Measuring Instruments for Large Dimensions

TESA – THE SPECIALISTS FOR LONG LENGTHS

Large sizes in mechanical engineering mean dimensions in excess of 500 mm.

Besides various measurement procedures like those that apply to large internal or external micrometers with two-point contact, tape rules (wrapping round the outside diameter), V-bases, rotating measuring disks (rolling-contact) and optical systems (triangulation with theodolite), resort is often to make use of simple testing means like fixed gauges (inside caliper gauges), gauge blocks combinations or adjustable telescopic gauges.

For large dimensions from 250 mm up to several meters, TESA offers various types of measuring instruments that have long proven their value in practical use.

Here's an example of a proportional relationship. With a bore of 1200 H7, the tolerance area matches 0,1 mm. Reducing both values by a factor of 100 would give a manufacturing tolerance as low as 1 µm. Of course, things are not as simple, but this example gives some ideas about the proportions.

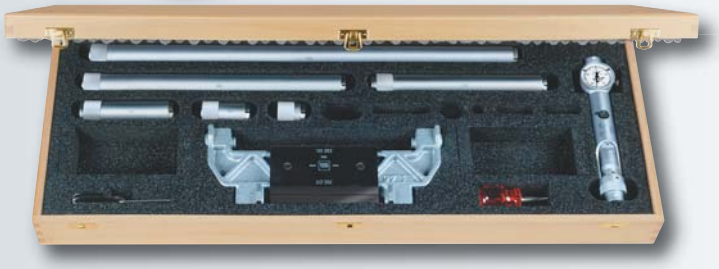
Whatever the sizes, from a simple distance between two surfaces parallel one another to large diameters, their measurement is always a challenge. Apart from the usual influences, which are proportional to the size whilst adding to your contributions in the uncertainty budget, those due to gravity play a key role in distortion.

TESA UNITEST Internal Micrometer

Measures internal dimensions in the micrometer's axis with 2-point contact with the workpiece to be checked – Optional accessories are available for inspecting centring shoulders and blind bores along with auxiliary means for external measuring.

Extensions with built-in gauge rods can be mounted on the measuring element, thus allowing any dimension within the application range to be measured, directly.

Precise, easy-to-handle micrometer – Horizontal or vertical position of use – Constant measuring force – Integrated dial gauge to show you the culmination point.



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DIN 863 T4 (Style B)

Measuring element

Micrometer and dial gauge to 0,01 mm

Micrometer: 0,1 mm

Micrometer: 25 mm

0,5 mm

Dial gauge: ± 0,22 mm

0,7 to 1 N

8 µm

Measuring bolts

Spherical end for measuring in the micrometer axis. All inserts are inter-changeable.

Tungsten carbide tipped

Extensions

26 mm dia. steel tube with snap-ring system. Also with built-in gauge rods.

Tungsten carbide tipped

One spherical and one flat measuring faces

Additional data

Wooden case

Setting standard with identification number

Declaration of conformity

mm

TESA UNITEST complete set

No		mm		
01110700		int. dimensions	200 ÷ 1400	

Consisting of:

No		mm	mm	µm
01110901	Meas. element for int. dimensions	200 ÷ 225		
01141001	Setting standard for internal/external dimensions		200	
01110801	Extension		25	0,7
01110802	Extension		50	1
01110804	Extension		100	1,5
01110808	Extension		200	2,5
01110812	Extension		300	3,5
01110820	Extension		500	5,5
01160901	Special screwdriver			
01162302	Wooden case for complete set			

Optional Accessories

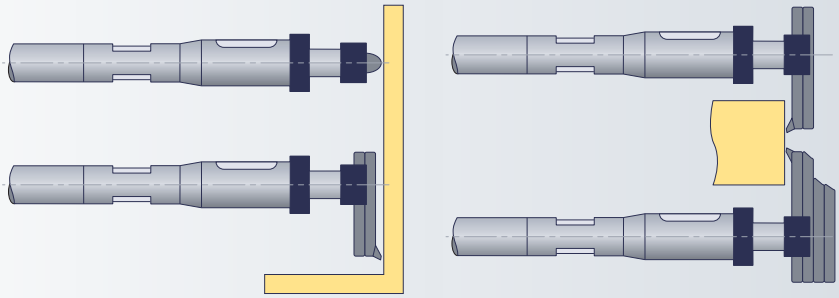
01141101	Extension		1000	10
01160701	Pair of tungsten carbide tipped measuring bolts for blind bores			
01162301	Auxiliary elements for external measurement	Measuring depth:	≤ 10	
01140801	Suspension device, complete	Measuring depth:	≤ 100	

TESA UNIMASTER
Universal Measuring Instrument

Provides the features necessary for direct measurement of specially large internal and external dimensions.

