



*Worldclass Internal Measurement
for more than 40 years*



MICROTEST® 3-point Internal Micrometer

- huge measurement ranges from \varnothing 30 to 400mm
in 6 Instruments only, max. \varnothing 1150mm
- highest precision : Linearity $\pm 2 \mu\text{m}$ / $\pm 3 \mu\text{m}$, repetition $\pm 1,5 \mu\text{m}$
- scales: $1 \mu\text{m}$ read out, paralaxfree / 1 turn = 1mm
direct full read out 1mm, 0.01 (100 div. / turn), 0.001 (nonius)
no readout errors
- automatic self centring for easy and save handling
- "blind hole" measurement down to the base in deep holes
- length extension up to many meters without precision reduction
- thermal-protected and -compensated construction
- automatic linear wear correction throughout easy adjustment
- cost reduction throughout multiple ranges,
less expenses for calibration and certifying
- high accurate performance, low cost
- Made in Switzerland

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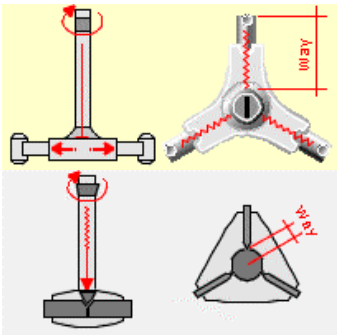
We offer a solution for the efficient, cost effective and precise measurement of internal diameters, which will help significantly improve your quality standards.

Microtest AG has been specializing in the internal measuring techniques for more than 40 years. Through permanent optimisation and constant further development our measurement instruments have reached a very high standard of precision, reliability and flexibility to conform to the high requirements of our customers.



Our products are in use all over the world and guarantee the highest precision over long periods of time. Our robust instruments are equally suitable for harsh factory environments as well as for measurement- and test-laboratory use. Microtest® supports many various industry sectors, such as the manufacture of machines, tools, motors, drives, pumps, compressors, automobiles, rolling stock, turbines and power stations, as well as oil, conveyor, mine, aviation and space technologies.

Technical Description: Microtest® 3-Point Internal Diameter Measurement System



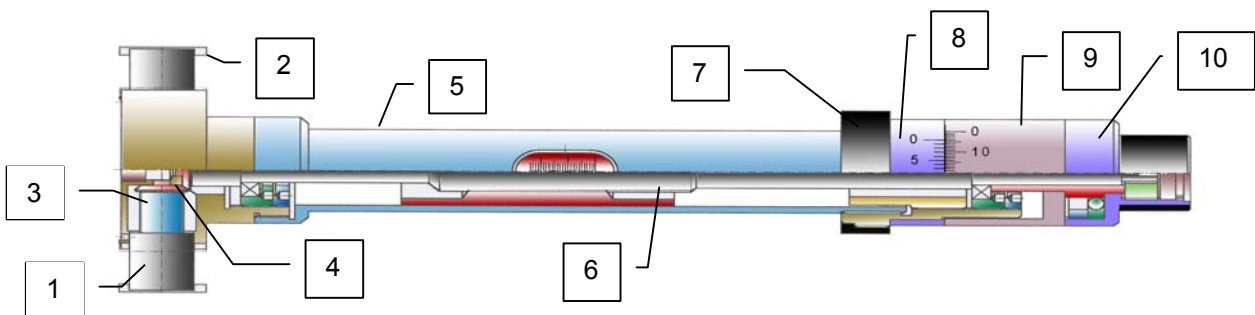
The MICROTEST® Spindle Measurement System provides for the first time a hitherto unattainable combination of high precision and wide measurement range.

The three point internal micrometers commonly in use today are based upon a taper or similar conical system. Such systems are limited in terms of accuracy and measurement range. A measurement screw on top of the instrument transfers a lateral movement via a shaft to the taper, which extends the measurement probes.

Conical systems have limited accuracy and range. Under the influence of temperature variations, other than 20°C and in particular warmth from the hand, taper devices expand in an uncontrolled and non linear manner which can lead to significant measurement errors.

In order to obtain reproducible results a high degree of experience is required. It is difficult to centre the device in combination with the fine ratchet and the “50 division scale” makes the risk of read out errors high.

The new MICROTEST® Threaded Spindle Measurement system eliminates all these Problems.



The central shaft (6) is synchronised with the measurement probes (1) via bevel gears (4). These gears transmit the rotation from the ratchet (10) and Scale drum (9), to the spindles (3), which extend the extremely well supported probes (1) to obtain a measurement. The greatest possible distance between the outer guide and the pivot in the centre remains unchanged for every measurement orientation. The poly-carbon insulation tube (5) offers protection against spray, dirt and warmth from the hand. Tungsten carbide pins(2) contacts at the point of measurement. Parallax free scale (8, 9) allows a clear reading. It has 100 divisions per turn, which avoids read out errors. The instrument can be extended to maximum 7.5m, without loss of accuracy, for the measurement of deep cylinders.

As the micrometer spindles are not displaced axially, rotation is limited only by the end of the thread on the extremely long spindle in the probes. This outstanding feature makes the extensive measurement range of the MICROTEST® system possible. It is a very significant advantage compared to conventional internal micrometers.

