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BOWERS METROLOGY

THE ESSENTIAL METROLOGY CATALOGUE 10/11



Partners in Precision

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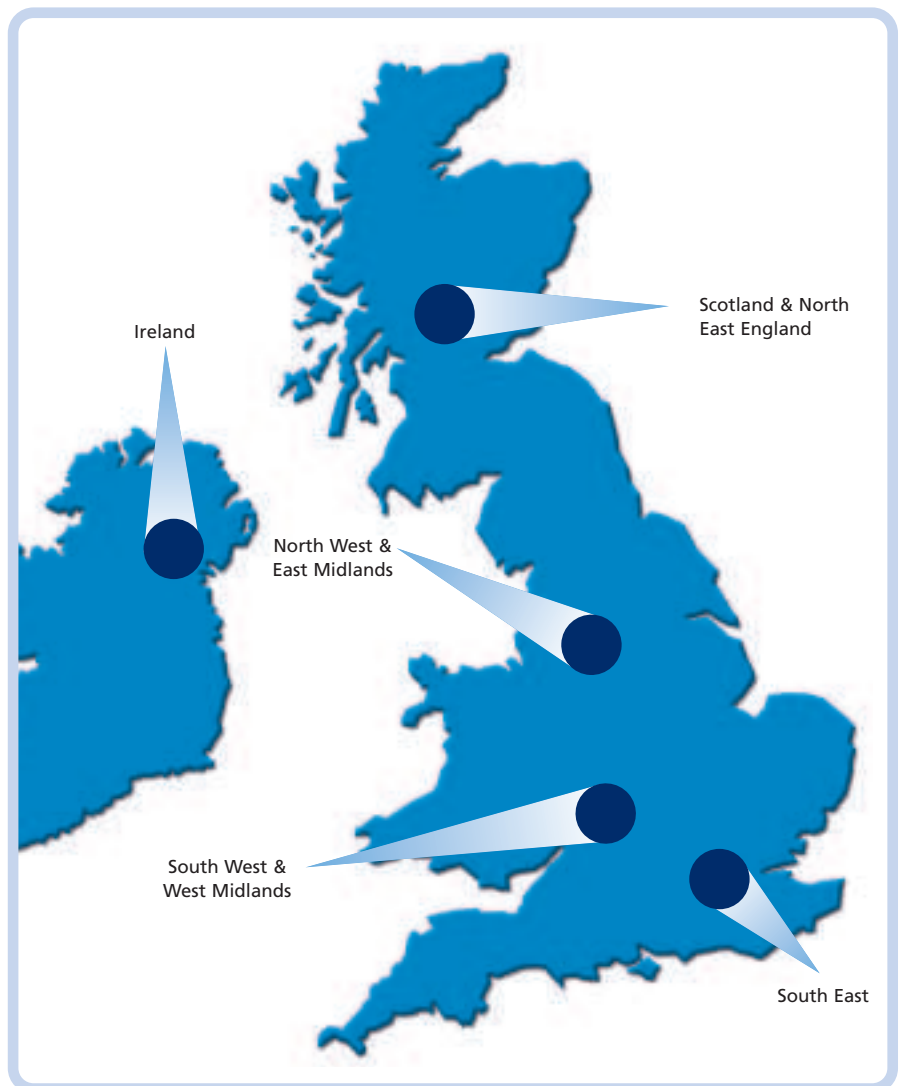
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For our full range of Spares & Accessories visit bowers.co.uk

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Analogue Bore Gauges

Bowers XT Analogue Bore Gauges are an economical solution to accurate shop-floor bore measurement. The extended mechanical travel of these advanced two or three point gauges ensures that exchanging measuring anvils is now unnecessary. Their wide application range, 2 - 300mm, rugged construction and easy read scale, ensure both accuracy and ease of use. XT measuring heads and setting rings are supplied with UKAS certification.



Features

- Range 2 - 300mm (0.080" – 12")
- 2 - 6mm 2 point/ 6 - 300mm 3 point measurement
- Graduation 2 - 6mm: 0.001mm, 6 - 300mm: 0.005mm
- Tungsten carbide measuring faces on all 3-point heads from 12.5mm
- Blind bore measurement from 2mm - 6mm and above 12.5mm (0.500")
- Extensions available above 6mm for deep hole measurement
- Ratchet stop to ensure consistent measurement
- Setting rings included with individual instruments and sets
- UKAS certificates supplied as standard with all setting rings
- UKAS certificate supplied as standard with all XT mechanical micrometers
- Serial number on all gauges
- Bore gauges manufactured according to DIN 863, part 4
- Supplied in fitted wooden case

XT SERIES SETTING RINGS

Code No	Setting Rings		Price (£)
	(mm)	(inch)	
XTR3M(I)	2.5	0.1000	£75.00 Q
XTR5M(I)	4.00	0.1600	£75.00 Q
XTR7M(I)	5.00	0.2000	£75.00 Q
XTR8M(I)	8.00	0.312	£53.00 Q
XTR12M(I)	12.50	0.500	£53.00 Q
XTR20M(I)	20.00	0.750	£67.00 Q
XTR35M(I)	35.00	1.375	£74.00 Q
XTR65M(I)	65.00	2.625	£94.00 Q
XTR80M(I)	80.00	3.250	£101.00 Q
XTR125M(I)	125.00	5.000	£153.00 Q
XTR175M(I)	175.00	7.000	£197.00 Q
XTR225M(I)	225.00	9.000	£332.00 Q
XTR275M(I)	275.00	11.000	£361.00 Q

(I) = Imperial option

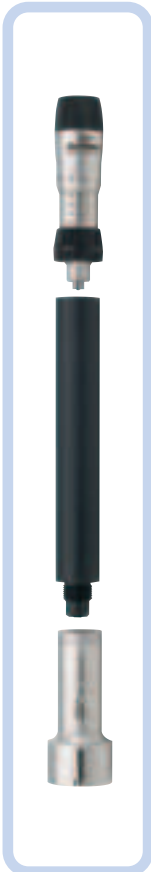
Analogue Bore Gauges

TECHNICAL SPECIFICATIONS: Individual instruments supplied with setting ring and UKAS

