

Internal Measurement

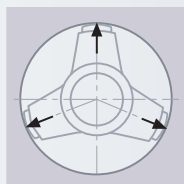


INTERNAL MEASUREMENT AND REQUIREMENTS

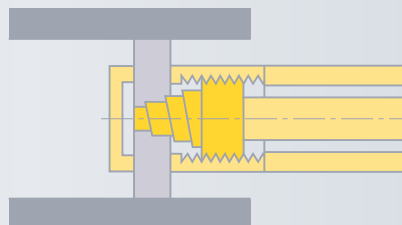
Bore measurement is more demanding than external measurement of workpieces. Besides the tight tolerances specified for the current application, all measuring components having a direct influence on the uncertainty of measurement must be designed in such a way that they can go into the bore to be checked.

Benefit of the 3-Line contact

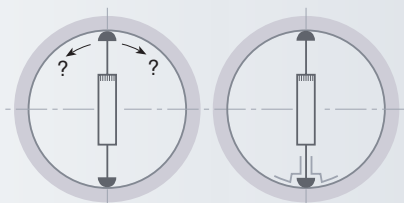
TESA IMICRO, TESA TRI-O-BOR, ALESOMETER as well as ETALON INTALOMETER are self-centring and self-aligning handtools that make bore measurement reliable, regardless of the operator's sensitivity.



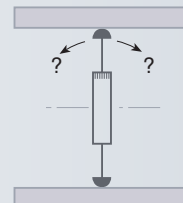
The three measuring bolts are spaced 120° apart, thus providing optimum self-centring.



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 self-centring. To make bore measurement easier, auxiliary means need additionally be used.



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

A single tool can replace hundreds of plug gauges

Unlike plug gauges that check only one toleranced size, a single tool can measure many diameters.

Depending on the model that is being used, through holes and blind bores along with short centring shoulders can be inspected, reliably.

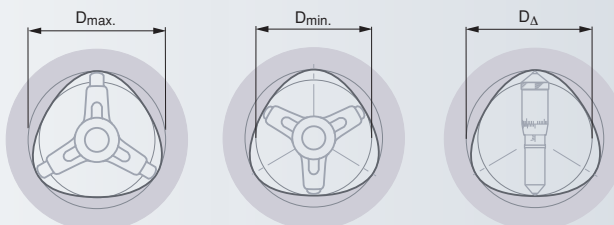
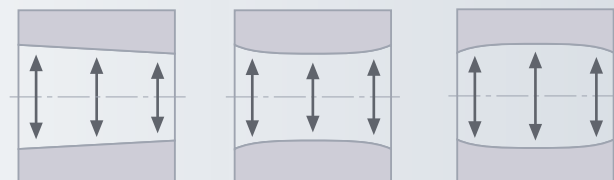


Establishing form errors

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

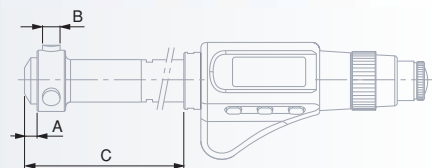
Micrometers with 3-line contact determine run-out errors in a triangular way.

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.



TESA IMICRO capa μ system with Digital Display

 A successful combination of the patented TESA capacitive system with the IMICRO unique cone.



 DIN 863 T4
(Style C1)

 0,001 mm
0.0000 5 in

 Metric/inch
Conversion

 LCD, 7 mm
digit height

 Floating zero

 Display lock

 Measuring faces
for application
ranges

3,5 to 12 mm:
hardened steel (HV30 770)
11 to 100 mm:
TiN hard-coating (HV5 2300)
100 to 300 mm:
carbide tipped (HV5 1300)

 RS 232
opto-coupled,
bidirectional

 3 V lithium battery

 1 to 2 a
(≈ 2000 h/a)

 Automatic
shut down after
10 min.

Display setting is retained
as long as power supply
remains stable.

 10 °C to 40 °C

 -10 °C to 60 °C

 80%,
non condensing



 Measuring
element IP54
(IEC 60529) or
IP40 with active data
output

 Plastic case

 Identification
number

 TESA's
calibration
certificate

 Declaration
of conformity

							
	mm	in	μm	μm	A mm	B mm	C mm
06130101	3,5 ÷ 4	0.1377 ÷ 0.1574	4	4	2	1,5	20
06130102	4 ÷ 4,5	0.1574 ÷ 0.1771	4	4	2	1,5	20
06130103	4,5 ÷ 5,5	0.1771 ÷ 0.2165	4	4	2	1,5	25
06130104	5,5 ÷ 6,5	0.2165 ÷ 0.2559	4	4	2	1,5	25
06130105	6 ÷ 8	0.2362 ÷ 0.3150	4	4	2,5	2,5	79
06130106	8 ÷ 10	0.3150 ÷ 0.3970	4	4	2,5	2,5	79
06130107	10 ÷ 12	0.3970 ÷ 0.4724	4	4	2,5	2,5	79
06130108	11 ÷ 14	0.4330 ÷ 0.5512	4	4	3,5	4	93
06130109	14 ÷ 17	0.5512 ÷ 0.6693	4	4	3,5	4	93
06130110	17 ÷ 20	0.6693 ÷ 0.7874	4	4	3,5	4	93
06130111	20 ÷ 25	0.7874 ÷ 0.9843	4	4	7	7	91
06130112	25 ÷ 30	0.9843 ÷ 1.1811	4	4	7	7	91
06130113	30 ÷ 35	1.1811 ÷ 1.3780	4	4	7	7	91
06130114	35 ÷ 40	1.3780 ÷ 1.5748	4	4	7	7	91
06130115	40 ÷ 50	1.5748 ÷ 1.9685	4	4	11	12	104
06130116	50 ÷ 60	1.9685 ÷ 2.3622	5	5	11	12	104
06130117	60 ÷ 70	2.3622 ÷ 2.7560	5	5	11	12	104
06130118	70 ÷ 80	2.7560 ÷ 3.1496	5	5	11	12	104
06130119	80 ÷ 90	3.1496 ÷ 3.5433	5	5	11	12	104
06130120	90 ÷ 100	3.5433 ÷ 3.9370	5	5	11	12	104
06130121	100 ÷ 125	3.9370 ÷ 4.9212	6	6	26	18	100
06130122	125 ÷ 150	4.9212 ÷ 5.9055	6	6	26	18	100
06130123	150 ÷ 175	5.9055 ÷ 6.8897	7	7	26	18	100
06130124	175 ÷ 200	6.8897 ÷ 7.8740	7	7	26	18	100
06130125	200 ÷ 225	7.8740 ÷ 8.8582	8	8	26	18	100
06130126	225 ÷ 250	8.8582 ÷ 9.8425	8	8	26	18	100
06130127	250 ÷ 275	9.8425 ÷ 10.8267	8	8	26	18	100
06130128	275 ÷ 300	10.8267 ÷ 11.8110	8	8	26	18	100

