

Internal micrometers

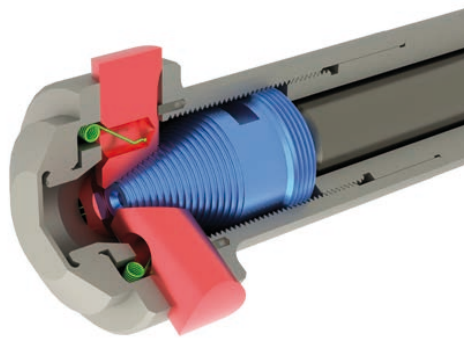


TESA
TECHNOLOGY

A constant measure

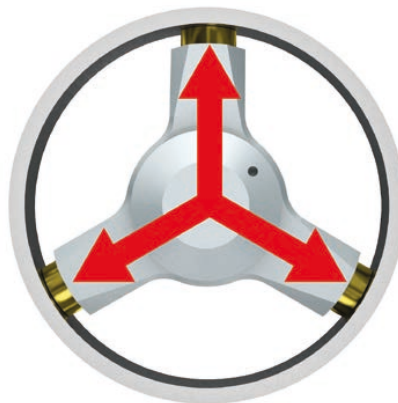
The 3 measuring inserts (red) are arranged symmetrically on the circumference of the measuring head and perpendicular to the axis of the instrument. Springs (green) keep them in constant contact with the threaded cone (micrometric thread), considered as the heart of the instrument. The inserts and the cone (blue) thus form a rigid and stable unit in the bore.

The three measuring inserts rest on the wall of the bore in three lines and not on three points. The ratchet ensures a constant measuring pressure.



Self-centering

The ideal 120° arrangement of the measuring inserts produces maximum centering force. Due to its line contact, the instrument always finds the correct measuring position and automatically centers itself in the bore, thanks to the longitudinal vibrations transmitted by the ratchet.



Internal micrometers

A single tool can replace multiple plug gauges

As plug gauges have fixed dimensions, they can be used for the verification of a single dimension. On the contrary, the instruments in the range all have a variable measuring range. Each of them is therefore suitable for measuring many different bore diameters, where several plug gauges would be required.