TESA UNIMASTER is similar to internal micrometers with two-point contact with the workpiece being measured. Measures any dimension within the extended application range diretly by simply adding the needed extensions with built-in gauge blocks to the measuring element.

Accurate, robust and easy-to-handle – Can be used either vertically or horizontally with a constant measuring force – Incorporates a lever-type dial test indicator that clearly shows the culmination point – Ensures stable measuring owing to both a negligible deflection and thermal protection on each extension.



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DIN 863 T4 (Style B)

Measuring element

Micrometer and dial test indicator: 0,01 mm

Micrometer: 25 mm

1 mm

Dial test indicator: ± 0,4 mm

15 to 20 N. Mobile ball-bearing anvil under spring pressure.

Reversible probing direction to allow both internal and external measuring.

5 µm

Measuring bolts

Tungsten carbide tipped

Measuring bolts supplied in pairs:

- No. 01110203 for internal measuring in the micrometer axis.
- No. 01110205 for internal/ external measuring, meas. depth up to 60 mm from the lower edge of the micrometer.
- No. 01110208, extra-rigid for external measuring, meas. depth up to 75 mm from the lower edge of the micrometer.

Extensions

38 mm dia. diameter steel tube with snap ring system. Built-in gauge rod.

Tungsten carbide tipped

One spherical and one flat measuring faces

mm

TESA UNIMASTER complete set

No		mm		
01110000		Internal dim. 250 ÷ 1475*		
		External dim. 225 ÷ 1450*		

Consisting of:

No	=	mm	mm	µm
01110300	Measuring element	internal dim. 250 ÷ 275		
		external dim. 225 ÷ 250		
01110203	Pair of measuring bolts for internal measuring			
01110205	Pair of measuring bolts for internal/external measuring, with length to		75	
01110208	Pair of measuring bolts for extern. measuring, length		100	
01110501	Setting standard	internal dimension	250	
		external dimension	225	
01110101	Extension		25	0,7
01110102	Extension		50	1
01110103	Extension		75	1,2
01110104	Extension		100	1,5
01110105	Extension		125	1,5
01110106	Extension		150	2
01110112	Extension		300	3,5
01110118	Extension		450	4,5
01110124	Extension		600	6,5
01130001	Special screwdriver for extensions			
01110401	Set of suspension accessories (4 brackets together with 4 clamps)			
01112401	Wooden case for complete set			

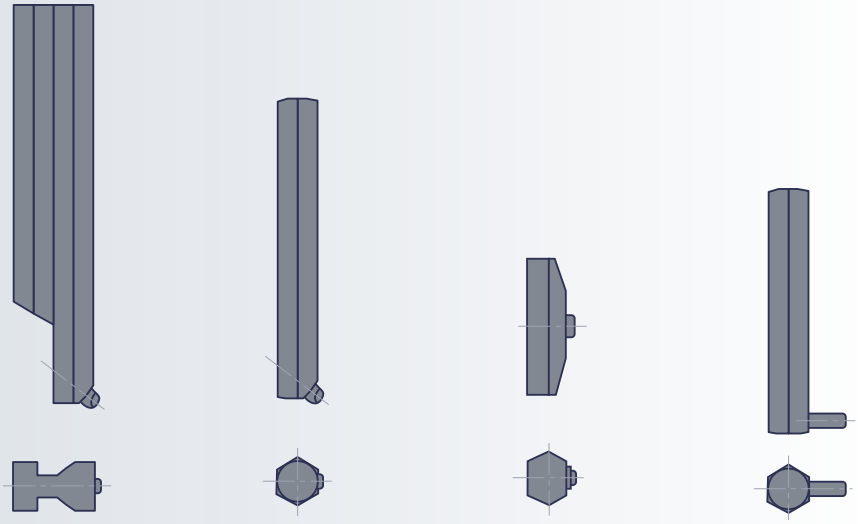
Optional Accessories

01110140	Extension		1000	10
01162001	Pair of measuring bolts for internal/external dimensions and grooves	Measuring depth	≤ 20	
		Tungsten carbide inserts	Ø 4 x 7	
01160001	Support roller supplied individually (2 items are needed)			

* Using 3 extensions at the very most.

