

ETALON Basic Steel Gauge Sets, Metric



ISO 3650

Highly alloyed steel, resistant to wear

$(11,5 \pm 1,0) \times 10^{-6} \text{ K}^{-1}$

Limit deviations t_e on page J-4

Tolerances t_v on page J-4

See page J-4

Wooden case

Identification number

SCS or COFRAC calibration certificate



SCS calibration certificate



COFRAC calibration certificate



$\frac{2}{1} \frac{3}{1}$
mm

Set compositions



Steps
mm

Pieces

32-Piece Set

06519000	06519010	1	1,005		1
06519001	06519011	2	1,01 ÷ 1,09	0,01	9
			1,1 ÷ 1,9	0,1	9
			1 ÷ 9,0	1,0	9
			10, 20, 30, 50		4

47-Piece Set

06519002	06519012	1	1,005		1
06519003	06519013	2	1,01 ÷ 1,09	0,01	9
			1,1 ÷ 1,9	0,1	9
			1,0 ÷ 24,0	1,0	24
			25 ÷ 100	25	4

88-Piece Set

06519004	06519014	1	1,0005		1
06519005	06519015	2	1,001 ÷ 1,009	0,001	9
			1,01 ÷ 1,49	0,01	49
			0,5 ÷ 9,5	0,5	19
			10 ÷ 100	10	10



TESA Gauge Sets, Metric Nominal lengths up to 100 mm



Steel	Carbide	Ceramic		Set compositions		
No	No	No	2 1 3	mm	Steps mm	Pieces
32-Piece Set – M32						
0651516027	0651526027	0651536027	K	1,005		1
0651515027	0651525027	0651535027	0	1,01 ÷ 1,09	0,01	9
0651511027	0651521027	0651531027	1	1,1 ÷ 1,9	0,1	9
0651512028	0651522027	0651532027	2	1,0 ÷ 9,0	1,0	9
				10, 20, 30, 60		4
46-Piece Set – M46						
0651516024	0651526024	0651536024	K	1,001 ÷ 1,009		9
0651515024	0651525024	0651535024	0	1,01 ÷ 1,09	0,01	9
0651511024	0651521024	0651531024	1	1,1 ÷ 1,9	0,1	9
0651512024	0651522024	0651532024	2	1,0 ÷ 9,0	1,0	9
				10 ÷ 100	10	10
47-Piece Set – M47						
0651516021	0651526021	0651536021	K	1,005		1
0651515021	0651525021	0651535021	0	1,01 ÷ 1,09	0,01	9
0651511021	0651521021	0651531021	1	1,1 ÷ 1,9	0,1	9
0651512021	0651522021	0651532021	2	1,0 ÷ 24,0	1,0	24
				25 ÷ 100	25	4
88-Piece Set – M88						
0651516014	0651526014	0651536014	K	1,0005		1
0651515014	0651525014	0651535014	0	1,001 ÷ 1,009	0,001	9
0651511014	0651521014	0651531014	1	1,01 ÷ 1,49	0,01	49
0651512014	0651522014	0651532014	2	0,5 ÷ 9,5	0,5	19
				10 ÷ 100	10	10
103-Piece Set – M103						
0651516013	0651526013	0651536013	K	1,005		1
0651515013	0651525013	0651535013	0	1,01 ÷ 1,49	0,01	49
0651511013	0651521013	0651531013	1	0,5 ÷ 24,5	0,5	49
0651512013	0651522013	0651532013	2	25 ÷ 100	25	4
112-Piece Set – M112						
0651516012	0651526012	0651536012	K	1,0005		1
0651515012	0651525012	0651535012	0	1,001 ÷ 1,009	0,001	9
0651511012	0651521012	0651531012	1	1,01 ÷ 1,49	0,01	49
0651512012	0651522012	0651532012	2	0,5 ÷ 24,5	0,5	49
				25 ÷ 100	25	4