Code No	Range (mm)	Price (£)	Code No	Range (inch)	Price (£)	Accuracy (mm)	Accuracy (inch)	Depth (mm)	Depth (inch)	Setting Ring (mm)	Setting Ring (inch)
XTA1M	2 - 2.5	£453.00 C	XTA1i	0.080 - 0.100	£453.00 C	0.004	0.00015	9	0.35	2.50	0.1000
XTA2M	2.5 - 3	£453.00 C	XTA2i	0.100 - 0.120	£453.00 C	0.004	0.00015	9	0.35	2.50	0.1000
XTA3M	3 - 4	£405.00 C	XTA3i	0.120 - 0.160	£405.00 C	0.004	0.00015	12	0.47	4.00	0.1600
XTA4M	4 - 5	£405.00 C	XTA4i	0.160 - 0.200	£405.00 C	0.004	0.00015	18	0.70	4.00	0.1600
XTA5M	5 - 6	£405.00 C	XTA5i	0.200 - 0.250	£405.00 C	0.004	0.00015	18	0.70	5.00	0.2000
XTA6M	6 - 8	£188.00 C	XTA6i	1/4 - 5/16	£188.00 C	0.004	0.00015	58	2.28	8.00	0.312
XTA8M	8 - 10	£195.00 C	XTA8i	5/16 - 3/8	£195.00 C	0.004	0.00015	58	2.28	8.00	0.312
XTA10M	10 - 12.5	£195.00 C	XTA10i	3/8 - 1/2	£195.00 C	0.004	0.00012	58	2.28	12.50	0.500
XTA12M	12.5 - 16	£195.00 C	XTA12i	1/2 - 5/8	£195.00 C	0.004	0.00015	62	2.44	12.50	0.500
XTA16M	16 - 20	£199.00 C	XTA16i	5/8 - 3/4	£199.00 C	0.004	0.00015	62	2.44	20.00	0.750
XTA20M	20 - 25	£217.00 C	XTA20i	3/4 - 1	£217.00 C	0.004	0.00015	66	2.62	20.00	0.750
XTA25M	25 - 35	£313.00 C	XTA25i	1 - 1 3/8	£313.00 C	0.004	0.00015	66	2.62	35.00	1.375
XTA35M	35 - 50	£318.00 C	XTA35i	1 3/8 - 2	£318.00 C	0.004	0.00015	80	3.15	35.00	1.375
XTA50M	50 - 65	£379.00 C	XTA50i	2 - 2 5/8	£379.00 C	0.005	0.00020	80	3.15	65.00	2.625
XTA65M	65 - 80	£379.00 C	XTA65i	2 5/8 - 3 1/4	£379.00 C	0.005	0.00020	80	3.15	65.00	2.625
XTA80M	80 - 100	£481.00 C	XTA80i	3 1/4 - 4	£481.00 C	0.005	0.00020	100	3.94	80.00	3.250
XTA100M	100 - 125	£484.00 C	XTA100i	4 - 5	£484.00 C	0.006	0.00025	115	4.53	125.00	5.000
XTA125M	125 - 150	£558.00 C	XTA125i	5 - 6	£558.00 C	0.006	0.00025	115	4.53	125.00	5.000
XTA150M	150 - 175	£718.00 C	XTA150i	6 - 7	£718.00 C	0.007	0.00030	115	4.53	175.00	7.000
XTA175M	175 - 200	£821.00 C	XTA175i	7 - 8	£821.00 C	0.007	0.00030	115	4.53	175.00	7.000
XTA200M	200 - 225	£851.00 C	XTA200i	8 - 9	£851.00 C	0.008	0.00030	118	4.65	225.00	9.000
XTA225M	225 - 250	£878.00 C	XTA225i	9 - 10	£878.00 C	0.008	0.00030	118	4.65	225.00	9.000
XTA250M	250 - 275	£958.00 C	XTA250i	10 - 11	£958.00 C	0.009	0.00035	118	4.65	275.00	11.000
XTA275M	275 - 300	£999.00 C	XTA275i	11 - 12	£999.00 C	0.009	0.00035	118	4.65	275.00	11.000

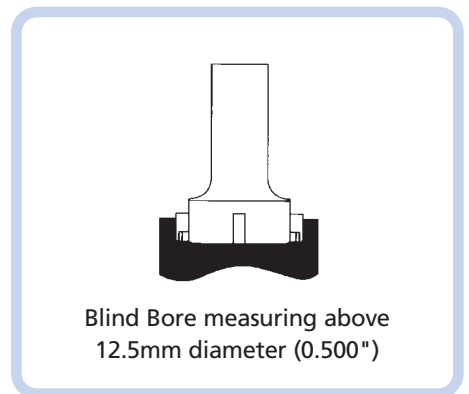
SETS Supplied with individual instrument, setting rings and UKAS

Range (mm)	Code No	Measuring Heads	Setting Rings	Price (£)	Range (inch)	Code No	Price (£)
2 - 3	SXTA1M	2	1	£825.00 C	0.080 - 0.120	SXTA1i	£825.00 C
3 - 6	SXTA2M	3	2	£1,114.00 C	0.120 - 0.250	SXTA2i	£1,114.00 C
6 - 10	SXTA3M	2	1	£355.00 C	1/4 - 3/8	SXTA3i	£355.00 C
10 - 20	SXTA4M	3	2	£529.00 C	3/8 - 3/4	SXTA4i	£529.00 C
20 - 50	SXTA5M	3	2	£832.00 C	3/4 - 2	SXTA5i	£832.00 C
50 - 100	SXTA6M	3	2	£1,131.00 C	2 - 4	SXTA6i	£1,131.00 C
100 - 150	SXTA7M	2	1	£846.00 C	4 - 6	SXTA7i	£846.00 C
150 - 200	SXTA8M	2	1	£1,204.00 C	6 - 8	SXTA8i	£1,204.00 C



EXTENSIONS

Code No	Length (mm)	(inch)	To Fit Heads (mm)	(inch)	Price (£)
EGX 0200	63	2.5	6 - 10	1/4 - 3/8	£61.00 Q
EGX 0400	76	3.0	10 - 12.5	3/8 - 1/2	£61.00 Q
EGX 0500	100	4.0	12.5 - 20	1/2 - 3/4	£61.00 Q
EGX 0001	150	6.0	20 - 50	3/4 - 2	£90.00 Q
EGX 0004	150	6.0	50 - 300	2 - 12	£97.00 Q



Digital Bore Gauges

Bowers XT Digital Xtreme internal micrometers give the operator the advantage of traditional quality ratchet gauges allied to advanced IP65 electronics. The extended mechanical travel of the XT range means that special heads can also be manufactured to accommodate users most awkward measuring problems. Measuring heads for threads, splines slots, grooves, deep-holes and many more applications are available on request. For applications please see pages 14-17.

The Bowers XT range of internal micrometers can be supplied as individual instruments or in complete sets. All XT instruments give the user the advantage of extended measuring travel with fixed anvils and UKAS certification of both measuring head and setting ring as standard.