Digital IMICRO models



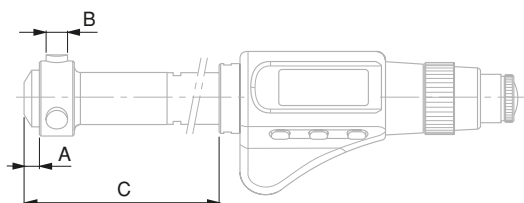
06130101

Article number	Measuring range, mm	Measuring range in	Max. perm. errors, μm	Max. perm. errors, in	Resolution mm	Resolution in	Repeatability limit, μm	Repeatability limit, in	A mm	B mm	C mm
06130101	3,5 ÷ 4	.1377 ÷ .1574	4	.0002	0,001	.00005	4	.0002	2	1,5	20
06130102	4 ÷ 4,5	.1574 ÷ .1771	4	.0002	0,001	.00005	4	.0002	2	1,5	20
06130103	4,5 ÷ 5,5	.1771 ÷ .2165	4	.0002	0,001	.00005	4	.0002	2	1,5	25
06130104	5,5 ÷ 6,5	.2165 ÷ .2559	4	.0002	0,001	.00005	4	.0002	2	1,5	25
06130105	6 ÷ 8	.2362 ÷ .315	4	.0002	0,001	.00005	4	.0002	2,5	2,5	58
06130106	8 ÷ 10	.315 ÷ .397	4	.0002	0,001	.00005	4	.0002	2,5	2,5	58
06130107	10 ÷ 12	.397 ÷ .4724	4	.0002	0,001	.00005	4	.0002	2,5	2,5	58
06130108	11 ÷ 14	.433 ÷ .5512	4	.0002	0,001	.00005	4	.0002	3,5	4	72
06130109	14 ÷ 17	.5512 ÷ .6693	4	.0002	0,001	.00005	4	.0002	3,5	4	72
06130110	17 ÷ 20	.6693 ÷ .7874	4	.0002	0,001	.00005	4	.0002	3,5	4	72
06130111	20 ÷ 25	.7874 ÷ .9843	4	.0002	0,001	.00005	4	.0002	7	7	91
06130112	25 ÷ 30	.9843 ÷ 1.1811	4	.0002	0,001	.00005	4	.0002	7	7	91
06130113	30 ÷ 35	1.1811 ÷ 1.378	4	.0002	0,001	.00005	4	.0002	7	7	91
06130114	35 ÷ 40	1.378 ÷ 1.5748	4	.0002	0,001	.00005	4	.0002	7	7	91
06130115	40 ÷ 50	1.5748 ÷ 1.9685	4	.0002	0,001	.00005	4	.0002	11	12	104
06130116	50 ÷ 60	1.9685 ÷ 2.3622	5	.00025	0,001	.00005	5	.00025	11	12	104
06130117	60 ÷ 70	2.3622 ÷ 2.756	5	.00025	0,001	.00005	5	.00025	11	12	104
06130118	70 ÷ 80	2.756 ÷ 3.1496	5	.00025	0,001	.00005	5	.00025	11	12	104
06130119	80 ÷ 90	3.1496 ÷ 3.5433	5	.00025	0,001	.00005	5	.00025	11	12	104
06130120	90 ÷ 100	3.5433 ÷ 3.937	5	.00025	0,001	.00005	5	.00025	11	12	104
06130121	100 ÷ 125	3.937 ÷ 4.9212	6	.00025	0,001	.00005	6	.00025	26	18	100
06130122	125 ÷ 150	4.9212 ÷ 5.9055	6	.00025	0,001	.00005	6	.00025	26	18	100
06130123	150 ÷ 175	5.9055 ÷ 6.8897	7	.0003	0,001	.00005	7	.0003	26	18	100
06130124	175 ÷ 200	6.8897 ÷ 7.874	7	.0003	0,001	.00005	7	.0003	26	18	100
06130125	200 ÷ 225	7.874 ÷ 8.8582	8	.00035	0,001	.00005	8	.00035	26	18	100
06130126	225 ÷ 250	8.8582 ÷ 9.8425	8	.00035	0,001	.00005	8	.00035	26	18	100
06130127	250 ÷ 275	9.8425 ÷ 10.8267	8	.00035	0,001	.00005	8	.00035	26	18	100
06130128	275 ÷ 300	10.8267 ÷ 11.811	8	.00035	0,001	.00005	8	.00035	26	18	100

Accessories

Article number	Designation
04760178	Opto-RS232 to TLC adapter
04760183	TLC-BLE Bluetooth® emitter + USB dongle receiver + 1,5 m extension cable set
04760184	TLC-BLE Bluetooth® emitter
04760185	USB receiver + 1,5 m extension cable
04761062	Opto-RS232 to USB cable, duplex, 2 m
04761046	Opto-RS232 to Sub-D 9p/f cable, simplex, 2 m
04761049	Opto-RS232 to Sub-D 9p/f cable, duplex, 2 m
DATA-VIEWER	Free data acquisition software
04981001	DATA-DIRECT software
04981002	STAT-EXPRESS software
00860001	Centering device for IMICRO 40 ÷ 100 mm, 150 mm
00862601	Centering device for IMICRO 100 ÷ 200 mm, 200 mm

Digital internal micrometers



Standard	DIN 863 T4
Measuring face(s)	Models (mm) 3,5 ÷ 12: hardened steel 11 ÷ 100: titanium nitride hard-coating 100 ÷ 300: tungsten carbide tipped
Resolution	0,001 mm / .00005 in
Zero	Floating
Degree of protection	IP54 IP40 (with opto-RS232)
Display	LCD Digit size: 7 mm
Power supply	CR2032 button battery
Data output(s)	Opto-RS232
Autonomy	1 ÷ 2 years
Units	mm / in
Included in delivery	Micrometer Battery (1x) Measuring report Declaration of conformity

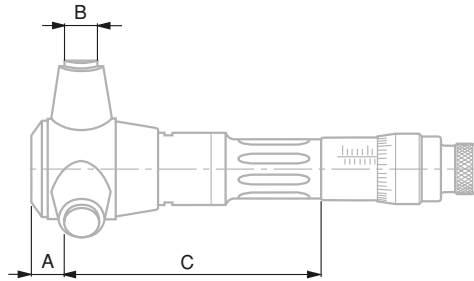
Analogue IMICRO models, metric



00812304

Standard	DIN 863 T4 / NF E 11-099
Measuring face(s)	Models (mm) 3,5 ÷ 12: hardened steel 11 ÷ 100: titanium nitride hard-coating 100 ÷ 300: tungsten carbide tipped
Units	mm
Included in delivery	Micrometer Measurement report Declaration of conformity