- Steel gauge blocks
- Tungsten carbide and ceramic gauge blocks
- ISO 3650
- Steel: highly alloyed, wear resistant
- Tungsten carbide: wear resistant and stable.
- Ceramic: stabilised zirconia, extremely resistant to wear and scratches
- Steel: $(11,5 \pm 1,0) \times 10^{-6} K^{-1}$
- Tungsten carbide: $(4,23 \pm 0,1) \times 10^{-6} K^{-1}$
- Ceramic: $(9,7 \pm 0,8) \times 10^{-6} K^{-1}$
- Limit deviations t_e on page J-4
- Tolerances t_v on page J-4
- See page J-4
- Supplied individually or in sets
- Wooden case
- Identification number
- Steel gauges to all grades with SCS certificate
- Carbide or ceramic gauges to all grades with UKAS certificate

Continued page J-7

Steel	Carbide	Ceramic		Set compositions		
<i>122-Piece Set – M122</i>						
0651516011	0651526011	0651536011	K	1,0005		1
0651515011	0651525011	0651535011	0	1,001 ÷ 1,009	0,001	9
0651511011	0651521011	0651531011	1	1,01 ÷ 1,49	0,01	49
0651512011	0651522011	0651532011	2	1,6 ÷ 1,9	0,1	4
				0,5 ÷ 24,5	0,5	49
				30 ÷ 100	10	8
				25, 75		2

Individual TESA Gauge Blocks Nominal lengths up to 100 mm

Only gauge blocks to both grades K and 00 are supplied with a calibration certificate as below.

- SCS for steel gauge blocks
- UKAS for tungsten carbide or ceramic gauge blocks

For any other accuracy grade, no calibration certificate is delivered unless specified.

TESA Gauge Set, Metric Long series with nominal lengths over 100 mm



Steel	Ceramic tipped		Set compositions						
<i>8-Piece Set – ML8</i>									
0651516500	0651536500	K	125	150	175	200	250	300	
0651515500	0651535500	0	400	500					
0651511500	0651531500	1							
0651512500	0651532500	2							

Individual gauge blocks are supplied with a UKAS certificate of calibration.
Measurement uncertainty 0,1 + (1 x L) µm, L in m.



Highly alloyed steel, stable and wear resistant.
Ceramic tipped gauge blocks in special steel with zirconia tipped ends.



(11,5 ± 1,0) x 10⁻⁶ K⁻¹
2 coupling holes.
Also with engraved Airy point.



Additional technical data on page J-4
Wooden case



UKAS calibration certificate



TESA Gauge Set, Inch Nominal lengths up to 4 in



BS 4311
Part 1



Additional
technical data
on page J-4



See BS 4311
Part 1



Supplied as
single gauge
blocks or in sets



Moulded
wooden case



Identification
number



UKAS
calibration
certificate



Tungsten carbide



Ceramic tipped



81-Piece Set – E81 with 2 Protective Gauge Blocks

			in	Steps in	Pieces
0652526012	0652536012	K	0.1001 ÷ 0.1009	0.0001	9
0652525012	0652535012	0	0.101 ÷ 0.149	0.001	49
0652521012	0652531012	1	0.05 ÷ 0.95	0.05	19
0652522012	0652532012	2	1.0 ÷ 4.0	1.0	4
			0.10		2

Individual gauge blocks of grade K are supplied with a UKAS calibration certificate.
For any other accuracy grade, no certificate is delivered unless specified.

TESA Gauge Sets Nominal lengths over 4 in



Factory standard



Highly
alloyed steel,
stable and wear
resistant.

Ceramic tipped gauge blocks
in special steel with zirconia
tipped ends.



(11,5 ± 1,0)
x 10⁻⁶ K⁻¹



2 coupling
holes.

Also with engraved
Airy point.