Optional Accessory

01961000 1 Lithium battery - 3 V, 190 mAh, type CR 203

For ordering information on cables etc., see section A.

Suited carrying cases on page D-8.

TESA IMICRO capa μ system with Digital Display – Partial Sets

 A successful combination of the TESA patented capacitive measuring system with the IMICRO unique cone.



								
Partial sets including	Elements	Measuring heads		Setting rings		Extensions		
06130230	3,5 ÷ 6,5	06130010	06140020	3,5 ÷ 4	00843200	4	–	
			06140021	4 ÷ 4,5	00843201	5,5		
			06140022	4,5 ÷ 5,5				
			06140023	5,5 ÷ 6,5				
06130231	6 ÷ 12	06130011	06140024	6 ÷ 8	00840101	8	00840001	100
			06140025	8 ÷ 10	00840102	10		
			06140026	10 ÷ 12				
06130232	11 ÷ 20	06130011	06140027	11 ÷ 14	00840103	11	00840301	150
			06140028	14 ÷ 17	00840105	17		
			06140029	17 ÷ 20				
06130233	20 ÷ 40	06130011	06140030	20 ÷ 25	00840106	25	00841100	150
			06140031	25 ÷ 30	00840107	35		
			06140032	30 ÷ 35				
			06140033	35 ÷ 40				
06130234	40 ÷ 100	06130011	06140034	40 ÷ 50	00840108	50	00841800	150
			06140035	50 ÷ 60	00840109	70		
			06140036	60 ÷ 70	00840110	90		
			06140037	70 ÷ 80				
			06140038	80 ÷ 90				
			06140039	90 ÷ 100				
06130235	100 ÷ 200	06130012	06140040	100 ÷ 125	00840112	125	00842600	150
			06140041	125 ÷ 150	00840113	175		
			06140042	150 ÷ 175				
			06140043	175 ÷ 200				

Set composition for the application range from 200 to 300 mm available upon request

		
Measuring Element	Measuring heads	mm
06130012	06140044	200 ÷ 225
	06140045	225 ÷ 250
	06140046	250 ÷ 275
	06140047	275 ÷ 300



DIN 863 T4
(Style C1)



0,001 mm
0.00005 in



Metric/inch
Conversion



LCD, 7 mm
digit height



Floating zero



Display lock



Measuring faces
for application
ranges

3,5 to 12 mm:
hardened steel (HV30 770)
11 to 100 mm:
TiN hard-coating (HV5 2300)
100 to 300 mm:
carbide tipped (HV5 1300)



RS 232
opto-coupled,
bidirectional



3 V lithium battery



1 to 2 a
(≈ 2000 h/a)



Automatic
shut down after
10 min.

Display setting is retained
as long as power supply
remains stable.



10 °C to 40 °C



-10 °C to 60 °C



80%,
non condensing



Measuring
element IP54
(IEC 60529) or
IP40 with active data
output



Plastic case



Identification
number



TESA's
calibration
certificate



Declaration
of conformity

TESA IMICRO capa μ system with Digital Display – Full Sets

 A successful combination of the TESA patented capacitive measuring system with the IMICRO unique cone.



 DIN 863 T4
(Style C1)

 0,001 mm
0.00005 in

 Metric/inch
Conversion

 LCD, 7 mm
digit height

 Floating zero

 Display lock

 Measuring faces
for application
ranges

3,5 to 12 mm:
hardened steel (HV30 770)
11 to 100 mm:
TiN hard-coating (HV5 2300)
100 to 300 mm:
carbide tipped (HV5 1300)

 RS 232
opto-coupled,
bidirectional

 3 V lithium battery

 1 to 2 a
(≈ 2000 h/a)

 Automatic
shut down after
10 min.

Display setting is retained
as long as power supply
remains stable.