Features

- IP65 Electronics
- Simple 2-button operation
- Large easy-to-read display
- 3 preset memories
- RS-232C output
- Range 2 – 300 mm (0.080" – 12")
- 2 – 6mm 2 point / 6 – 300mm 3 point measurement
- Resolution 0.001mm / 0.00005"
- Tungsten carbide measuring faces on all 3-point heads from 12.5mm
- Blind bore measurement from 2mm – 6mm and above 12.5 mm (0.500")
- Extensions available above 6mm
- Ratchet stop to ensure consistent measurement
- Setting rings included with individual instruments and sets
- UKAS certificates supplied as standard with all setting rings
- UKAS certificates supplied as standard with all gauges
- Serial number on all digital readouts and measuring heads
- Heads with special anvils available to suit specific customer requirements (e.g. threads, grooves, 2-point, spherical, splines etc)
For applications please see pages 14-17
- Bore gauges manufactured according to DIN 863, part 4
- Supplied in fitted case

Digital Bore Gauges

TECHNICAL SPECIFICATIONS: Individual instruments supplied with digital display unit, head, ring and UKAS

Code No	Range (mm)	Price (£)		Accuracy (mm)	Depth (mm)	Setting Ring (mm)
XTD1M	2 - 2.5	£675.00	Q	0.004	9	2.50
XTD2M	2.5 - 3	£689.00	Q	0.004	9	2.50
XTD3M	3 - 4	£689.00	Q	0.004	12	4.00
XTD4M	4 - 5	£689.00	Q	0.004	18	4.00
XTD5M	5 - 6	£689.00	Q	0.004	18	5.00
XTD6M	6 - 8	£607.00	Q	0.004	58	8.00
XTD8M	8 - 10	£607.00	Q	0.004	58	8.00
XTD10M	10 - 12.5	£607.00	Q	0.004	58	12.50
XTD12M	12.5 - 16	£622.00	Q	0.004	62	12.50
XTD16M	16 - 20	£622.00	Q	0.004	62	20.00
XTD20M	20 - 25	£748.00	Q	0.004	66	20.00
XTD25M	25 - 35	£859.00	Q	0.004	66	35.00
XTD35M	35 - 50	£943.00	Q	0.004	80	35.00
XTD50M	50 - 65	£993.00	Q	0.005	80	65.00
XTD65M	65 - 80	£993.00	Q	0.005	80	65.00
XTD80M	80 - 100	£1,048.00	Q	0.005	100	80.00
XTD100M	100 - 125	£1,037.00	Q	0.006	115	125.00
XTD125M	125 - 150	£1,128.00	Q	0.006	115	125.00
XTD150M	150 - 175	£1,233.00	Q	0.007	115	175.00
XTD175M	175 - 200	£1,311.00	Q	0.007	115	175.00
XTD200M	200 - 225	£1,244.00	Q	0.008	118	225.00
XTD225M	225 - 250	£1,372.00	Q	0.008	118	225.00
XTD250M	250 - 275	£1,422.00	Q	0.009	118	275.00
XTD275M	275 - 300	£1,554.00	Q	0.009	118	275.00

For Setting Ring prices see page 4

SETS Supplied with digital display unit, heads, rings and UKAS

Code No	Range (mm)	Measuring Heads	Setting Rings	Price (£)	
SXTD1M	2 - 6	5	3	£2,042.00	Q
SXTD3M	6 - 10	2	1	£840.00	Q
SXTD4M	10 - 20	3	2	£1,016.00	Q
SXTD5M	20 - 50	3	2	£1,399.00	Q
SXTD6M	50 - 100	3	2	£1,554.00	Q
SXTD7M	100 - 150	2	1	£1,296.00	Q
SXTD8M	150 - 200	2	1	£1,796.00	Q
SXTD9M	100 - 200	4	2	£2,878.00	Q



DEPTH STOP

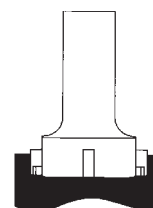
Code No	Range (mm)	Price (£)
DSTOP01	2 - 6	£38.00 Q

EXTENSIONS

Code No	Length (mm)	(inch)	To Fit Heads (mm)	(inch)	Price (£)	
EGX 0200	63	2.5	6 - 10	1/4 - 3/8	£61.00	Q
EGX 0400	76	3.0	10 - 12.5	3/8 - 1/2	£61.00	Q
EGX 0500	100	4.0	12.5 - 20	1/2 - 3/4	£61.00	Q
EGX 0001	150	6.0	20 - 50	3/4 - 2	£90.00	Q
EGX 0004	150	6.0	50 - 300	2 - 12	£97.00	Q

CABLE

Code No	Description	Price (£)
30-905-4516	Serial Data Output Cable	£70.00 I
30-926-6821	USB Data Output Cable	£102.00 I



Blind Bore measuring above 12.5mm diameter (0.500")

Digital Pistol Grip Bore Gauge

Bowers XT Holematic Xtreme bore gauge incorporates an ergonomic pistol grip handle with an advanced trigger action, giving the user the advantages of both speed of operation and a constant measuring pressure. The clear digital display, superior IP65 electronics and application range of 2 to 300mm ensures ease of use and assured accuracy. For applications please see pages 14-17.

The XT Holematic pistol grip range of bore gauges can be supplied as individual instruments or in complete sets. All XT instruments give the user the advantage of extended measuring travel with fixed anvils and UKAS certification of both measuring head and setting ring as standard.



Features

- IP65 Electronics
- Simple 2-button operation
- Large easy-to-read swivel display
- 3 preset memories
- RS - 232C output
- Self-centring heads
- Constant measuring pressure
- Fast, accurate measurement
- Range 2 – 300mm (0.080" – 12")
- 2 – 6mm 2 point / 6 – 300mm 3 point measurement
- Resolution 0.001mm (0.00005")
- Tungsten carbide measuring faces on all 3-point heads from 12.5mm
- Blind bore measurement from 2mm – 6mm and above 12.5mm (0.500")
- Extensions available above 6mm
- Setting rings included with individual instruments and sets
- UKAS certificates supplied as standard with all setting rings
- UKAS certificates supplied as standard with all pistol grip gauges
- Serial number on all gauges and measuring heads
- Heads with special anvils available to suit specific customer requirements (e.g. threads, grooves, 2-point, spherical, splines etc) For applications please see pages 14-17
- Bore gauges manufactured according to DIN 863, part 4
- Supplied in fitted case

Digital Pistol Grip Bore Gauge

TECHNICAL SPECIFICATIONS Individual instruments supplied with digital pistol grip, head, ring and UKAS