Additional
technical data
on page J-9



Wooden case



Identification
number



UKAS
calibration
certificate



Steel



Ceramic tipped



8-Piece Set – EL8

			Set compositions							
			in							
0652516500	0652536500	K	5	6	7	8	10	12	16	20
0652515500	0652535500	0								
0652511500	0652531500	1								
0652512500	0652532500	2								

Individual gauge blocks are supplied with a UKAS calibration certificate.
Measurement uncertainty 0,1 + (1 x L) µm, L in m.

Limit Deviations and Tolerances According to Factory Standard for Gauge Blocks over 4 in

Nominal length <i>in</i>	Calibration grade K		Grade 0		Grade 1		Grade 2	
	Limit deviation of length at any point from nominal length	Tolerance for the variation in length	Limit deviation of length at any point from nominal length	Tolerance for the variation in length	Limit deviation of length at any point from nominal length	Tolerance for the variation in length	Limit deviation of length at any point from nominal length	Tolerance for the variation in length
	$\pm t_e$ μin	t_v μin	$\pm t_e$ μin	t_v μin	$\pm t_e$ μin	t_v μin	$\pm t_e$ μin	t_v μin
$4 < l_n \leq 6$	31	3	15	5	31	8	63	16
$6 < l_n \leq 8$	40	3	20	6	40	10	79	16
$8 < l_n \leq 10$	47	4	23	6	47	10	95	18
$10 < l_n \leq 12$	55	4	28	7	55	10	110	20
$12 < l_n \leq 16$	70	5	35	8	70	12	140	20
$16 < l_n \leq 20$	87	5	43	10	87	14	174	24

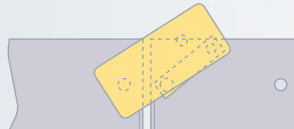


Constant force. Compression at each locking point is within 0,3 to 0,4 μm .

TESA Toggle Clamp for Long Series Gauge Blocks over 100 mm/4 in



0651500492 Toggle clamp for long series gauge blocks



Full set in a wooden case

TESA Maintenance Kit



0652500450 TESA maintenance kit for gauge blocks

Supplied with the following items:



- 0652500452 1 Arkansas stone
- 0652500453 1 Soft tipped tweezers
- 0652500454 1 Pneumatic vacuum pen
- 0652500455 1 Nanofibre cleaning cloth
- 0652500456 1 Pair of cotton gloves
- 0652500457 1 Acid-free solvent
- 0652500458 1 Box with protective grease
- 02530050 1 Optical flat, 50 mm dia.
- 0652500460 1 Solvent container
- 0652500461 1 Dust remover
- 0652500462 1 Dust-brush
- 0652500463 1 Bottle of super-fine, acid-free oil
- 0652500451 1 Wooden case

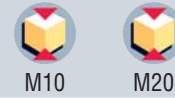


TESA Maintenance Kit for Gauge Blocks



0651570401 TESA accessory set M10
0651570403 TESA accessory set M20

Furnished with the following items:



		M10	M20
①	0651570420 2 measuring jaws with 1 cylindrical (R = 2 mm) and 1 flat measuring faces	●	●
②	0651570421 2 measuring jaws with 1 cylindrical (R = 5 mm) and 1 flat measuring faces	●	●
③	0651570422 2 measuring jaws with 1 cylindrical (R = 8 mm) and 1 flat measuring faces	-	●
④	0651570423 2 measuring jaws with 1 cylindrical (R = 12 mm) and 1 flat measuring faces	●	●
⑤	0651570424 2 measuring jaws with 2 flat and parallel measuring faces, L = 100	-	-
⑥	0651570436 2 measuring jaws with 2 flat and parallel measuring faces, L = 160	-	●
⑦	0651570432 1 Scriber	-	●
⑧	0651570433 1 Centring point	-	●
⑨	0651570434 2 Checking points	●	●
⑩	0651570425 1 Gauge holder, max. tightening 60 mm	-	●
⑪	0651570426 1 Gauge holder, max. tightening 100 mm	●	●
⑫	0651570427 1 Gauge holder, max. tightening 160 mm	-	●
⑬	0651570428 1 Gauge holder, max. tightening 250 mm	●	●
⑭	0651570429 1 Gauge holder, max. tightening 400 mm	-	-
⑮	0651570431 1 Cast iron base for gauge holder	●	●
⑯	0651570438 2 measuring jaws with 1 cylindrical (R = 20 mm) and 1 flat measuring faces	-	●