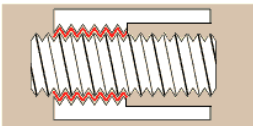
11 Important Advantages of MICROTEST® Internal Micrometers



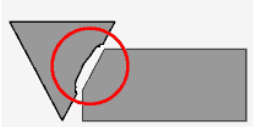
1. Parallax free direct read out for 1 mm, 1/10 mm, 1/100 mm, 1/1000 mm guarantees quick, easy and failure free read out.
100 Division/Rotation = No further conversion necessary
No more ½ mm failure!



2. The high precision MICROTEST® - Measurement system owes its accuracy to the three spindles which simultaneously reach their limit. Through the vibration generated by the ratchet and transmitted to the probes via the spindle system, the measurement repeatability is guaranteed which is independent of the experience of the user. **Service free!**
3. The poly-carbon tube protects the instrument from spray, dirt and warmth from the hand. The temperature compensated construction allows highly accurate measurement also outside the standard 20°C environment. The material expansion of the object and the instrument itself are practically completely equalised.



minimal lineare wear only
(adjustable)

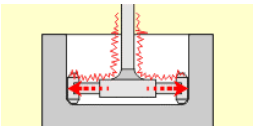


uncontrolled, non-linear wear
(compensation not possible)

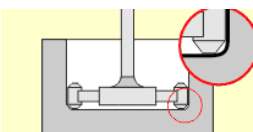
4. The MICROTEST® - Measurement system automatically compensates the minimal occurrence of wear; each time during zero setting.

MICROTEST® system: The thread on the measurement probes shows minimal wear only; this has a linear effect over the entire range because contact takes place over a broad area, which is in contact permanently.

Conical systems: Probes touch the taper along a thin line causing increased and localized wear which has a non linear effect. This problem is often ignored during calibration leading to significant inaccuracies.
No compensation is possible.



5. Easy self-centring is made possible by the optimal 120° arrangement of the three probes. The ratchet generates a vibration, which supports centring.



6. Blind holes can be measured to their very bottom with the MICROTEST® System without difficulty, because the tungsten carbide pins are the lowest point of the instrument.



7. For the measurement of extremely deep holes; extensions of up to 7.5m can be attached to the MICROTEST®, without affecting the accuracy. This is made possible because only rotations are measured and not lengths.



8. An oversized measurement range:
For diameters between 30mm and 400mm only 6 MICROTEST® Internal Micrometers are necessary. (By comparison 16 to 20 conventional devices would be necessary).
9. Thanks to the wide measurement range of the MICROTEST® Internal Micrometer fewer instruments and setting rings need to be purchased which means less calibration work, less adjustment work and less costs.
10. The space taken up by the entire set Ø 5mm to 400mm, including the calibration tools, packed in a stabile wooden case is 370 x 300 x 300 mm.

11. Cost reduction ! A single MICROTEST® internal Micrometer may be slightly more expensive than a conventional product, but it can reduce costs by up to 50%. Depending upon the size of instrument, one MICROTEST® can replace between 2 and 8 conventional devices. Furthermore, only a small number of adjustment rings are required. Regular calibration and certifying costs are reduced many-fold. Up to 90% saving compared to plug gauges.

Production yield can be increased because MICROTEST® Internal – Micrometers prevent read out interpretation errors. **The MICROTEST® will return on investment very quickly.**

Six different MICROTEST Internal micrometers can be fitted to a versatile universal test gauge to offer a measurement range from 30 - 400 mm. Many expensive control rings can be saved by using such a flexible master gauge. The test surfaces themselves are chrome plated, to reduce the wear to an absolute minimum.



Our Special Version :

Allow us to introduce you to the world's largest 3-Point Internal micrometer.



During the last 15 years the requirements of our customers to precisely measure holes with a diameter above 500mm has risen dramatically. Our Microtest® is the only system capable to comply with this requirement. Based upon our normal construction we manufacture an instrument that provides, a sensational linearity of +/- 4µm and a repeatability of +/- 2µm, over a measurement range of Ø 400 mm to Ø 650 mm. The device weighs only 5 Kg allowing easy handling. We have begun a new project to design a device with a range of Ø 650 mm to Ø1100 mm. We expect a linearity of +/- 6µm. This instrument will be available in 2005.

Accuracy:	Linearity	Repeatability
(MICROTEST- Work standard equal to, or better than DIN 864)	Ø 5- 140 mm ± 2 µ m	± 1,5 µ m
	Ø 140- 400 mm ± 3 µ m	± 1,5 µ m
	Ø 400- 650 mm ± 4 µ m	± 2,5 µ m
	Ø 650- 1100 mm ± 6 µ m	± 3,5 µ m
Read out : 0,001 mm (Measurement range 30-1100 mm)		

Declaration of Conformity and traceability of the values.

MICROTEST AG confirms that its products are tested and comply with all relevant national standards as well as all our own works standards. The measurement systems used to test the instrument, have a nationally certified accuracy. Each instrument is delivered with a performance certificate that states the measurement accuracy at various points.

For further information and orders:



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