 10 °C to 40 °C

 -10 °C to 60 °C

 80%,
non condensing



 Measuring
element IP54
(IEC 60529) or
IP40 with active data
output

 Plastic case

 Identification
number

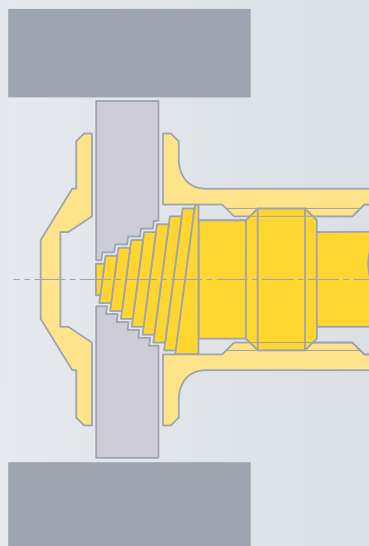
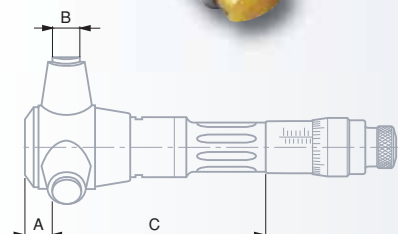
 TESA's
calibration
certificate

 Declaration
of conformity

							
mm		mm		mm		mm	
Full sets including		Single micrometers		Setting rings		Extensions	
06130220	3,5 ÷ 6,5	06130101	3,5 ÷ 4	00843200	4	–	
		06130102	4 ÷ 4,5	00843201	5,5		
		06130103	4,5 ÷ 5,5				
		06130104	5,5 ÷ 6,5				
06130221	6 ÷ 12	06130105	6 ÷ 8	00840101	8	00840001	100
		06130106	8 ÷ 10	00840102	10		
		06130107	10 ÷ 12				
06130222	11 ÷ 20	06130108	11 ÷ 14	00840103	11	00840301	150
		06130109	14 ÷ 17	00840105	17		
		06130110	17 ÷ 20				
06130223	20 ÷ 40	06130111	20 ÷ 25	00840106	25	00841100	150
		06130112	25 ÷ 30	00840107	35		
		06130113	30 ÷ 35				
		06130114	35 ÷ 40				
06130224	40 ÷ 100	06130115	40 ÷ 50	00840108	50	00841800	150
		06130116	50 ÷ 60	00840109	70		
		06130117	60 ÷ 70	00840110	90		
		06130118	70 ÷ 80				
		06130119	80 ÷ 90				
06130225	100 ÷ 200	06130120	90 ÷ 100				
		06130121	100 ÷ 125	00840112	125	00842600	150
		06130122	125 ÷ 150	00840113	175		
		06130123	150 ÷ 175				
		06130124	175 ÷ 200				

TESA IMICRO with Analogue Indication – Metric

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



DIN 863 T4
(Style C1)
NF E 11-099



Measuring
faces for
application
ranges from
3,5 to 12 mm:
hardened steel (HV30 770)
11 to 100 mm:
TiN hard-coating (HV5 2300)
100 to 300 mm:
carbide tipped (HV5 1300)



Application
ranges from
3,5 to 200 mm
in a shipping box
200 to 300 mm in a wooden
case with 1 extension of
150 mm (No. 00842600)



Identification
number



Inspection report
with a declaration
of conformity

							
00813410	3,5 ÷ 4	0,001	4	4	2	1,5	20
00813411	4 ÷ 4,5	0,001	4	4	2	1,5	20
00813412	4,5 ÷ 5,5	0,001	4	4	2	1,5	25
00813413	5,5 ÷ 6,5	0,001	4	4	2	1,5	25
00810001	6 ÷ 8	0,001	4	4	2,5	2,5	52
00810002	8 ÷ 10	0,001	4	4	2,5	2,5	52
00810003	10 ÷ 12	0,001	4	4	2,5	2,5	52
00810801	11 ÷ 14	0,005	4	4	3,5	4	77
00810802	14 ÷ 17	0,005	4	4	3,5	4	77
00810803	17 ÷ 20	0,005	4	4	3,5	4	77
00811501	20 ÷ 25	0,005	4	4	7	7	78
00811502	25 ÷ 30	0,005	4	4	7	7	78
00811503	30 ÷ 35	0,005	4	4	7	7	78
00811504	35 ÷ 40	0,005	4	4	7	7	78
00812301	40 ÷ 50	0,005	4	4	11	12	84
00812302	50 ÷ 60	0,005	5	5	11	12	84
00812303	60 ÷ 70	0,005	5	5	11	12	84
00812304	70 ÷ 80	0,005	5	5	11	12	84
00812305	80 ÷ 90	0,005	5	5	11	12	84
00812306	90 ÷ 100	0,005	5	5	11	12	84
00812601	100 ÷ 125	0,01	6	6	26	18	81
00812602	125 ÷ 150	0,01	6	6	26	18	81
00812603	150 ÷ 175	0,01	7	7	26	18	81
00812604	175 ÷ 200	0,01	7	7	26	18	81
00813101	200 ÷ 225	0,01	8	8	26	18	81
00813102	225 ÷ 250	0,01	8	8	26	18	81
00813103	250 ÷ 275	0,01	8	8	26	18	81
00813104	275 ÷ 300	0,01	8	8	26	18	81



DIN 863 T4
(Style C1)
NF E 11-099

Measuring faces
on models from
3,5 to 12 mm:
hardened steel, HV30 770;
11 to 100 mm: titanium
nitride (TiN) hard-coating
to HV5 2300.
100 to 200 mm: tungsten
carbide tipped to HV5 1300.

Additional
technical data:
see on the
previous page.
Setting rings on
page D-17.