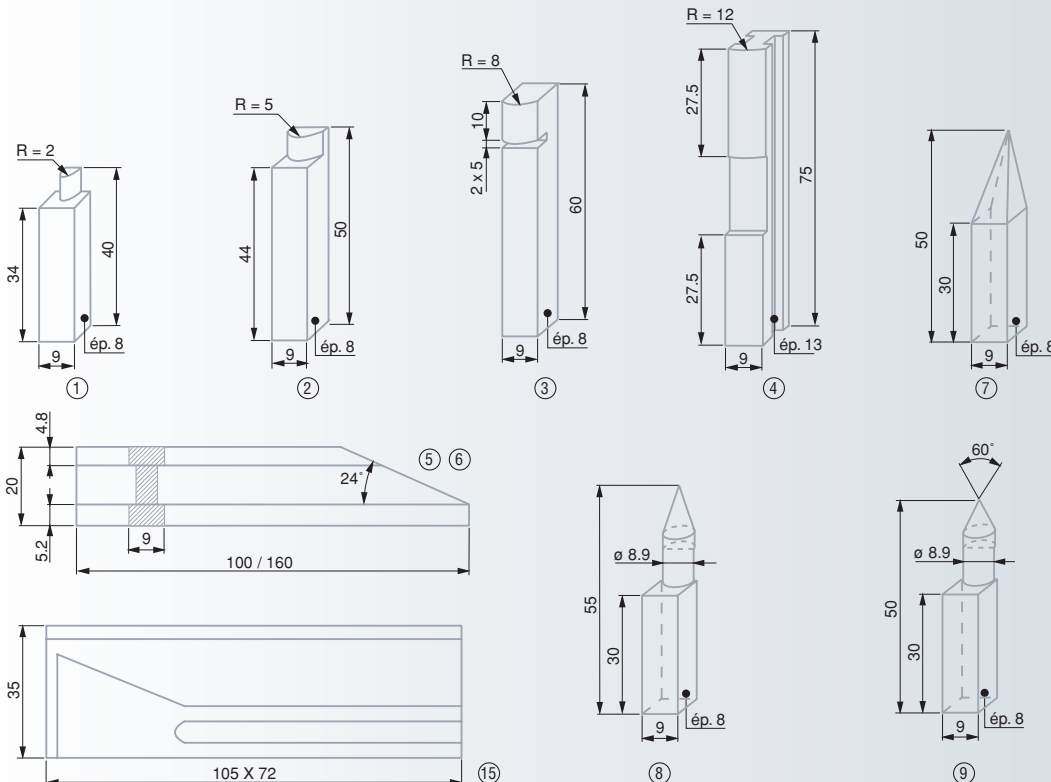
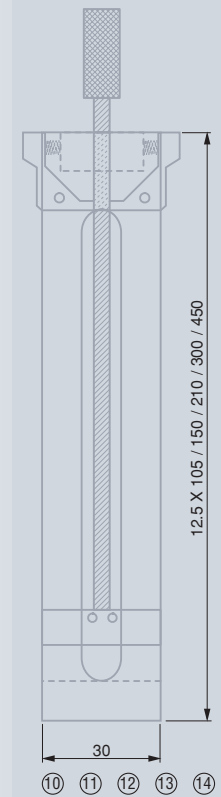


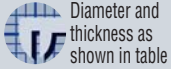
Measuring jaws, scriber and centring points in hardened steel