Analogue internal micrometers



Article number	Serie	Measuring range mm	Max. perm. errors, μm	Resolution mm	Repeatability limit, μm	A mm	B mm	C mm
00813410	BAE1	3,5 ÷ 4	4	0,001	4	2	1,5	20
00813411	BAE2	4 ÷ 4,5	4	0,001	4	2	1,5	20
00813412	BAE3	4,5 ÷ 5,5	4	0,001	4	2	1,5	25
00813413	BAE4	5,5 ÷ 6,5	4	0,001	4	2	1,5	25
00810001	BAF1	6 ÷ 8	4	0,001	4	2,5	2,5	52
00810002	BAF2	8 ÷ 10	4	0,001	4	2,5	2,5	52
00810003	BAF3	10 ÷ 12	4	0,001	4	2,5	2,5	52
00810801	BAG1	11 ÷ 14	4	0,005	4	3,5	4	77
00810802	BAG2	14 ÷ 17	4	0,005	4	3,5	4	77
00810803	BAG3	17 ÷ 20	4	0,005	4	3,5	4	77
00811501	BAH1	20 ÷ 25	4	0,005	4	7	7	78
00811502	BAH2	25 ÷ 30	4	0,005	4	7	7	78
00811503	BAH3	30 ÷ 35	4	0,005	4	7	7	78
00811504	BAH4	35 ÷ 40	4	0,005	4	7	7	78
00812301	BAJ1	40 ÷ 50	4	0,005	4	11	12	84
00812302	BAJ2	50 ÷ 60	5	0,005	5	11	12	84
00812303	BAJ3	60 ÷ 70	5	0,005	5	11	12	84
00812304	BAJ4	70 ÷ 80	5	0,005	5	11	12	84
00812305	BAJ5	80 ÷ 90	5	0,005	5	11	12	84
00812306	BAJ6	90 ÷ 100	5	0,005	5	11	12	84
00812601	BAK1W	100 ÷ 125	6	0,01	6	26	18	81
00812602	BAK2W	125 ÷ 150	6	0,01	6	26	18	81
00812603	BAK3W	150 ÷ 175	7	0,01	7	26	18	81
00812604	BAK4W	175 ÷ 200	7	0,01	7	26	18	81
00813101	BAL1	200 ÷ 225	8	0,01	8	26	18	81
00813102	BAL2	225 ÷ 250	8	0,01	8	26	18	81
00813103	BAL3	250 ÷ 275	8	0,01	8	26	18	81
00813104	BAL4	275 ÷ 300	8	0,01	8	26	18	81

Accessories

Article number	Designation
00860001	Centering device for IMICRO 40 ÷ 100 mm, 150 mm
00862601	Centering device for IMICRO 100 ÷ 200 mm, 200 mm
00860002	Key for analogue IMICRO BAJ 1/2/3/4/5/6
00862802	Key for analogue IMICRO BAG 1/2/3
00862702	Key for analogue IMICRO BAF 1/2/3
00862901	Key for analogue IMICRO BAH 1/2/3/4 and BAK 1/2/3/4
00862801	Screwdriver, 2,5 x 5 mm

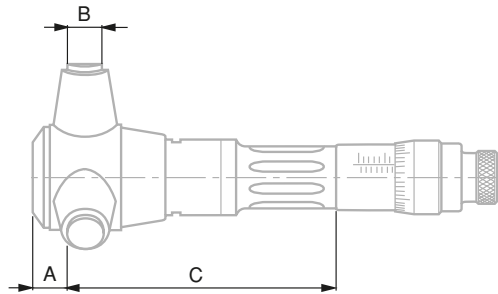
Analogue IMICRO models, imperial



00881905

Standard	DIN 863 T4 / NF E 11-099
Measuring face(s)	Models (in) .275 ÷ 4: hardened steel 4 ÷ 8: tungsten carbide tipped
Units	in
Included in delivery	Micrometer Measurement report Declaration of conformity