Plastic case
or suitcase

Identification
number

Inspection report
with a declaration
of conformity

TESA IMICRO with Analogue Indication – Full Metric Sets



No		mm		mm		mm		mm	
Full sets including		Single micrometers		Setting rings		Extensions			
00813409	BAE	3,5 ÷ 6,5	00813410	3,5 ÷ 4	00843200	4	–		
			00813411	4 ÷ 4,5	00843201	5,5			
			00813412	4,5 ÷ 5,5					
			00813413	5,5 ÷ 6,5					
00810000	BAF	6 ÷ 12	00810001	6 ÷ 8	00840101	8	00840001	100	
			00810002	8 ÷ 10	00840102	10			
			00810003	10 ÷ 12					
00810800	BAG	11 ÷ 20	00810801	11 ÷ 14	00840103	11	00840301	150	
			00810802	14 ÷ 17	00840105	17			
			00810803	17 ÷ 20					
00811500	BAH	20 ÷ 40	00811501	20 ÷ 25	00840106	25	00841100	150	
			00811502	25 ÷ 30	00840107	35			
			00811503	30 ÷ 35					
			00811504	35 ÷ 40					
00812300	BAJ	40 ÷ 100	00812301	40 ÷ 50	00840108	50	00841800	150	
			00812302	50 ÷ 60	00840109	70			
			00812303	60 ÷ 70	00840110	90			
			00812304	70 ÷ 80					
			00812305	80 ÷ 90					
			00812306	90 ÷ 100					
00812600	BAK	100 ÷ 200	00812601	100 ÷ 125	00840112	125	00842600	150	
			00812602	125 ÷ 150	00840113	175			
			00812603	150 ÷ 175					
			00812604	175 ÷ 200					

Accessories for both TESA IMICRO and TESA IMICRO capa μ system

Extensions for Deep Hole Measurement



Nº		mm	Nº		mm
00840001		6 ÷ 12	00841800		40 ÷ 100
00840301		11 ÷ 20	00841801		500
00840302		500	00841802		1000
00841100		20 ÷ 40	00842600		100 ÷ 300
00841101		500	00842601		500
00841102		1000	00842602		1000



DIN 863 T4
(Style C1)

Centring Devices for TESA IMICRO



Nº		mm		mm
00860001		40 ÷ 100		150
00862601		100 ÷ 200		200



Moulded Cases for Single Micrometers, Full Sets and Partial Sets

Nº		Nº		mm
Single micrometers				
—		06160002		3,5 ÷ 12
00860007		06160002		11 ÷ 20
00860011		06160002		20 ÷ 40
00860015		06160003		40 ÷ 70
00860016		06160003		70 ÷ 100
00863016		00863016		100 ÷ 300

Nº		Nº		mm
Micrometer sets				
00863035		06160006		3,5 ÷ 6,5
00863005		06160005		6 ÷ 12
00860008		06160005		11 ÷ 20
00860012		06160006		20 ÷ 40
00860017		06160007		40 ÷ 100
00863017		00863017		100 ÷ 200

IMICRO Adapter

Every TESA IMICRO (SM versions or models with analogue indication) can easily be updated by means of the adapter used for coupling the measuring head with the new capa μ system element.



Nº	Nº		mm
Capa μ system element	Adapter		Application range
06130011			6 ÷ 100
	06140048		6 ÷ 12
	06140049		11 ÷ 20
	06140050		20 ÷ 40
	06140051		40 ÷ 100

Note: To ensure accuracy, the micrometer needs to be recalibrated.

TESA ALESOMETER capa μ system with Digital Display

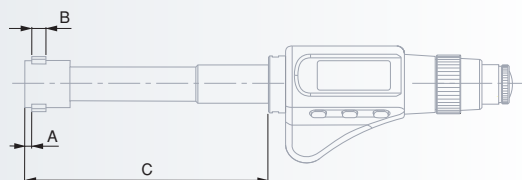
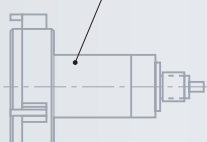
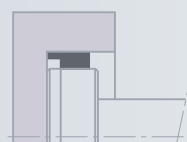


Fitted with a TESA patented capacitive measuring system

Bore gauges with 3-line contact. All TESA ALESOMETER are made to measure through and blind bores as well as short centring shoulders, except for the models covering the application range from 6 to 10 mm.



Measuring head



Single Bore Gauges, Complete

No							
	mm	in	µm	µm	A mm*	B mm	C mm
06230051	6 ÷ 8	0.2362 ÷ 0.3150	4	4	1,2	3	55
06230052	8 ÷ 10	0.3150 ÷ 0.3970	4	4	1,2	3	55
06230023	10 ÷ 12,5	0.3970 ÷ 0.4921	4	4	0,3	6,5	65
06230024	12,5 ÷ 15	0.4921 ÷ 0.5905	4	4	0,3	6,5	65
06230025	15 ÷ 17,5	0.5905 ÷ 0.6890	4	4	0,3	6,8	65
06230026	17,5 ÷ 20	0.6890 ÷ 0.7874	4	4	0,3	6,8	95
06230027	20 ÷ 25	0.7874 ÷ 0.9843	4	4	0,3	8,5	100
06230028	25 ÷ 30	0.9843 ÷ 1.1811	4	4	0,3	8,5	100
06230029	30 ÷ 35	1.1811 ÷ 1.3780	4	4	0,3	8,5	100
06230030	35 ÷ 40	1.3780 ÷ 1.5748	4	4	0,3	8,5	100
06230031	40 ÷ 50	1.5748 ÷ 1.9685	4	4	0,3	14,5	140
06230032	50 ÷ 60	1.9685 ÷ 2.3622	5	5	0,3	14,5	140
06230033	60 ÷ 70	2.3622 ÷ 2.7560	5	5	0,3	14,5	140
06230034	70 ÷ 85	2.7560 ÷ 3.3465	5	5	0,3	14,5	140
06230035	85 ÷ 100	3.3465 ÷ 3.9370	5	5	0,3	14,5	140
06230036	100 ÷ 125	3.9370 ÷ 4.9212	6	6	0,3	30	175
06230037	125 ÷ 150	4.9212 ÷ 5.9055	6	6	0,3	30	175
06230038	150 ÷ 175	5.9055 ÷ 6.8897	7	7	0,3	30	175
06230039	175 ÷ 200	6.8897 ÷ 7.8740	7	7	0,3	30	175
06230040	200 ÷ 225	7.8740 ÷ 8.8582	8	8	0,3	30	175
06230041	225 ÷ 250	8.8582 ÷ 9.8425	8	8	0,3	30	175
06230042	250 ÷ 275	9.8425 ÷ 10.8267	8	8	0,3	30	175
06230043	275 ÷ 300	10.8267 ÷ 11.8110	8	8	0,3	30	175

Optional Accessory

01961000 1 Lithium battery 3 V, 190 mAh, type CR 2032

* Not applicable for models from 10 mm since the measuring inserts are close to the micrometer front face.