Available individually or in sets

Full sets in a wooden case

Declaration of conformity





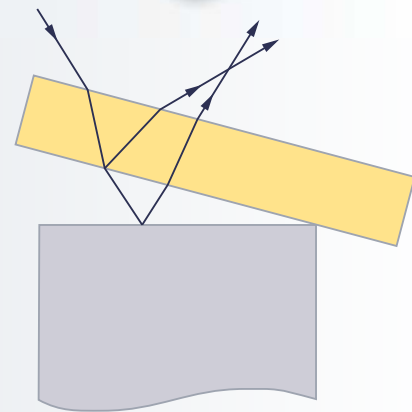
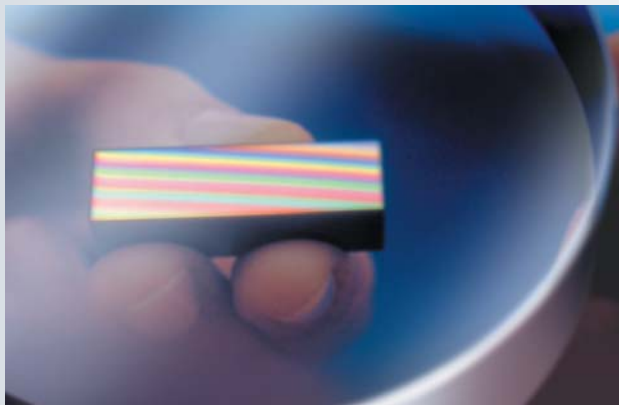
Diameter and thickness as shown in table
Optical flats with 2 flat measuring faces.
Parallelism cannot be guaranteed.



TESA Optical flats

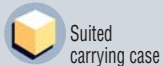
Used for examining flatness and wringability of gauge blocks or any other test pieces having flat faces with same high grade of accuracy.

	mm	mm	μm
02530050	50	15	0,125
02530075	75	20	0,125



Case in lacquered wood
406 x 406 x 355 mm
(W x D x H)

Light source:
35 W sodium lamp,
89% monochromatic,
colour yellow,
wavelength 0,575 μm



TESA Monochromatic Light Unit

For use with optical flats or optical parallels to measure both the flatness and parallelism of the measuring faces by interferometry.

Monochromatic light source providing high-contrast interference fringes. This light unit uses a single wavelength so that bright/light fringes only are visible.

The light source at the rear of the case also permits a visual examination, e.g. with the aid of a knife-edge or bevelled straight edge. .

0652500420	110
0652500422	210 ÷ 230
<i>Accessories</i>	
0651570269	200 mm dia. surface plate. Lapped and polished measuring face
0652500424	Spare lamp (sodium)

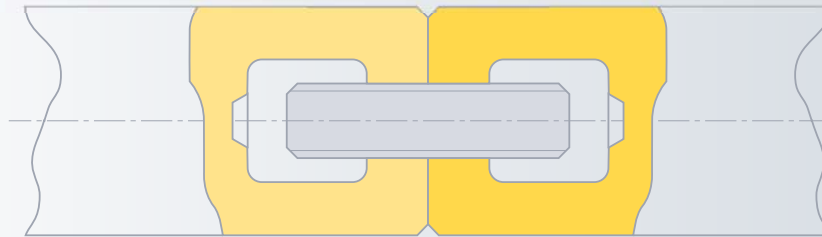
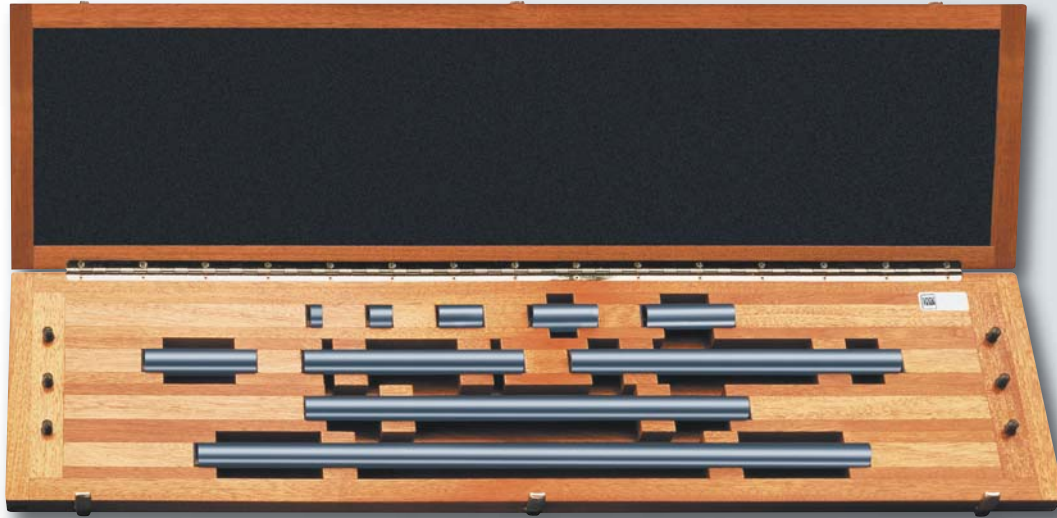