Code No	Range (mm)	Price (£)		Accuracy (mm)	Depth (mm)	Setting Ring (mm)
XTH1M	2 - 2.5	£713.00	Q	0.004	9	2.50
XTH2M	2.5 - 3	£713.00	Q	0.004	9	2.50
XTH3M	3 - 4	£713.00	Q	0.004	12	4.00
XTH4M	4 - 5	£713.00	Q	0.004	18	4.00
XTH5M	5 - 6	£713.00	Q	0.004	18	5.00
XTH6M	6 - 8	£713.00	Q	0.004	58	8.00
XTH8M	8 - 10	£714.00	Q	0.004	58	8.00
XTH10M	10 - 12.5	£754.00	Q	0.004	58	12.50
XTH12M	12.5 - 16	£764.00	Q	0.004	62	12.50
XTH16M	16 - 20	£764.00	Q	0.004	62	20.00
XTH20M	20 - 25	£848.00	Q	0.004	66	20.00
XTH25M	25 - 35	£920.00	Q	0.004	66	35.00
XTH35M	35 - 50	£943.00	Q	0.004	80	35.00
XTH50M	50 - 65	£969.00	Q	0.005	80	65.00
XTH65M	65 - 80	£967.00	Q	0.005	80	65.00
XTH80M	80 - 100	£1,032.00	Q	0.005	100	80.00
XTH100M	100 - 125	£1,101.00	Q	0.006	115	125.00
XTH125M	125 - 150	£1,168.00	Q	0.006	115	125.00
XTH150M	150 - 175	£1,237.00	Q	0.007	115	175.00
XTH175M	175 - 200	£1,290.00	Q	0.007	115	175.00
XTH200M	200 - 225	£1,279.00	Q	0.008	118	225.00
XTH225M	225 - 250	£1,412.00	Q	0.008	118	225.00
XTH250M	250 - 275	£1,463.00	Q	0.009	118	275.00
XTH275M	275 - 300	£1,615.00	Q	0.009	118	275.00

For Setting Ring prices see page 4

EXTENSIONS

Code No	Length (mm)	(inch)	To Fit Heads (mm)	(inch)	Price (£)	
EGX 0200	63	2.5	6 - 10	1/4 - 3/8	£61.00	Q
EGX 0400	76	3.0	10 - 12.5	3/8 - 1/2	£61.00	Q
EGX 0500	100	4.0	12.5 - 20	1/2 - 3/4	£61.00	Q
EGX 0001	150	6.0	20 - 50	3/4 - 2	£90.00	Q
EGX 0004	150	6.0	50 - 300	2 - 12	£97.00	Q



SETS Supplied with digital display unit, heads, rings and UKAS

Range (mm)	Code No	Measuring Heads	Setting Rings	Price (£)	
2 - 6	SXTH1M	5	3	£2,181.00	Q
6 - 10	SXTH3M	2	1	£869.00	Q
10 - 20	SXTH4M	3	2	£1,027.00	Q
20 - 50	SXTH5M	3	2	£1,345.00	Q
50 - 100	SXTH6M	2	1	£1,504.00	Q
100 - 150	SXTH7M	2	1	£1,345.00	Q
150 - 200	SXTH8M	2	1	£1,796.00	Q

LARGE SETS Supplied with digital pistol grip, heads, rings and UKAS

Range (mm)	Code No	Measuring Heads	Setting Rings	Price (£)	
6 - 20	SXTH10M	5	3	£1,331.00	Q
20 - 100	SXTH11M	5	3	£2,486.00	Q
100 - 200	SXTH9M	4	2	£2,878.00	Q

CABLE

Code No	Description	Price (£)	
30-905-4516	Serial Data Output Cable	£70.00	1
30-926-6821	USB Data Output Cable	£102.00	1

XT500 Large Diameter 3-point Bore Gauge

The **Bowers XT500** large diameter 3-point bore-gauge has been designed specifically for the measurement of internal diameters between 300 and 500mm. The newly designed constant-force digital readout ensures that the measuring pressure remains constant throughout the measurement whilst radiussed measuring anvils provide optimum centralisation in the part. Anvil sets are supplied in 25mm steps (300-325, 325-350 etc) and each set has been manufactured to the exact toleranced size. The 300-325 mm anvils are the master reference set and are used for setting the gauge in the setting ring. The other anvil sets are then fitted as required without further re-setting. This means that only one 300 mm setting ring is required to set the gauge for all diameters in the full 300-500 mm range of the instrument.

WiFi

see p251 for wireless options

RS232

Features

- Measuring range: 300-500 mm
- New constant-force digital readout
- Single 300mm setting ring covers full range
- Radiussed anvils of tool-steel for optimum centering
- Accuracy: 15 µm
- Repeatability: 3 µm
- IP65 electronics
- RS232 output
- Resolution 0.01/0.001 mm. Metric/inch switchable
- Fast accurate measurement
- Extensions available for deeper bores
- UKAS certificate with setting ring
- Certificate of conformity with bore gauge
- Supplied in fitted case



XT500 Anvil Set



The Bowers XT500 with extension for deeper bores

INDIVIDUAL INSTRUMENTS: Supplied with digital display unit, measuring head with exchangeable anvils and setting ring with UKAS certificate

Code No	Range (mm)	Accuracy	Depth (mm)	Setting ring (mm)	Price (£)	
SXT3000M	300-400	15 µm	120	300	£2,495.00	Q
SXT5000M	300-500	15 µm	120	300	£2,995.00	Q

CABLE

Code No	Description	Price (£)
30-905-4516	Serial Data Output Cable	£70.00 I
30-926-6821	USB Data Output Cable	£102.00 I

Digital Lever Bore Gauge

The robust new **Bowers XTL Lever** range is perfect for vertical bore measurement, providing accurate and repeatable bore gauging under inspection department or shop-floor conditions. The XTL has a simple ergonomic action and can be fitted with a wide variety of analogue and digital indicators or even transducer probes. The range can be provided with IP65 rated digital indicators, rendering it resistant to coolant, water and airborne particles. A 'wireless' gauge module is also available, enabling cable free communication with remote data collectors, PCs etc.

The cost-effective new XTL boasts hardwearing extended travel carbide measuring anvils and is able to measure diameters up to 300mm.

WiFi
see p251 for wireless options

RS232

Features

- Measuring range 6-100mm (diameters above 100mm on request)
- Excellent for vertical bore measurement
- Simple 2-button operation
- Large easy-to-read swivel display (20-100 sizes only)
- 2 preset memories
- RS-232C output
- Self-entering heads
- Constant measuring pressure
- Fast, accurate measurement
- Resolution 0.001mm (0.00005")
- Tungsten carbide measuring faces on all 3-point heads from 12.5mm
- Blind bore measurement above 12.5mm (0.500")
- Extensions available above 6mm for deep hole measurement
- Setting rings included with individual instruments and sets
- UKAS certificates supplied as standard with all setting rings
- UKAS certificates supplied with all gauges
- Serial number on all gauges and measuring heads
- Heads with special anvils available to suit specific customer requirements (e.g. Threads, grooves, 2-point, spherical, splines etc)
- Bore gauges manufactured according to DIN863, part4



INDIVIDUAL INSTRUMENTS: Supplied with head, ring and UKAS certificates

Code No	Range (mm)	Accuracy (mm)	Depth (mm)	Setting ring (mm)	Price (£)	
XTL6M	6-8	0.004	58	8.00	£713.00	Q
XTL8M	8-10	0.004	58	8.00	£714.00	Q
XTL10M	10-12.5	0.004	58	12.50	£754.00	Q
XTL12M	12.5-16	0.004	62	12.50	£764.00	Q
XTL16M	16-20	0.004	62	20.00	£764.00	Q
XTL20M	20-25	0.004	66	20.00	£848.00	Q
XTL25M	25-35	0.004	66	35.00	£920.00	Q
XTL35M	35-50	0.004	80	35.00	£943.00	Q
XTL50M	50-65	0.005	80	65.00	£969.00	Q
XTL65M	65-80	0.005	80	65.00	£967.00	Q
XTL80M	80-100	0.005	85	80.00	£1,032.00	Q