For ordering information on setting rings, see both pages D-12 and D-17, or report to page D-10 for storage cases or to section A for connecting cables and the like.



DIN 863 T4.

Style C1

for models

6 to 10 mm or style C2 for all other models



0,001 mm

0.00005 in



Metric/inch

conversion



LCD, digit height

7 mm



Floating zero



Display lock



Measuring

inserts for

application range

6 to 10 mm: steel, hardened to HV30 550.
10 to 300: tungsten carbide tipped, HRC $\geq$ 70.



RS 232

opto-coupled,

bidirectional



3 V lithium battery



1 to 2 a

($\approx$ 2000 h/a)



Automatic

shut down

after 10 min.

Display setting is retained as long as power supply remains stable.



10 °C to 40 °C



-10 °C to 60 °C



80%,

non condensing



✓



For the measuring

element IP54

(IEC 60529) or

IP40 with active data output



$\leq$ 100 mm in

a plastic case

> 100 mm in

a wooden case



Identification

number



Inspection report

with a declaration

of conformity

TESA ALESOMETER capa μ system with Digital Display

Partial Sets plus Components



Fitted with TESA patented capacitive measuring system

Models that cover the application range from 6 to 10 mm can only measure through bores – All other partial sets also allow blind bores as well as short centring shoulders to be inspected.



DIN 863 T4.
Style C1
for models
6 to 10 mm or C2 for
all other models



0,001 mm
0.00005 in



Measuring inserts
for application
range
6 to 10 mm: steel,
hardened to HV30 550.
10 to 300: tungsten carbide
tipped to HRC $\geq$ 70.



For additional
technical data,
see on page D-9
or D-12 for setting rings.



$\leq$ 100 m in a
plastic case,
> 100 m in a
wooden case



Identification
number



Inspection report
with a declaration
of conformity

Nº		Nº		Nº	Nº	Nº		Nº
	mm		mm				mm	
<i>Partial sets including</i>		<i>Measuring heads</i>		<i>Connectors</i>	<i>Measuring elements</i>	<i>Setting rings</i>		<i>Storage cases</i>
06230100	6 ÷ 10	0081720351	6 ÷ 8	0081620491	06230020	0211625101	8	06260001
		0081720353	8 ÷ 10					
06230110	10 ÷ 20	0081720356	10 ÷ 12,5	0081620492	06230020	0211625102	12,5	06260001
		0081720358	12,5 ÷ 15			0211625103	17,5	
		0081720360	15 ÷ 17,5					
		0081720362	17,5 ÷ 20					
06230111	20 ÷ 40	0081720364	20 ÷ 25	0081620493	06230020	0211625104	25	06260001
		0081720366	25 ÷ 30			0211625105	35	
		0081720368	30 ÷ 35					
		0081720370	35 ÷ 40					
06230112	40 ÷ 100	0081720372	40 ÷ 50	0081620494	06230020	0211625106	45	0081629525
		0081720374	50 ÷ 60			0211625107	60	
		0081720376	60 ÷ 70			0211625109	85	
		0081720378	70 ÷ 85					
		0081720380	85 ÷ 100					
<i>Set composition for application range from 100 to 300 mm available upon request</i>								
		<i>Measuring heads</i>		<i>Connectors</i>	<i>Measuring element</i>	<i>Setting rings</i>		<i>Storage cases</i>
		0081720382	100 ÷ 125	0081620495	06230020	0211625111	125	00863016
		0081720384	125 ÷ 150			0211625112	150	
		0081720386	150 ÷ 175			0211625112	150	
		0081720388	175 ÷ 200			0211625113	175	
		0081720390	200 ÷ 225			0211625114	200	
		0081720392	225 ÷ 250			0211625115	225	
		0081720394	250 ÷ 275			0211625116	250	
		0081720396	275 ÷ 300			0211625117	275	

Each storage case can contain a single measuring head only.



NF E 11-099.
Type 1
for models
6 to 10 mm or type 2 for
all other models

Measuring inserts
for application
range

6 to 10 mm: steel,
hardened to HV30 550.
10 to 300 mm:
tungsten carbide tipped to
HRC $\geq$ 70.

Wooden case

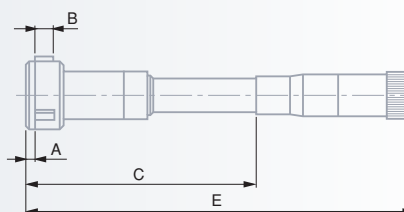
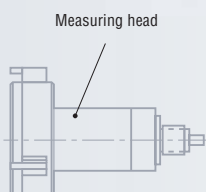
Identification
number

Declaration
of conformity

Calibration
certificate
upon request

ROCH ALESOMETER with Analogue Indication, Metric

Bore gauges with 3-line contact. All ROCH ALESOMETER let you measure not only through bores, but also blind bores as well as centring shoulders, except for the models covering the application range 6 to 10 mm.