TESA Combination Length Bars with Round Section

The coaxially mounted threaded connection allows length bars of both grades I and W as well as accessory components to be securely joined together so as to form the desired combination.



R = «Reference»
 C = «Calibration»
 I = «Inspection»
 W = «Workshop»



Limit Deviations of Length at any Point from Nominal Length

Grades	R	C	I	W
Nominal length				
mm	μm	μm	μm	μm
$l_n \leq 25$	$\pm 0,08$	$\pm 0,15$	$+ 0,4/- 0,2$	$+ 0,75/- 0,35$
$25 < l_n \leq 50$	$\pm 0,12$	$\pm 0,20$	$+ 0,6/- 0,2$	$+ 0,95/- 0,45$
$50 < l_n \leq 75$	$\pm 0,15$	$\pm 0,30$	$+ 0,7/- 0,3$	$+ 1,2/- 0,5$
$75 < l_n \leq 100$	$\pm 0,2$	$\pm 0,35$	$+ 0,85/- 0,35$	$+ 1,4/- 0,6$
$100 < l_n \leq 125$	$\pm 0,25$	$\pm 0,45$	$+ 1,0/- 0,4$	$+ 1,6/- 0,7$
$125 < l_n \leq 150$	$\pm 0,3$	$\pm 0,50$	$+ 1,1/- 0,5$	$+ 1,8/- 0,8$
$150 < l_n \leq 175$	$\pm 0,3$	$\pm 0,60$	$+ 1,25/- 0,55$	$+ 2,0/- 0,9$
$175 < l_n \leq 200$	$\pm 0,35$	$\pm 0,65$	$+ 1,4/- 0,6$	$+ 2,2/- 1,0$
$275 < l_n \leq 300$	$\pm 0,5$	$\pm 0,95$	$+ 1,4/- 0,6$	$+ 2,2/- 1,0$
$300 < l_n \leq 375$	$\pm 0,5$	$\pm 0,95$	$+ 2,4/- 1,0$	$+ 3,7/- 1,6$
$375 < l_n \leq 400$	$\pm 0,65$	$\pm 1,3$	$+ 2,5/- 1,1$	$+ 3,9/- 1,7$
$500 < l_n \leq 575$	$\pm 0,8$	$\pm 1,6$	$+ 3,5/- 1,5$	$+ 5,4/- 2,3$
$575 < l_n \leq 600$	$\pm 0,95$	$\pm 1,9$	$+ 3,65/- 1,55$	$+ 5,6/- 2,4$
$700 < l_n \leq 775$	$\pm 1,1$	$\pm 2,2$	$+ 4,6/- 2,0$	$+ 7,1/- 3,0$