Analogue internal micrometers



Article number	Serie	Measuring range in	Max. perm. errors in	Resolution in	Repeatability limit, in	A mm	B mm	C mm
00880101	BAF1E	.275 ÷ .35	.0002	.0001	.0002	2,5	2,5	52
00880102	BAF2E	.35 ÷ .425	.0002	.0001	.0002	2,5	2,5	52
00880103	BAF3E	.425 ÷ .5	.0002	.0001	.0002	2,5	2,5	52
00880401	BAG1E	.5 ÷ .6	.0002	.0002	.0002	3,5	4	77
00880402	BAG2E	.6 ÷ .7	.0002	.0002	.0002	3,5	4	77
00880403	BAG3E	.7 ÷ .8	.0002	.0002	.0002	3,5	4	77
00881201	BAH1E	.8 ÷ 1	.0002	.0002	.0002	7	7	78
00881202	BAH2E	1 ÷ 1.2	.0002	.0002	.0002	7	7	78
00881203	BAH3E	1.2 ÷ 1.4	.0002	.0002	.0002	7	7	78
00881204	BAH4E	1.4 ÷ 1.6	.0002	.0002	.0002	7	7	78
00881901	BAJ1E	1.6 ÷ 2	.0002	.0002	.0002	11	12	84
00881902	BAJ2E	2 ÷ 2.4	.0002	.0002	.0002	11	12	84
00881903	BAJ3E	2.4 ÷ 2.8	.0002	.0002	.0002	11	12	84
00881904	BAJ4E	2.8 ÷ 3.2	.0002	.0002	.0002	11	12	84
00881905	BAJ5E	3.2 ÷ 3.6	.0002	.0002	.0002	11	12	84
00881906	BAJ6E	3.6 ÷ 4	.0002	.0002	.0002	11	12	84
00882701	BAK1WE	4 ÷ 5	.0005	.0005	.0005	26	18	95
00882702	BAK2WE	5 ÷ 6	.0005	.0005	.0005	26	18	95
00882703	BAK3WE	6 ÷ 7	.0005	.0005	.0005	26	18	95
00882704	BAK4WE	7 ÷ 8	.0005	.0005	.0005	26	18	95

Accessories

Article number	Designation
00862802	Key for analogue IMICRO BAG 1/2/3
00862702	Key for analogue IMICRO BAF 1/2/3
00862901	Key for analogue IMICRO BAH 1/2/3/4 and BAK 1/2/3/4
00860002	Key for analogue IMICRO BAJ 1/2/3/4/5/6
00862801	Screwdriver, 2,5 x 5 mm

Sets of digital internal micrometers, complete



06130223

Family	Part number	Dimension mm	06130220 3,5 ÷ 6,5	06130221 6 ÷ 12	06130222 11 ÷ 20	06130223 20 ÷ 40	06130224 40 ÷ 100	06130225 100 ÷ 200
Micrometers	06130101	3,5 ÷ 4	1					
	06130102	4 ÷ 4,5	1					
	06130103	4,5 ÷ 5,5	1					
	06130104	5,5 ÷ 6,5	1					
	06130105	6 ÷ 8		1				
	06130106	8 ÷ 10		1				
	06130107	10 ÷ 12		1				
	06130108	11 ÷ 14			1			
	06130109	14 ÷ 17			1			
	06130110	17 ÷ 20			1			
	06130111	20 ÷ 25				1		
	06130112	25 ÷ 30				1		
	06130113	30 ÷ 35				1		
	06130114	35 ÷ 40				1		
	06130115	40 ÷ 50					1	
	06130116	50 ÷ 60					1	
	06130117	60 ÷ 70					1	
	06130118	70 ÷ 80					1	
	06130119	80 ÷ 90					1	
	06130120	90 ÷ 100					1	
	06130121	100 ÷ 125						1
	06130122	125 ÷ 150						1
	06130123	150 ÷ 175						1
	06130124	175 ÷ 200						1
Setting rings	00843200	4	1					
	00843201	5,5	1					
	00840101	8		1				
	00840102	10		1				
	00840103	11			1			
	00840104	17			1			
	00840106	25				1		
	00840107	35				1		
	00840108	50					1	
	00840109	70					1	
	00840110	90					1	
	00840112	125						1
	00840113	175						1
Extensions	00840001	100		1				
	00840301	150			1			
	00841100	150				1		
	00841800	150					1	
	00842600	150						1