Single Bore Gauges, complete

							
	mm	mm	µm	A mm*	B mm	C mm	E mm
0081725001	6 ÷ 8	0,001	4	1,2	3	54,5	107
0081725003	8 ÷ 10	0,001	4	1,2	3	54,5	107
0081725006	10 ÷ 12,5	0,001	4	0,3	6,5	64,5	117
0081725008	12,5 ÷ 15	0,001	4	0,3	6,5	64,5	117
0081725010	15 ÷ 17,5	0,001	4	0,3	6,8	64,5	117
0081725012	17,5 ÷ 20	0,001	4	0,3	6,8	64,5	117
0081725014	20 ÷ 25	0,001	4	0,3	8,5	70	122,5
0081725016	25 ÷ 30	0,001	4	0,3	8,5	70	122,5
0081725018	30 ÷ 35	0,001	4	0,3	8,5	70	122,5
0081725020	35 ÷ 40	0,001	4	0,3	8,5	70	122,5
0081725022	40 ÷ 50	0,001	4	0,3	14,5	108,7	188,7
0081725024	50 ÷ 60	0,001	5	0,3	14,5	108,7	188,7
0081725026	60 ÷ 70	0,001	5	0,3	14,5	108,7	188,7
0081725028	70 ÷ 85	0,001	5	0,3	14,5	126,7	206,7
0081725030	85 ÷ 100	0,001	5	0,3	14,5	126,7	206,7
0081725032	100 ÷ 125	0,01	7	0,3	30	153,7	233,5
0081725034	125 ÷ 150	0,01	7	0,3	30	153,7	233,5
0081725036	150 ÷ 175	0,01	8	0,3	30	153,7	233,5
0081725038	175 ÷ 200	0,01	8	0,3	30	153,7	233,5
0081725040	200 ÷ 225	0,01	9	0,3	30	153,7	233,5
0081725042	225 ÷ 250	0,01	9	0,3	30	153,7	233,5
0081725044	250 ÷ 275	0,01	9	0,3	30	153,7	233,5
0081725046	275 ÷ 300	0,01	9	0,3	30	153,7	233,5

* Not applicable for models from 10 mm since the measuring inserts are close to the micrometer front face.

ROCH ALESOMETER with Analogue Indication – Full Metric Sets



							
Full sets including		Single bore gauges		Setting rings		Extensions	
0081725063	6 ÷ 10	0081725001	6 ÷ 8	0211625101	8	0081625081	100
		0081725003	8 ÷ 10				
0081725066	10 ÷ 20	0081725006	10 ÷ 12,5	0211625102	12,5	0081625082	100
		0081725008	12,5 ÷ 15	0211625103	17,5		
		0081725010	15 ÷ 17,5				
		0081725012	17,5 ÷ 20				
0081725068	20 ÷ 40	0081725014	20 ÷ 25	0211625104	25	0081625083	150
		0081725016	25 ÷ 30	0211625105	35		
		0081725018	30 ÷ 35				
		0081725020	35 ÷ 40				
0081725070	40 ÷ 100	0081725022	40 ÷ 50	0211625106	45	0081625084	150
		0081725024	50 ÷ 60	0211625107	60		
		0081725026	60 ÷ 70	0211625109	85		
		0081725028	70 ÷ 85				
		0081725030	85 ÷ 100				
0081725072	100 ÷ 150	0081725032	100 ÷ 125	0211625111	125	0081625085	200
		0081725034	125 ÷ 150				

Extensions for Depth Increase

		
	mm	mm
0081625081	6 ÷ 10	100
0081625082	10 ÷ 20	100
0081625083	20 ÷ 40	150
0081625084	40 ÷ 100	150
0081625085	100 ÷ 300	200

ROCH Setting Rings

			
	mm		mm
0211625101	8	0211625110	90
0211625102	12,5	0211625111	125
0211625103	17,5	0211625112	150
0211625104	25	0211625113	175
0211625105	35	0211625114	200
0211625106	45	0211625115	225
0211625107	60	0211625116	250
0211625109	85	0211625117	275



NF E 11-099.



Type 1
for models
6 to 10 mm or type 2 for
all other models.



Measuring inserts
for application
range

6 to 10 mm: steel,
hardened to HV30 550.
10 to 300 mm:
tungsten carbide tipped to
HRC ≥ 70.



For any additional
data, see
on page D-11



Wooden case



Identification
number



Declaration
of conformity



Calibration
certificate
upon request

Extensions



Hardened steel.
Insulated body
against hand
warmth.



Identification
number



Declaration
of conformity

Setting rings



NF E 11-011,
type A2



Steel, hardened
to 60 HRC



Bore related
tolerance
± (3 μm + 10 · 10⁻⁶ D) μm



D = Nominal
diameter in mm
(1 μm + 5 · 10⁻⁶ D) μm



Shipping box



Identification
number



Calibration
certificate
upon request



DIN 863 T4
(Style C2)
NF E 11-099

0,002 mm

0,01 mm

Tungsten carbide
tipped measuring
bolts and cone

Supplied
with 1 heat
insulating
sleeve (No. 00940020),
2 keys (No. 00940001),
1 screwdriver
(No. 00862801).