Grades	R	C	I	W
Nominal length				
in	μin	μin	μin	μin
$l_n \leq 1$	± 3	± 5	$+ 7/- 7$	$+ 10/- 10$
$1 < l_n \leq 2$	± 4	± 10	$+ 14/- 7$	$+ 20/- 10$
$2 < l_n \leq 3$	± 6	± 15	$+ 20/- 10$	$+ 30/- 20$
$3 < l_n \leq 4$	± 8	± 20	$+ 30/- 10$	$+ 40/- 20$
$4 < l_n \leq 5$	± 10	± 25	$+ 35/- 15$	$+ 50/- 30$
$5 < l_n \leq 6$	± 12	± 30	$+ 40/- 20$	$+ 60/- 30$
$6 < l_n \leq 7$	± 14	± 35	$+ 50/- 20$	$+ 70/- 40$
$7 < l_n \leq 8$	± 16	± 40	$+ 55/- 25$	$+ 80/- 40$
$8 < l_n \leq 9$	± 18	± 45	$+ 55/- 25$	$+ 80/- 40$
$9 < l_n \leq 10$	± 20	± 50	$+ 55/- 25$	$+ 80/- 40$
$11 < l_n \leq 12$	± 25	± 60	$+ 55/- 25$	$+ 80/- 40$
$12 < l_n \leq 15$	± 30	± 75	$+ 105/- 45$	$+ 150/- 80$
$15 < l_n \leq 18$	± 35	± 90	$+ 105/- 45$	$+ 150/- 80$
$18 < l_n \leq 23$	± 45	± 120	$+ 160/- 70$	$+ 230/- 120$
$24 < l_n \leq 30$	± 60	± 150	$+ 160/- 70$	$+ 230/- 120$
$30 < l_n \leq 31$	± 60	± 160	$+ 220/- 90$	$+ 310/- 160$
$31 < l_n \leq 40$	± 80	± 200	$+ 280/- 120$	$+ 400/- 200$
$40 < l_n \leq 50$	± 100	± 250	$+ 350/- 150$	$+ 500/- 250$

Metric Gauge Blocks



BS 5317

22 mm

Gauges of both grades I and W with coupling thread M10 x 1,5

Highly alloyed steel, stable and wear resistant. Hardness to ≥ 800 HV.

$(11,5 \pm 1,0) \times 10^{-6} \text{ K}^{-1}$

See table

See BS 5317

See BS 5317

Available individually or in sets

Wooden case

Identification number

UKAS calibration certificate

	Thread		Set compositions					
			mm					
<i>8-Piece Set – MB8</i>								
0651517750	R	–	10	20	40	60	80	100
0651516750	C	–	200	300				
0651511750	I	●						
0651512750	W	●						
<i>9-Piece Set – MB9</i>								
0651517751	R	–	10	20	40	60	80	100
0651516751	C	–	200	300	400			
0651511751	I	●						
0651512751	W	●						
<i>10-Piece Set – MB10</i>								
0651517752	R	–	10	20	40	60	80	100
0651516752	C	–	200	300	400	600		
0651511752	I	●						
0651512752	W	●						
<i>11-Piece Set – MB11</i>								
0651517753	R	–	25	50	75	100	125	150
0651516753	C	–	175	200	375	575	775	
0651511753	I	●						
0651512753	W	●						
<i>14-Piece Set – MB14</i>								
0651517754	R	–	25 ^{3x}	50	75	100	125	150
0651516754	C	–	175	200 ^{2x}	375	575	775	
0651511754	I	●						
0651512754	W	●						

^{2x} = 2 pieces

^{3x} = 3 pieces



Inch Gauge Blocks

No	Thread	Set compositions	in	
			0.5	12
8-Piece Set – EB8				
0652517750	R	–	0.5	12
0652515750	C	–		
0652511750	I	●		
0652512750	W	●		
9-Piece Set – EB9				
0652517751	R	–	0.5	12
0652515751	C	–	18	
0652511751	I	●		
0652512751	W	●		
10-Piece Set – EB10				
0652517752	R	–	0.5	12
0652515752	C	–	18	30
0652511752	I	●		
0652512752	W	●		
11-Piece Set – EB11				
0652517753	R	–	1	8
0652515753	C	–	15	31
0652511753	I	●		
0652512753	W	●		
14-Piece Set – EB14				
0652517754	R	–	1 ^{3x}	8 ^{2x}
0652515754	C	–	15	31
0652511754	I	●		
0652512754	W	●		
15-Piece Set – EB15				
0652517755	R	–	0.5	7
0652515755	C	–	8	50
0652511755	I	●		
0652512755	W	●		