Internal micrometer sets

Sets of digital internal micrometers, partial



06130233

Family	Dimension mm	Dimension in	06130230 3,5 ÷ 6,5 mm .1377 ÷ .2559 in	06130231 6 ÷ 12 mm .2362 ÷ .4724 in	06130232 11 ÷ 20 mm .4330 ÷ .7874 in	06130233 20 ÷ 40 mm .7874 ÷ 1.5748 in	06130234 40 ÷ 100 mm 1.5748 ÷ 3.9370 in	06130235 100 ÷ 200 mm 3.9370 ÷ 7.8740 in
Micrometers	3,5 ÷ 4	.1377 ÷ .1574	1					
	4 ÷ 4,5	.1574 ÷ .1771	1					
	4,5 ÷ 5,5	.1771 ÷ .2165	1					
	5,5 ÷ 6,5	.2165 ÷ .2559	1					
	6 ÷ 8	.2362 ÷ .3150		1				
	8 ÷ 10	.3150 ÷ .3970		1				
	10 ÷ 12	.3970 ÷ .4724		1				
	11 ÷ 14	.4330 ÷ .5512			1			
	14 ÷ 17	.5512 ÷ .6693			1			
	17 ÷ 20	.6693 ÷ .7874			1			
	20 ÷ 25	.7874 ÷ .9843				1		
	25 ÷ 30	.9843 ÷ 1.1811				1		
	30 ÷ 35	1.1811 ÷ 1.3780				1		
	35 ÷ 40	1.3780 ÷ 1.5748				1		
	40 ÷ 50	1.5748 ÷ 1.9685					1	
	50 ÷ 60	1.9685 ÷ 2.3622					1	
	60 ÷ 70	2.3622 ÷ 2.7560					1	
	70 ÷ 80	2.7560 ÷ 3.1496					1	
	80 ÷ 90	3.1496 ÷ 3.5433					1	
	90 ÷ 100	3.5433 ÷ 3.9370					1	
Setting rings	100 ÷ 125	3.9370 ÷ 4.9212						1
	125 ÷ 150	4.9212 ÷ 5.9055						1
	150 ÷ 175	5.9055 ÷ 6.8897						1
	175 ÷ 200	6.8897 ÷ 7.8740						1
	4	.1574	1					
	5,5	.2165	1					
	8	.3150		1				
	10	.3970		1				
Extensions	11	.4330			1			
	17	.6693			1			
	25	.9843				1		
	35	1.3780				1		
	50	1.9685					1	
	70	2.7560					1	
	90	3.5433					1	
	125	4.9212						1
	175	6.8897						1
	100	3.9370		1				
	150	5.9055			1			
	150	5.9055				1		
	150	5.9055					1	
	150	5.9055						1

Sets of analogue internal micrometers, metric


00811500

Family	Dimension mm	00813409 BAE 3,5 ÷ 6,5	00810000 BAF 6 ÷ 12	00810800 BAG 11 ÷ 20	00811500 BAH 20 ÷ 40	00812300 BAJ 40 ÷ 100	00812600 BAK 100 ÷ 200
Micrometers	3,5 ÷ 4	1					
	4 ÷ 4,5	1					
	4,5 ÷ 5,5	1					
	5,5 ÷ 6,5	1					
	6 ÷ 8		1				
	8 ÷ 10		1				
	10 ÷ 12		1				
	11 ÷ 14			1			
	14 ÷ 17			1			
	17 ÷ 20			1			
	20 ÷ 25				1		
	25 ÷ 30				1		
	30 ÷ 35				1		
	35 ÷ 40				1		
	40 ÷ 50					1	
	50 ÷ 60					1	
	60 ÷ 70					1	
	70 ÷ 80					1	
	80 ÷ 90					1	
	90 ÷ 100					1	
Setting rings	100 ÷ 125						1
	125 ÷ 150						1
	150 ÷ 175						1
	175 ÷ 200						1
	4	1					
	5,5	1					
	8		1				
	10		1				
Extensions	11			1			
	17			1			
	25				1		
	35				1		
	50					1	
	70					1	
	90					1	
	125						1
	175						1
	100		1				
Extensions	150			1			
	150				1		
	150					1	
	150						1
	150						1

Internal micrometer sets

Sets of analogue internal micrometers, imperial



00881200

Family	Dimension in	00880100 BAFE .275 ÷ .5	00880400 BAFE .5 ÷ .8	00881200 BAFE .8 ÷ 1.6	00881900 BAJE 1.6 ÷ 4	00882700 BAFE 4 ÷ 8
Micrometers	.275 ÷ .350	1				
	.350 ÷ .425	1				
	.425 ÷ .500	1				
	.500 ÷ .600		1			
	.600 ÷ .700		1			
	.700 ÷ .800		1			
	.800 ÷ 1.0			1		
	1.0 ÷ 1.2			1		
	1.2 ÷ 1.4			1		
	1.4 ÷ 1.6			1		
	1.6 ÷ 2.0				1	
	2.0 ÷ 2.4				1	
	2.4 ÷ 2.8				1	
	2.8 ÷ 3.2				1	
	3.2 ÷ 3.6				1	
	3.6 ÷ 4.0				1	
	4.0 ÷ 5.0					1
Setting rings	.35	1				
	.43	1				
	.50		1			
	.70		1			
	1.0			1		
	1.4			1		
	2.0				1	
	2.8				1	
	3.6				1	
	5.0					1
Extensions	7.0					1
	4.0	1				
	6.0		1			
	6.0			1		
	6.0				1	
	6.0					1