SETS: Supplied with heads, rings and UKAS certificates

Code No	Range (mm)	Price (£)	
SXTL3M	6-10	£869.00	Q
SXTL4M	10-20	£1,027.00	Q
SXTL5M	20-50	£1,345.00	Q
SXTL6M	50-100	£1,504.00	Q
SXTL10M	6-20	£1,331.00	Q
SXTL11M	20-100	£2,486.00	Q

CABLE 6-20mm LEVER GAUGE

Code No	Description	Price (£)	
30-905-4516	Serial Data Output Cable	£70.00	I
30-905-6821	USB Data Output Cable	£102.00	I

CABLE 20-100mm LEVER GAUGE

Code No	Description	Price (£)	
30-926-6521	Serial Data Output Cable	£60.00	I
30-926-6621	USB Data Output Cable	£70.00	I

Electronic Bore Gauge - Ultima

Bowers Ultima Bore Gauge offers a choice of resolutions up to 0.0001mm. Featuring the NEW Bowers 'FASTFIT' measuring heads with extended measuring range (above 14mm), the Ultima boasts a simple lever operation and a constant measuring force, ensuring outstanding ease of use and repeatability under laboratory or shop-floor conditions.

WiFi

 see p251 for
wireless options

RS232


Features

- UKAS certificates standard for all measuring heads and setting rings
- Measuring range 2 - 310mm (0.080" - 12.000")
- Resolution: 0.0001mm (0.00001")
- Constant spring pressure for improved repeatability
- Good positive feel as heads self-centre in the bore
- Bowers Fastfit measuring heads for rapid changeover
- Ceramic anvils on heads above 12mm
- Blind-bore measurement standard above 12mm
- Possible to connect several probe holders to one single readout to measure different bore sizes at one measuring station
- The complete range of Bowers special heads is available for the Ultima (grooves, threads, splines, deep-bores etc)
- Depth stops available for all heads
- Available without digital readout unit (if not required)
- Alternative Sylvac digital readouts available see pages 123 - 124
- Interchangeable probe option, to allow use of other manufacturers probes and displays

ULTIMA SPECIFICATION

Head code	Range		Accuracy		Repeatability		Measuring Depth		Head Price (£)	Setting Ring			Holder Type	Ring Price
	mm	inch	mm	inch	mm	inch	mm	inch		Code	mm	inch		
ULH6	2.0 - 2.5	0.078 - 0.098	0.0010	0.00004	0.0010	0.00004	9	0.35	£306.00	ULR2	2.5	0.098	PH2	£61.00
ULH7	2.5 - 3.0	0.098 - 0.118	0.0010	0.00004	0.0010	0.00004	9	0.35	£306.00	ULR2	2.5	0.098	PH2	£61.00
ULH8	3.0 - 4.0	0.118 - 0.157	0.0010	0.00004	0.0010	0.00004	12	0.47	£306.00	ULR4	4	0.157	PH2	£55.00
ULH9	4.0 - 5.0	0.157 - 0.197	0.0010	0.00004	0.0010	0.00004	18	0.71	£306.00	ULR5	5	0.197	PH2	£56.00
ULH10	5.0 - 6.0	0.197 - 0.236	0.0010	0.00004	0.0010	0.00004	18	0.71	£306.00	ULR5	5	0.197	PH2	£56.00
ULH11	6 - 8	0.236 - 0.315	0.0010	0.00004	0.0010	0.00004	60	2.36	£220.00	ULR8	8	0.315	PH3	£56.00
ULH12	8 - 10	0.315 - 0.393	0.0010	0.00004	0.0010	0.00004	60	2.36	£220.00	ULR8	8	0.315	PH3	£56.00
ULH13	10 - 12	0.393 - 0.472	0.0010	0.00004	0.0010	0.00004	61	2.40	£220.00	ULR12	12	0.472	PH3	£56.00
ULH14	12 - 14	0.472 - 0.550	0.0010	0.00004	0.0010	0.00004	61	2.40	£220.00	ULR12	12	0.472	PH3	£56.00
ULH15	14 - 17	0.550 - 0.670	0.0010	0.00004	0.0010	0.00004	61	2.40	£220.00	ULR17	17	0.670	PH3	£56.00
ULH16	17 - 20	0.670 - 0.787	0.0010	0.00004	0.0010	0.00004	61	2.40	£220.00	ULR17	17	0.670	PH3	£56.00
ULH17	20 - 24	0.787 - 0.945	0.0010	0.00004	0.0010	0.00004	69	2.72	£220.00	ULR24	24	0.945	PH4	£56.00
ULH18	24 - 28	0.945 - 1.100	0.0010	0.00004	0.0010	0.00004	69	2.72	£226.00	ULR24	24	0.945	PH4	£56.00
ULH19	28 - 32	1.100 - 1.260	0.0010	0.00004	0.0010	0.00004	69	2.72	£226.00	ULR32	32	1.260	PH4	£67.00
ULH20	32 - 38	1.260 - 1.500	0.0010	0.00004	0.0010	0.00004	72	2.83	£226.00	ULR32	32	1.260	PH4	£67.00
ULH21	38 - 44	1.500 - 1.730	0.0010	0.00004	0.0010	0.00004	72	2.83	£226.00	ULR44	44	1.730	PH4	£89.00
ULH22	44 - 50	1.730 - 1.970	0.0010	0.00004	0.0010	0.00004	72	2.83	£226.00	ULR44	44	1.730	PH4	£89.00
ULH23	50 - 60	1.970 - 2.360	0.0015	0.00006	0.0010	0.00004	80	3.15	£252.00	ULR60	60	2.360	PH4	£113.00
ULH24	60 - 70	2.360 - 2.756	0.0015	0.00006	0.0010	0.00004	80	3.15	£252.00	ULR60	60	2.360	PH4	£113.00
ULH25	70 - 80	2.756 - 3.150	0.0015	0.00006	0.0010	0.00004	80	3.15	£330.00	ULR80	80	3.150	PH4	£126.00
ULH26	80 - 90	3.150 - 3.543	0.0015	0.00006	0.0010	0.00004	80	3.15	£330.00	ULR80	80	3.150	PH4	£126.00
ULH27	90 - 100	3.543 - 3.940	0.0015	0.00006	0.0010	0.00004	80	3.15	£338.00	ULR100	100	3.940	PH4	£154.00
ULH28	100 - 110	3.940 - 4.330	0.0015	0.00006	0.0010	0.00004	80	3.15	£410.00	ULR100	100	3.940	PH5	£154.00
ULH29	110 - 120	4.330 - 4.725	0.0015	0.00006	0.0010	0.00004	80	3.15	£410.00	ULR120	120	4.725	PH5	£189.00
ULH30	120 - 130	4.725 - 5.120	0.0015	0.00006	0.0010	0.00004	80	3.15	£493.00	ULR120	120	4.725	PH5	£189.00
ULH31	130 - 140	5.120 - 5.510	0.0015	0.00006	0.0010	0.00004	80	3.15	£493.00	ULR140	140	5.510	PH5	£222.00
ULH32	140 - 150	5.510 - 5.900	0.0015	0.00006	0.0010	0.00004	80	3.15	£493.00	ULR140	140	5.510	PH5	£222.00
ULH33	150 - 160	5.900 - 6.300	0.0015	0.00006	0.0010	0.00004	80	3.15	£554.00	ULR160	160	6.300	PH5	£251.00
ULH34	160 - 170	6.300 - 6.690	0.0015	0.00006	0.0010	0.00004	80	3.15	£554.00	ULR160	160	6.300	PH5	£251.00
ULH35	170 - 180	6.690 - 7.090	0.0015	0.00006	0.0010	0.00004	80	3.15	£602.00	ULR180	180	7.090	PH5	£337.00
ULH36	180 - 190	7.090 - 7.480	0.0015	0.00006	0.0010	0.00004	80	3.15	£602.00	ULR180	180	7.090	PH5	£337.00
ULH37	190 - 200	7.480 - 7.875	0.0015	0.00006	0.0010	0.00004	80	3.15	£602.00	ULR200	200	7.875	PH5	£392.00
ULH38	200 - 210	7.875 - 8.270	0.0015	0.00006	0.0010	0.00004	80	3.15	£602.00	ULR200	200	7.875	PH5	£392.00
ULH39	210 - 220	8.270 - 8.661	0.0020	0.00008	0.0020	0.00008	80	3.15	£814.00	ULR220	220	8.661	PH5	£469.00
ULH40	220 - 230	8.661 - 9.055	0.0020	0.00008	0.0020	0.00008	80	3.15	£814.00	ULR220	220	8.661	PH5	£469.00
ULH41	230 - 240	9.055 - 9.449	0.0020	0.00008	0.0020	0.00008	80	3.15	£953.00	ULR240	240	9.449	PH5	£493.00
ULH42	240 - 250	9.449 - 9.842	0.0020	0.00008	0.0020	0.00008	80	3.15	£953.00	ULR240	240	9.449	PH5	£493.00
ULH43	250 - 260	9.842 - 10.236	0.0020	0.00008	0.0020	0.00008	80	3.15	£1,193.00	ULR260	260	10.236	PH5	£518.00
ULH44	260 - 270	10.236 - 10.630	0.0020	0.00008	0.0020	0.00008	80	3.15	£1,193.00	ULR260	260	10.236	PH5	£518.00
ULH45	270 - 280	10.630 - 11.024	0.0020	0.00008	0.0020	0.00008	80	3.15	£1,193.00	ULR280	280	11.024	PH5	£554.00
ULH46	280 - 290	11.024 - 11.417	0.0020	0.00008	0.0020	0.00008	80	3.15	£1,274.00	ULR280	280	11.024	PH5	£554.00
ULH47	290 - 300	11.417 - 11.811	0.0020	0.00008	0.0020	0.00008	80	3.15	£1,274.00	ULR300	300	11.811	PH5	£581.00
ULH48	300 - 310	11.811 - 12.200	0.0020	0.00008	0.0020	0.00008	80	3.15	£1,274.00	ULR300	300	11.81	PH5	£581.00