^{2x} = 2 pieces ^{3x} = 3 pieces

Single length bars with round section are supplied with UKAS calibration certificate.
Measurement uncertainty 0,1 + (1 x L) µm, L in m.



BS 1790

7/8 in

Gauges of both grades I and W with coupling thread BSW 3/8 in

Highly alloyed steel, stable and wear resistant.
Hardness to ≥ 800 HV

(11,5 ± 1,0) x 10⁻⁸ K⁻¹

See table

See BS 1790

See BS 1790

Available individually or in sets

Wooden case

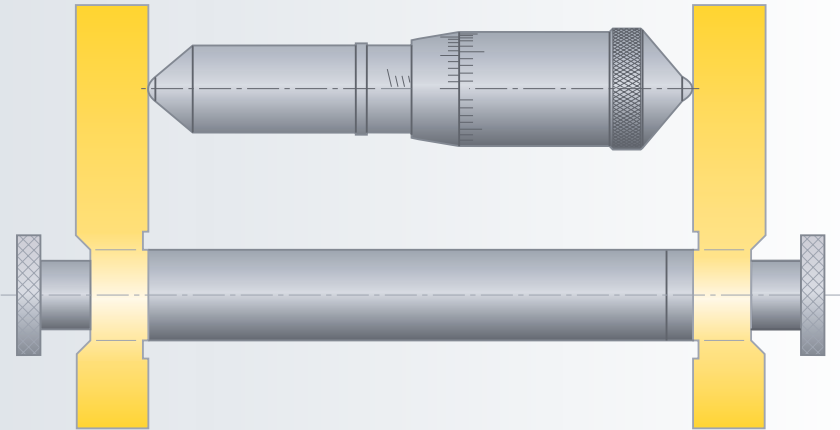
Identification number

UKAS calibration certificate



Accessories for TESA Length Bars with Round Section

Suited for the assembly of a length bar combination of both grades I and W equipped with a coaxially mounted coupling thread.



BS 5317 for metric units.
BS 1790 for Inch units.



22 mm for metric gauges or 7/8 in for inch gauges



Coupling thread: metric M10 x 1,5, inch BSW 3/8 in



Stable, light alloyed steel, resistant to wear.
Hardness to ≥ 800 HV



$(11,5 \pm 1,0) \times 10^{-6} \text{ K}^{-1}$



See table opposite



See BS 5317 or BS 1790



See BS 5317 or BS 1790



Available in sets or individually



Wooden case



Identification number



Declaration of conformity



0651570800 TESA accessory set Metric units
0652570800 TESA accessory set Inch units

Consisting of:



			mm	μm	in	in	μin
0651570805	1 Pair	AA style jaws with 2 plane parallel measuring faces	10	$\pm 0,5$	0652570805	0.4	± 20
0651570806	1 Pair	BB style jaws. each with 1 cylindrical and 1 flat measuring faces	25	± 1	0652570806	1	± 30
0651570807	1 Pair	End pieces with spherical measuring faces	25	$+1/-0$	0652570807	1	$+30/-0$
0651570808	1 Piece	Round base	25	± 1	0652570808	1	± 30
0651570809	1 Pair	Knurled nut	M10 x 1,5		0652570809	BSW $3/8$	
0651570810		Threaded rod	M10 x 1,5		0652570810	BSW $3/8$	
	4 Pieces	Length	28			$1\frac{1}{8}$	
	4 Pieces		35			$1\frac{3}{8}$	
	2 Pieces		57			$2\frac{1}{4}$	

