the bore to be checked.

3-Line contact offers a true advantage

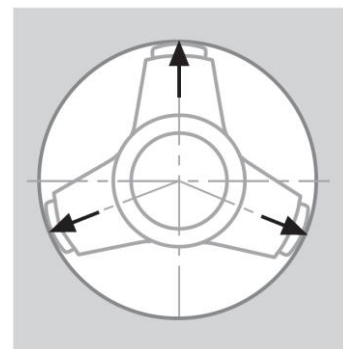
The near perfect auto-centering and auto alignment provided by TESA IMICRO, TESA TRI-O-BOR, ALESOMETER and ETALON INTALOMETER make bore measurement reliable, without the need for an operator to estimate



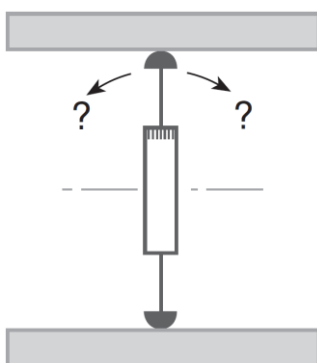
The measuring bolts with 3-line contact allows the micrometer to align itself parallel to the contact surfaces



2-point contact measuring instruments are not selfcentring. To enable bore measurements, the use of auxiliary means are required



The three measuring bolts are spaced 120° apart, thus providing optimum self-centring



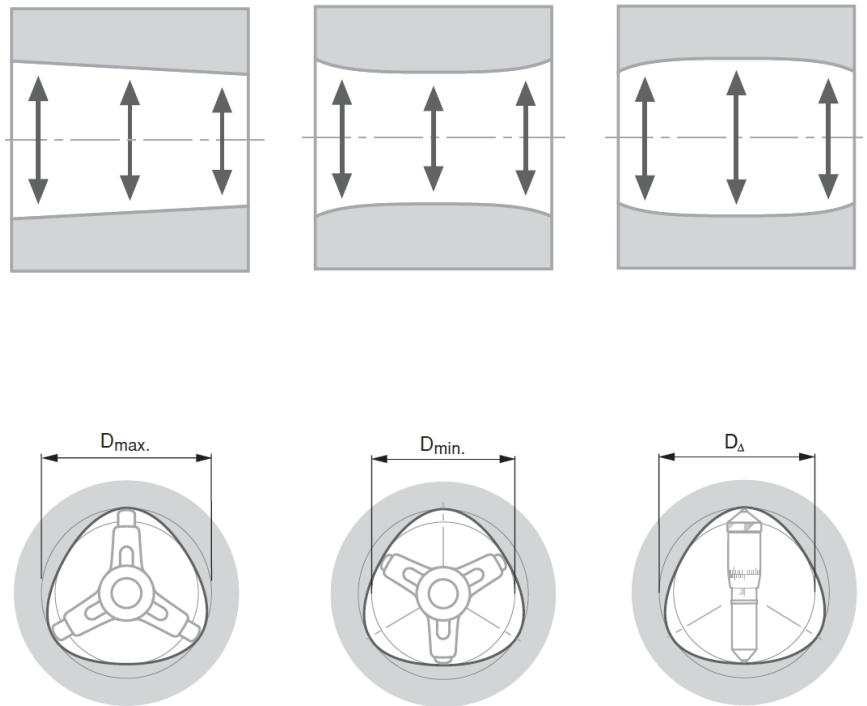
2-point contact does not permit the tool to align itself in relation to the bore axis

THE CHALLENGES OF INTERNAL MEASUREMENT

Establishing form errors

Form errors are established through measurements taken at several points within a bore.

Micrometers with 3-line contact determine run-out errors in a triangular way. Micrometers with 2-point contact measure medium-size diameters only. They do not allow users to see what makes diameters measured at various points different.



TYPICAL INDUSTRIES FOR THIS INSTRUMENT

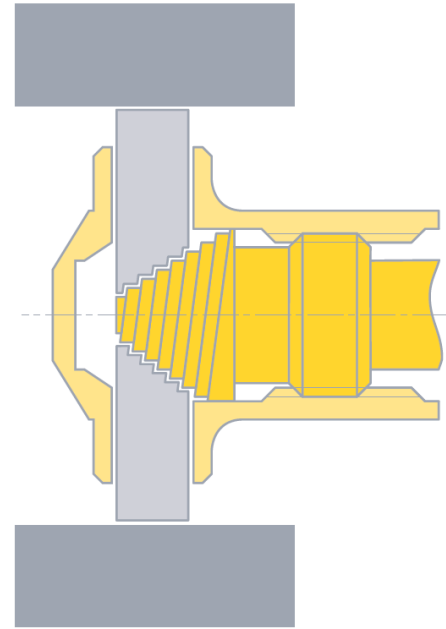
For internal measurement in the following industries

- Aviation
- Automotive
- Moulding
- Manufacturing
- Weapons & Arms
- Piping
- Etc.

UNIQUE SELLING POINTS

Thermal expansion not an issue

The reliability and precision of the TESA IMICRO and its extensions allow you to measure **bores** with confidence without worrying about the influence of thermal expansion from holding the instrument. The cone is made in such a way that when it expands due to heat it does not affect the measuring bolts.



A complete range for your internal measurements

Available in more than 100 **models**, the wide range of measures covers diameters from 3.5 mm to 300 mm. Full range of **accessories** available for depth measurement with extension until 1000 mm and centring device.



Unique features:

- Self-alignment and self-centering of the instrument guaranteed by the vibration of the ratchet
- Run-out error determination with 3 line contact at intervals of 120°
- Constant measuring force with ratchet integrated in rapid drive
- Scale with satin-chrome finish
- Unbeatable wear protection with hard-coating nitride titanium of the measuring faces

SPECIFICATIONS

Order Number	Range (mm)	Resolution (mm)	Max Perm. Error & Repeatability (µm)	Available as sets
00813410	3.5 - 4	0.001	4	00813409
00813411	4 - 4.5	0.001	4	
00813412	4.5 - 404	0.001	4	
00813413	5.5 - 6.5	0.001	4	
00810001	6 - 8	0.001	4	00810000
00810002	8 - 10	0.001	4	
00810003	10 - 12	0.001	4	
00810801	11 - 14	0.005	4	00810800
00810802	14 - 17	0.005	4	
00810803	17 - 20	0.005	4	
00811501	20 - 25	0.005	4	00811500
00811502	25 - 30	0.005	4	
00811503	30 - 35	0.005	4	
00811504	35 - 40	0.005	4	
00812301	40 - 50	0.005	4	00812300
00812302	50 - 60	0.005	5	
00812303	60 - 70	0.005	5	
00812304	70 - 80	0.005	5	
00812305	80 - 90	0.005	5	
00812306	90 - 100	0.005	5	
00812601	100 - 125	0.01	6	00812600
00812602	125 - 150	0.01	6	
00812603	150-175	0.01	7	
00812604	175 - 200	0.01	7	
00813101	200 - 225	0.01	8	N/A
00813102	225 - 250	0.01	8	
00813103	250 - 275	0.01	8	
00813104	275 - 300	0.01	8	

See page D-3 in our catalogue for more information and D-5 for digital version
Or on www.tesatechnology.com