Extensions for metric internal micrometer


Article number	Dimensions mm	Dimensions in	Compatibility
00840001	100	4	for micrometer with a measuring range of 6 ÷ 12 mm
00840301	150	6	for micrometer with a measuring range of 11 ÷ 20 mm
00840302	500	20	for micrometer with a measuring range of 11 ÷ 20 mm
00841100	150	6	for micrometer with a measuring range of 20 ÷ 40 mm
00841101	500	20	for micrometer with a measuring range of 20 ÷ 40 mm
00841102	1000	52	for micrometer with a measuring range of 20 ÷ 40 mm
00841800	150	6	for micrometer with a measuring range of 40 ÷ 100 mm
00841801	500	20	for micrometer with a measuring range of 40 ÷ 100 mm
00841802	1000	52	for micrometer with a measuring range of 40 ÷ 100 mm
00842600	150	6	for micrometer with a measuring range of 100 ÷ 300 mm
00842601	500	20	for micrometer with a measuring range of 100 ÷ 300 mm
00842602	1000	52	for micrometer with a measuring range of 100 ÷ 300 mm

Extensions for imperial internal micrometer


Article number	Dimensions mm	Dimensions in	Compatibility
00850001	100	4	for micrometer with a measuring range of .275 ÷ .5 in
00850301	150	6	for micrometer with a measuring range of .5 ÷ .8 in
00850302	500	20	for micrometer with a measuring range of .5 ÷ .8 in
00851100	150	6	for micrometer with a measuring range of .8 ÷ 1.6 in
00851101	500	20	for micrometer with a measuring range of .8 ÷ 1.6 in
00851800	1000	6	for micrometer with a measuring range of 1.6 ÷ 4 in
00851801	500	20	for micrometer with a measuring range of 1.6 ÷ 4 in
00851802	1000	40	for micrometer with a measuring range of 1.6 ÷ 4 in
00852600	150	6	for micrometer with a measuring range of 4 ÷ 12 in
00852601	500	20	for micrometer with a measuring range of 4 ÷ 12 in
00852602	1000	40	for micrometer with a measuring range of 4 ÷ 12 in

Accessories for internal micrometers

Centring devices for metric internal micrometers



Article number	Dimensions mm	Compatibility
00860001	150	for micrometer with a measuring range of 40 ÷ 100 mm
00862601	200	for micrometer with a measuring range of 100 ÷ 200 mm

Setting rings, metric



Max. perm. errors

The cylindricity errors make no allowance for a rim of 1 mm.

Particular characteristic(s)

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.

Article number	Max. perm. cylindricity error μm	Uncertainty of measurement μm	Diameter mm
00843200	1,5	1,5	4
00843201	1,5	1,5	5,5
00840114	1,5	1,5	6
00840101	1,5	1,5	8
00840115	1,5	1,5	8,5
00840102	1,5	1,5	10
00840103	1,5	1,5	11
00840116	1,5	1,5	12,5
00840104	1,5	1,5	15
00840105	1,5	1,5	17
00840117	1,5	1,5	17,5
00840106	1,5	1,5	25
00840107	2	2	35
00843230	2	2	45
00840108	2	2	50
00843239	2	2	60
00840109	2	2	70
00840118	2	2	85
00840110	2	2	90
00840111	2,5	2,5	110
00840112	2,5	2,5	125
00840113	2,5	4	175

Setting rings and setting standards

Setting rings, imperial



00850106

Max. perm. errors

The cylindricity errors make no allowance for a rim of 1 mm.

Particular characteristic(s)

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.

Article number	Max. perm. cylindricity error μm	Uncertainty of measurement μm	Diameter in
00850101	1,5	1,5	.35
00850102	1,5	1,5	.425
00850103	1,5	1,5	.5
00850104	1,5	1,5	.6
00850105	1,5	1,5	.7
00850106	1,5	1,5	1
00850107	2	2	1.4
00850108	2	2	2
00850109	2	2	2.8
00850110	2	2	3.6
00850111	2,5	2,5	4.4
00850112	2,5	2,5	5
00850113	2,5	4	7