Additional Data

- Wooden case
- Measuring element and setting standard with identification number
- Declaration of conformity



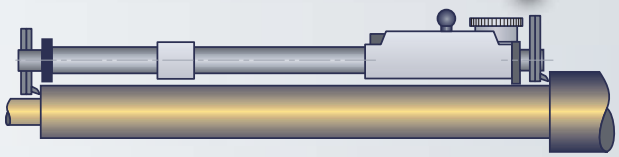
01110208 01110205 01110203 01162001

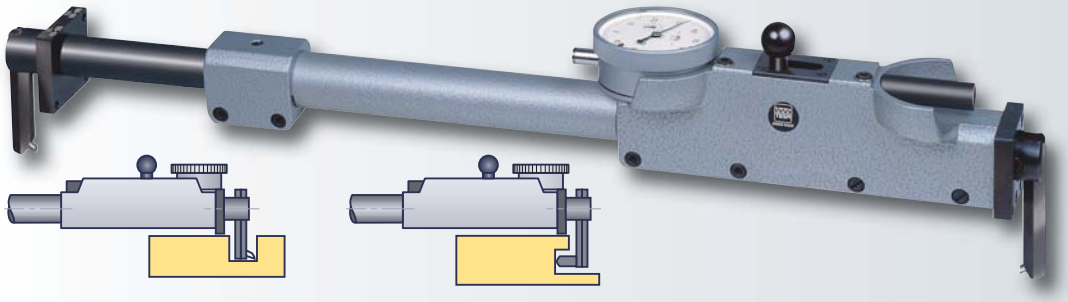
TESA INOTEST
Comparative Measuring Instrument

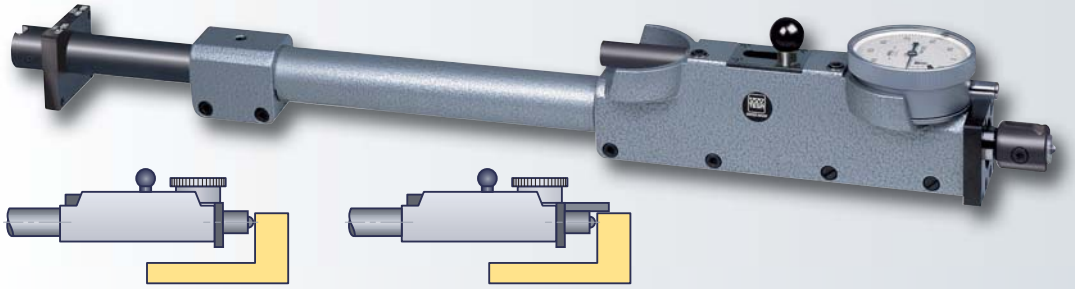
Allows for comparative measurement of large internal or external dimensions.

Consists of a measuring element with interchangeable inserts as well as a set of extensions. Since there is no material measure, the indication is set using a separate standard that can either be a gauge block, setting ring or horizontal measuring bench.

Measuring inserts for inspection in the tool axis, or offset inserts – Vertical or horizontal position of use – Integrated dial gauge to show the culmination point – Constant measuring force – Extensions with heat insulating grip.







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Measuring element

Mobile ball-bearing anvil, 10 mm measuring travel.

Watertight dial gauges 01470104 and 01480100

0,01 mm

10 mm

For additional technical data, see section F.

4 to 7 N. Reversible probing direction to allow both internal and external measuring.

Measuring bolts

Tungsten carbide tipped

Measuring bolts supplied in pairs:
- No. 01131901 for internal measuring in the instrument axis.
- No. 01131902 for internal/external measurement, measuring depth up to 30 mm from the lower edge of the tool.

Extensions

25 mm dia. steel tube. 19 mm dia. telescopic tube that can be clamped.

Additional data

Plastic case

Dial gauge with serial number

Dial gauge with inspection report

Declaration of conformity

mm

TESA INOTEST complete set

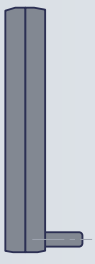
		mm
01111900		Internal dimensions 275 ÷ 1025 External dimensions 250 ÷ 1010

Consisting of:

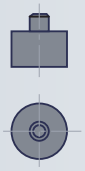
		mm	mm
01112301	Measuring element with dial gauge		
01131901	Pair of measuring bolts for internal measuring		
01131902	Pair of measuring bolts for internal/external measuring with length to		60
01132001	4 resting rods		Ø 7 x 40
00160101	3 insulating grips (order number for 1 item)		
01112001	Extension	internal dimensions 275 ÷ 335 external dimensions 250 ÷ 310	
01112002	Extension	internal dimensions 325 ÷ 435 external dimensions 300 ÷ 410	
01112003	Extension	internal dimensions 425 ÷ 635 external dimensions 400 ÷ 610	
01112004	Extension	internal dimensions 625 ÷ 1035 external dimensions 600 ÷ 1010	
01162303	Plastic case for complete set		