ULTIMA STANDARD EXTENSIONS

Code No	Length (mm)	To Fit Heads (mm)	Price (£)
UEXT0200	63	6 - 10	£61.00
UEXT0300	75	10 - 12	£61.00
UEXT0001	100	12 - 20	£61.00
UEXT0002	150	20 - 50	£90.00
UEXT0004	150	50 +	£97.00

ULTIMA SHORT EXTENSIONS

Code No	Length (mm)	To Fit Heads (mm)	Price (£)
UXSH4	50	20 - 50	£86.00
UXSH5	50	50+	£92.00

ULTIMA SETS

Range (mm)	Code No (with Sylvac D50S display)	Price (£)	Code No (without Sylvac D50S display)	Price (£)
2 - 6mm	USET2	£2,915.00	USET2W	£2,411.00
6 - 10mm	USET3	£1,739.00	USET3W	£1,245.00
10 - 20mm	USET4	£2,169.00	USET4W	£1,675.00
6 - 20mm	USET7	£2,589.00	USET7W	£2,096.00
20 - 50mm	USET8	£2,800.00	USET8W	£2,306.00
50 - 100mm	USET9	£3,073.00	USET9W	£2,579.00
20 - 100mm	USET10	£5,374.00	USET10W	£4,885.00

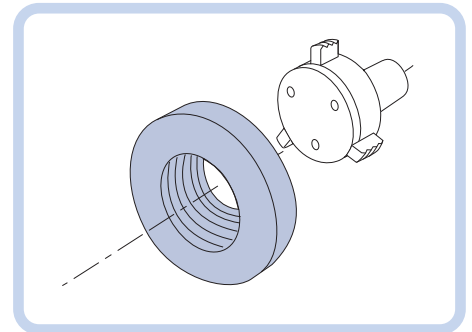


Special Bore Measurement

Although Bowers produces the most comprehensive series of bore gauges and internal measuring equipment available, not all applications can be covered by our standard instrument range. In line with our customer care ethos, Bowers has earned a reputation for manufacturing special heads for measuring non-standard applications. The following information illustrates some of the many difficult measuring problems easily solved by these special heads.

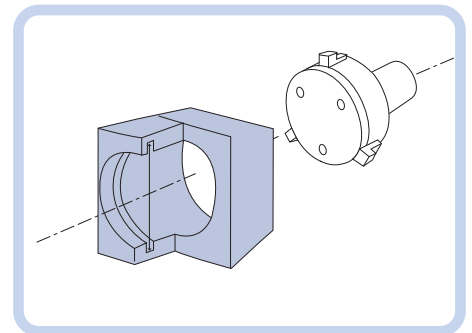
Screw Threads

To measure effective (functional) diameter, pitch diameter, major diameter, between M4 - 300mm. / No. 8 UN - 12" diameter.



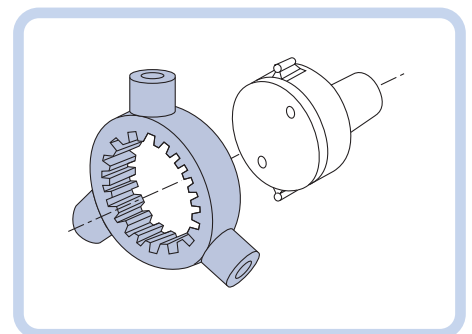
Grooves

For sizes from 2mm - 300mm diameter.