Shipping box

Identification
number

Inspection report
with a declaration
of conformity

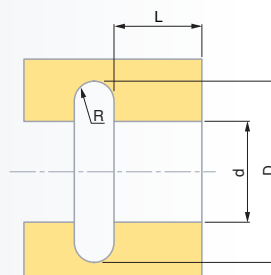
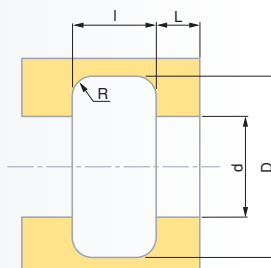
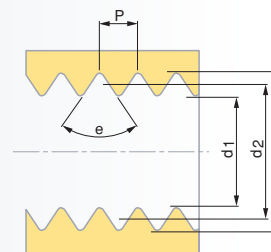
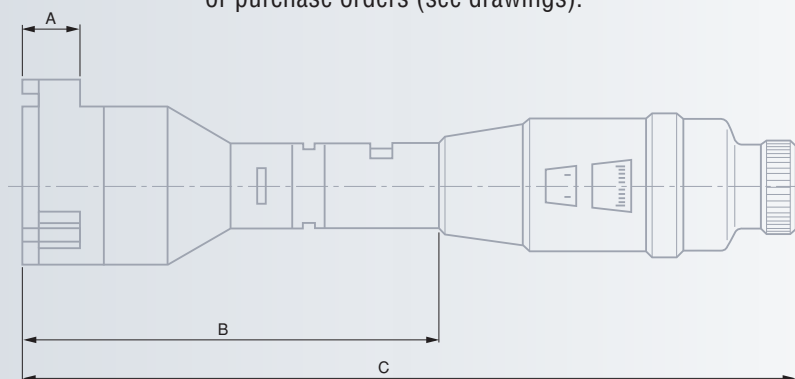
TESA TRI-O-BOR

Self-centring and self-aligning internal micrometers with 3-line contact with the part being inspected. These micrometers measure trough holes, blind bores and short centring shoulders.



Measuring Bolts with Special Design

Used for ISO metric threads (M16 x 0,5 to M150 x 6), UN, UNC or UNF unified imperial threads (60°) and Whitworth threads (55°). Measuring bolts with special profiles can also be made available. Both the size and type of the thread or the workpiece to be measured must be specified in your inquiries or purchase orders (see drawings).



No	mm	μm	μm	A mm	B mm	C mm
00910005	15 ÷ 20	4	4	6	≥ 66	≤ 132
00910006	20 ÷ 25	4	4	6	≥ 66	≤ 132
00910007	25 ÷ 30	4	4	6	≥ 66	≤ 132
00910405	30 ÷ 40	4	4	10	≥ 70	≤ 138
00910406	40 ÷ 50	4	4	10	≥ 70	≤ 138
00910407	50 ÷ 60	5	5	10	≥ 70	≤ 138
00910705	60 ÷ 70	5	5	18	≥ 78	≤ 147
00910706	70 ÷ 80	5	5	18	≥ 78	≤ 147
00910707	80 ÷ 90	5	5	18	≥ 78	≤ 147
00911105	90 ÷ 100	5	5	18	≥ 78	≤ 147
00911106	100 ÷ 110	6	6	18	≥ 78	≤ 147
00911107	110 ÷ 120	6	6	18	≥ 78	≤ 147

TESA TRI-O-BOR Full Sets



For technical data, see on page D-13.
For setting rings, report to page D-17.



Supplied with 1 extension for depth increase (150 mm) No. 00940000, 1 heat insulating sleeve No. 00940020, 2 keys No. 00940001, 1 screwdriver No. 00862801.



Protective case or carrying case



Inspection report with a declaration of conformity

Metric Executions

  			  			  		
mm			mm			mm		
Full sets including			Single micrometers		Setting rings		Extensions	
00910004	BSC	15 ÷ 30	00910005	15 ÷ 20	00840104	15	00940000	150
			00910006	20 ÷ 25	00840105	25		
			00910007	25 ÷ 30				
00910404	BSD	30 ÷ 60	00910405	30 ÷ 40	00840107	35	00940000	150
			00910406	40 ÷ 50	00840108	50		
			00910407	50 ÷ 60				
00910704	BSF	60 ÷ 90	00910705	60 ÷ 70	00840109	70	00940000	150
			00910706	70 ÷ 80	00840110	90		
			00910707	80 ÷ 90				
00911104	BSG	90 ÷ 120	00911105	90 ÷ 100	00840110	90	00940000	150
			00911106	100 ÷ 110	00840111	110		
			00911107	110 ÷ 120				

TESA TRI-O-BOR Accessories

Extension for Depth Increase

	
00940000	150 mm



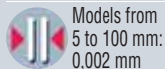
Protective or Plastic Carrying Cases for TESA TRI-O-BOR

 			
Single micrometers		mm	in
00960023	00960024	15 ÷ 30	0.6 ÷ 1.2
00960025	00960026	30 ÷ 60	1.2 ÷ 2.4
00960027	00960028	60 ÷ 90	2.4 ÷ 3.6
00960004	00960008	90 ÷ 120	3.6 ÷ 4.8

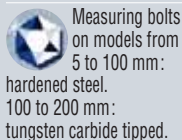




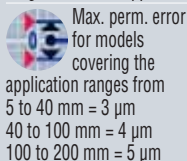
Models from
10 to 100 mm:
DIN 863 T4
(Style C2) NF E 11-099



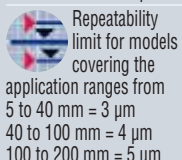
Models from
5 to 100 mm:
0,002 mm
Models 100 to 200 mm
with vernier reading:
0,01 mm.



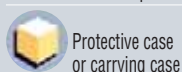
Measuring bolts
on models from
5 to 100 mm:
hardened steel.
100 to 200 mm:
tungsten carbide tipped.