Optional Accessories

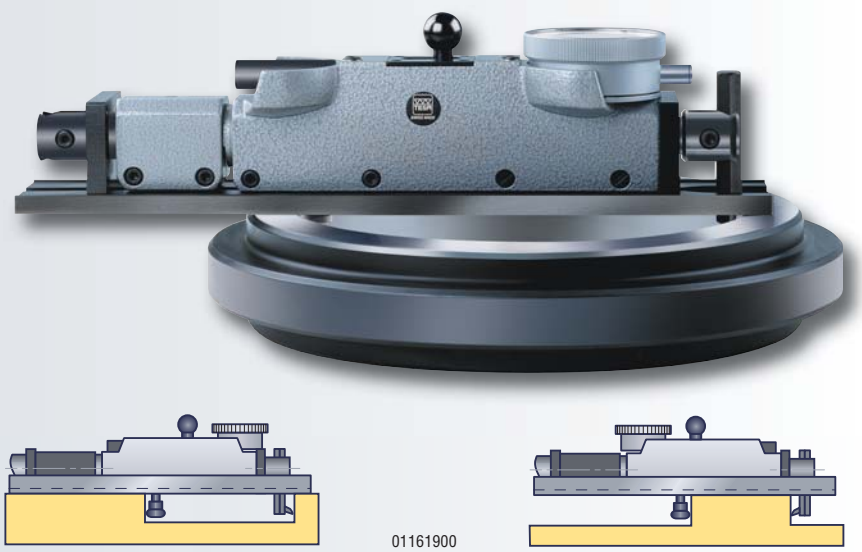
01141901	Extension for extending the application range by	500
01141902	Extension for extending the application range by	1000
01162001	Pair of tungsten carbide measuring bolts for internal/external dimensions	Ø 4 x 7
01162002	Pair of tungsten carbide measuring bolts for grooves	Ø 4 x 7
01161900	Measuring device for small - internal dimensions 35 ÷ 280 - external dimensions 15 ÷ 255	



01162001



01131901



01161900

ETALON 532 Internal Micrometer

This micrometer is designed for measurements with 2-point contact.

Extensions with built-in gauge rods can be used to increase the measuring range – Stiff screw coupling.

Complete sets					072109101	072109107	072109108	072109117	072109128
		mm			50 ÷ 170	50 ÷ 290	50 ÷ 530	50 ÷ 1010	50 ÷ 1510
Consisting of:									
		mm	mm	µm					
072103576	Micrometer element	50 ÷ 65		3	●	●	●	●	●
072103585	Extension		15	1,5	●	●	●	●	●
072105462	Extension		30	1,5	●	●	●	●	●
072109030	Extension		60	2	●	●	●	●	●
072103586	Extension		120	2		●	●	●	●
072109055	Extension		240	3			●	●	●
072109066	Extension		480	3,5				●	●
072109089	Extension		500	3,5					●

✓ Factory standard

Micrometer element

- 0,01 mm
- 15 mm
- 0,5 mm
- Spherical (R = 15 mm)
- Tungsten carbide tipped

Extensions

- Reference gauge rods
- 29 mm
- Tungsten carbide tipped

Additional data

- Wooden or plastic case
- Declaration of conformity

ROCH Periphery Tapes

Steel tapes with a dual graduation for measuring external circumferences and diameters of cylindrical parts on machines and other fittings – Suitable for malleable parts such as plastic tubing – Used for inspecting tanks or boilers – Also designed for checking steel or concrete pipes, rims, tires etc.

	Diameter mm	Circumference mm	mm
0951750222	20 ÷ 300	60 ÷ 950	0,15
0951750223	300 ÷ 700	940 ÷ 2200	0,20
0951750224	700 ÷ 1100	2190 ÷ 3460	0,20
0951750225	1100 ÷ 1500	3450 ÷ 4720	0,25
0951750226	1500 ÷ 1900	4710 ÷ 5980	0,30
0951750227	1900 ÷ 2300	5960 ÷ 7230	0,35

✓ Factory standard

- 0,1 mm
- See table
- 16 x 0,2 mm type section
- Steel band
- Shipping packaging
- Declaration of conformity