2-Point Spline

2 and 3 point heads available.
Anvils manufactured from tool steel.
Between pin, major and minor diameter heads available.
Diameters from 12 - 300mm diameter (1/2" - 12").

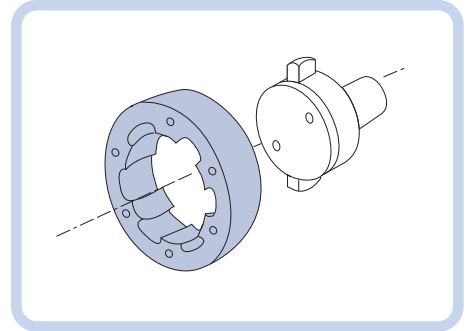


Special Bore Measurement

The following diagrams illustrate some of the many applications covered by Bowers Specials. Customer quotations for gauges suitable for the measurement of other features can be supplied against a component drawing.

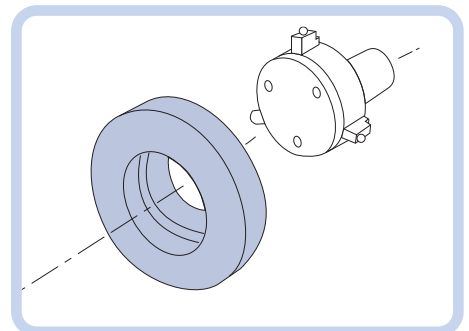
2-Point Spherical

2 point available from 3 - 150mm.
3 point from 6 - 300mm diameter.



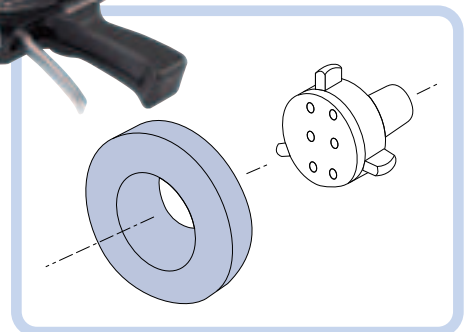
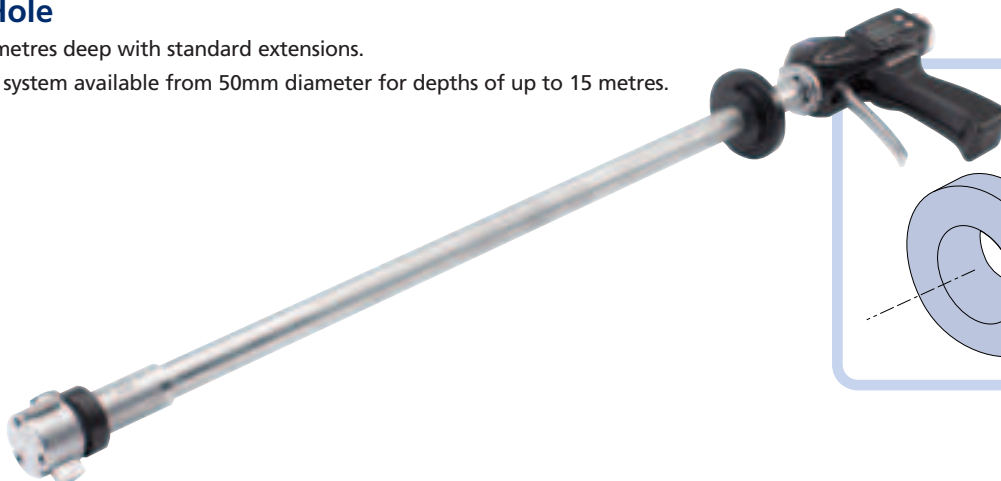
Ball Screw Threads

From Ø M10



Deep Hole

Up to 2.0 metres deep with standard extensions.
Pneumatic system available from 50mm diameter for depths of up to 15 metres.

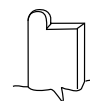
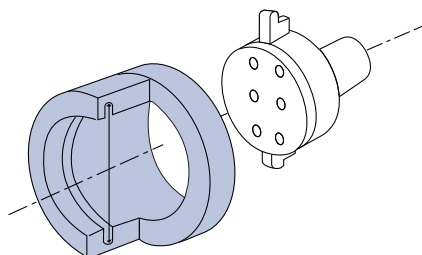


Special Bore Measurement

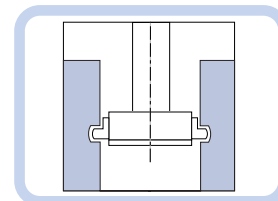
2 and 3 Point

Grooves

For ovality measurement.
Various anvil forms available.
Diameters from 6 - 100mm.

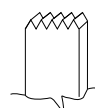
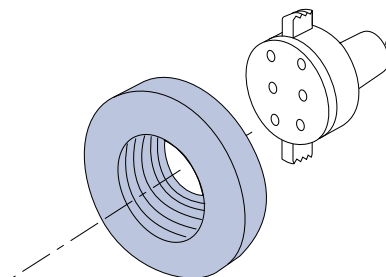


Side view

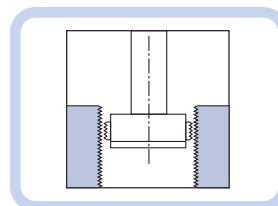


Thread

(Also available as 3 point system).

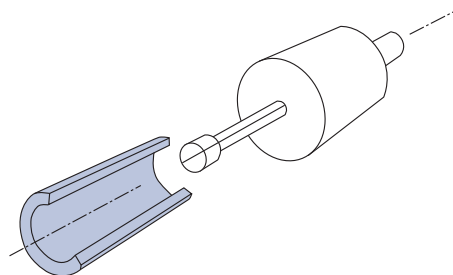


Side view

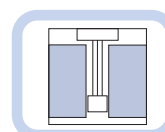
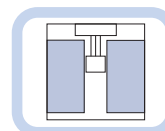


Special Length

Diameters from 2 – 6mm can be supplied.
Length dependent on diameter.

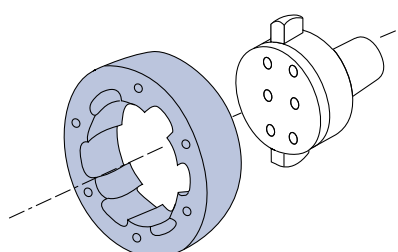


Standard Length



Spherical Radius

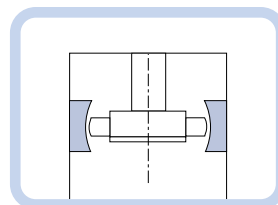
Can be supplied as a 2 point for ovality or 3 point contact.
Available from 6 - 300mm.