Max. perm. error
for models
covering the
application ranges from
5 to 40 mm = 3 μ m
40 to 100 mm = 4 μ m
100 to 200 mm = 5 μ m



Repeatability
limit for models
covering the
application ranges from
5 to 40 mm = 3 μ m
40 to 100 mm = 4 μ m
100 to 200 mm = 5 μ m



Protective case
or carrying case



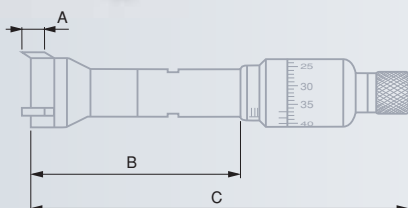
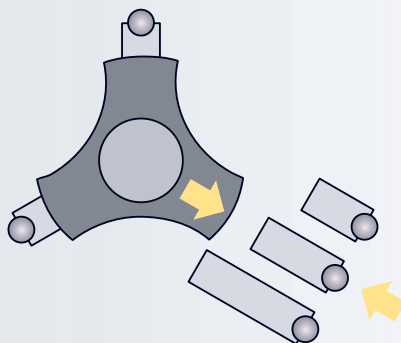
Identification
number



Inspection report
with a declaration
of conformity

ETALON INTALOMETER 531

Made to check through holes, blind bores and short centring shoulders.
All models covering the application range up to 100 mm have sloped bolts
extending beyond the front face of the measuring head.



No	mm		A mm	B mm	C mm
078112356	5 ÷ 6	2 x 180°	3	≥ 32	≤ 109
078112357	6 ÷ 7	2 x 180°	3	≥ 33	≤ 111
078112358	7 ÷ 8,5	2 x 180°	4	≥ 60	≤ 130
078112359	8,5 ÷ 10	2 x 180°	4	≥ 72	≤ 133
078112360	10 ÷ 12,5	3 x 120°	3	≥ 60	≤ 118
078112361	12,5 ÷ 15	3 x 120°	3	≥ 63	≤ 120
078112362	15 ÷ 17,5	3 x 120°	3	≥ 65	≤ 122
078112363	17,5 ÷ 20	3 x 120°	3	≥ 68	≤ 125
078112364	20 ÷ 25	90°-135°-135°	7	≥ 75	≤ 132
078112365	25 ÷ 30	90°-135°-135°	7	≥ 80	≤ 138
078112366	30 ÷ 35	90°-135°-135°	7	≥ 90	≤ 142
078112367	35 ÷ 40	90°-135°-135°	7	≥ 90	≤ 148
078112368	40 ÷ 45	90°-135°-135°	10,5	≥ 110	≤ 167
078112369	45 ÷ 50	90°-135°-135°	10,5	≥ 113	≤ 170
078112370	50 ÷ 60	90°-135°-135°	15	≥ 123	≤ 187
078112371	60 ÷ 70	90°-135°-135°	15	≥ 130	≤ 193
078112372	70 ÷ 85	90°-135°-135°	15	≥ 145	≤ 213
078112373	85 ÷ 100	90°-135°-135°	15	≥ 155	≤ 224
078110733	100 ÷ 125	3 x 120°	27	≥ 105	≤ 194
078110735	125 ÷ 150	3 x 120°	27	≥ 105	≤ 194
078110737	150 ÷ 175	3 x 120°	27	≥ 105	≤ 194
078110739	175 ÷ 200	3 x 120°	27	≥ 105	≤ 194

Measuring range up to 300 mm available upon request.

ETALON INTALOMETER 531

Metric Tool Sets



For technical data, see page D-15. For setting rings, report to page D-17.



Protective case or carrying case



Inspection report with a declaration of conformity

								
	mm		mm	mm		mm		mm

Full sets including		Single micrometers		Extensions		Setting rings	
078110592	5 ÷ 10	078112356	5 ÷ 6	078103613	100	00840114	6
		078112357	6 ÷ 7			00840115	8,5
		078112358	7 ÷ 8,5				
		078112359	8,5 ÷ 10				
078110594	10 ÷ 20	078112360	10 ÷ 12,5	078103621	150	00840116	12,5
		078112361	12,5 ÷ 15			00840117	17,5
		078112362	15 ÷ 17,5				
		078112363	17,5 ÷ 20				
078110596	20 ÷ 40	078112364	20 ÷ 25	078103624	150	00840106	25
		078112365	25 ÷ 30			00840107	35
		078112366	30 ÷ 35				
		078112367	35 ÷ 40				
078110598	40 ÷ 100	078112368	40 ÷ 45	078104940	150	00843230	45
		078112369	45 ÷ 50			00843239	60
		078112370	50 ÷ 60			00840118	85
		078112371	60 ÷ 70				
		078112372	70 ÷ 85				
		078112373	85 ÷ 100				
Partial sets including		Single micrometers	Measuring bolts		Extensions		
078110749	100 ÷ 150	078110733	078111003*	100 ÷ 125	078104940	150	
			078111004	125 ÷ 150			

* Bolt set provided with the single micrometer No. 078110733.



Shipping
box



Identification
number

TESA Setting Rings and Setting Masters



			
	mm	µm*	µm**
<i>Setting rings</i>			
00843200	4	1,5	1,5
00843201	5,5	1,5	1,5
00840114	6	1,5	1,5
00840101	8	1,5	1,5
00840115	8,5	1,5	1,5
00840102	10	1,5	1,5
00840103	11	1,5	1,5
00840116	12,5	1,5	1,5
00840104	15	1,5	1,5
00840105	17	1,5	1,5
00840117	17,5	1,5	1,5
00840106	25	1,5	1,5
00840107	35	2	2
00843230	45	2	2
00840108	50	2	2
00843239	60	2	2
00840109	70	2	2
00840118	85	2	2
00840110	90	2	2
00840111	110	2,5	2,5
00840112	125	2,5	2,5
00840113	175	2,5	4
<i>Setting master</i>			
00843101	225, 275	—	6

* Making no allowance for a rim of 1 mm.

** All listed values are determined through a 2-point measurement taken at half-height of the setting ring. The measuring direction is marked with 2 strokes. The measured actual dimension is engraved on every setting master.