Front view

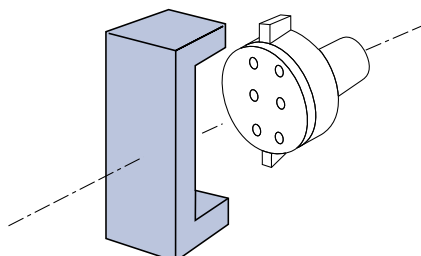


Side view



Slot Width (Large)

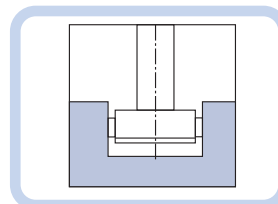
Slot widths from 3 - 100mm.



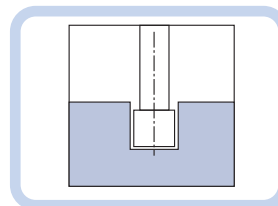
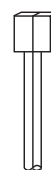
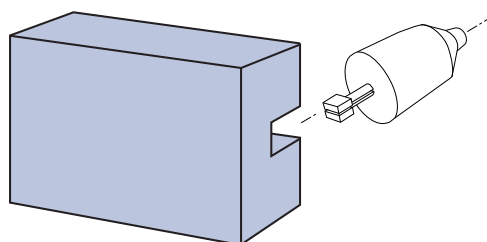
Front view



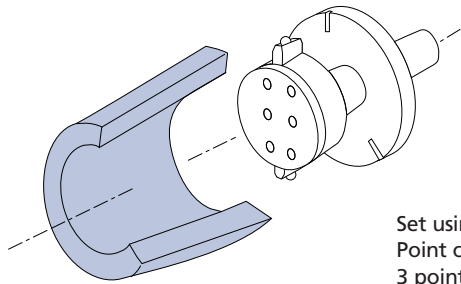
Side view



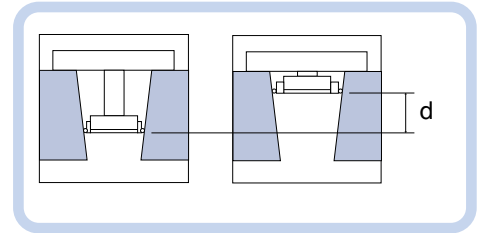
Slot Width (Small)



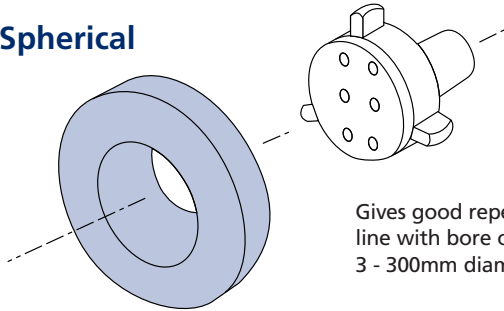
Taper



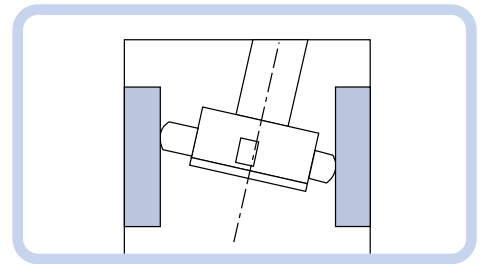
Set using distance 'd' between two heads. Point contact on bore using carbide balls. 3 point also available.



3 Point Spherical

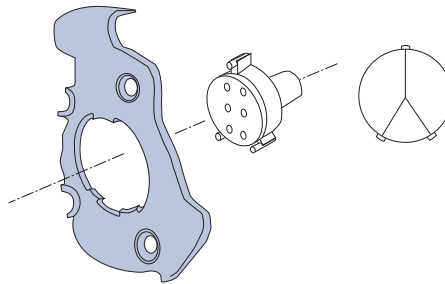


Gives good repeatability even when out of line with bore centre. Available from 3 - 300mm diameter on digital systems.



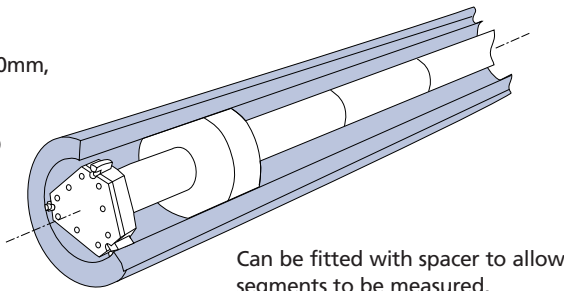
Irregular Spacing

Available between 16 - 300mm diameter to measure between odd spaced lobes.

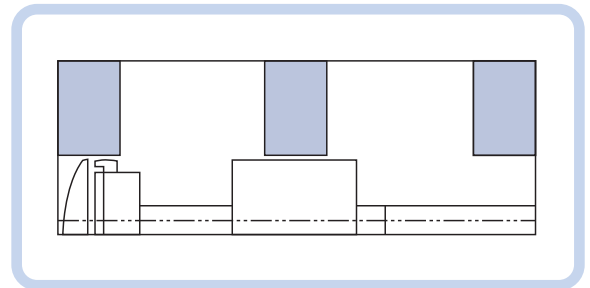


Deep Hole

For diameters from 20mm, depths up to 500mm. Pneumatic system available for 50mm Ø for depth up to 15m.

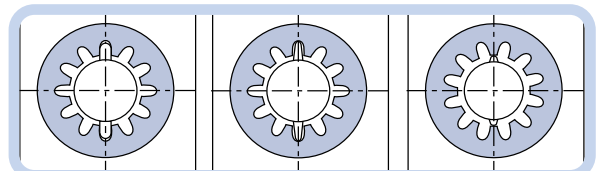
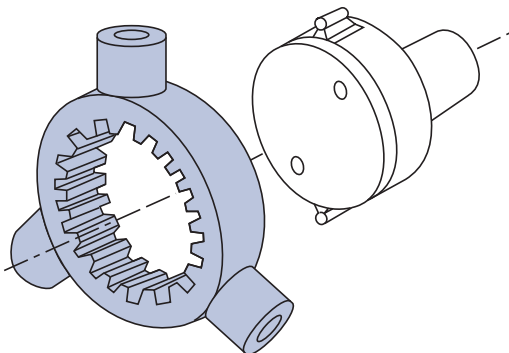


Can be fitted with spacer to allow segments to be measured.



Internal Splines

3 point heads machined to suit particular spline. Pitch diameter heads fitted with precision formed anvils. Sizes available from 8 - 300mm diameter.

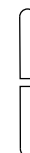


Pitch Diameter

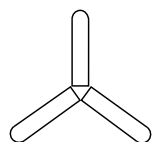
Major Diameter

Minor Diameter

2 Point anvil position



3 Point anvil position



SmartPlugs

The robust, easy to use **SmartPlug** range is designed to give the operator greater speed of use, unmatched measuring accuracy and superb repeatability, especially in harsh shop - floor environments. Advanced hand held ergonomics allied to an ingenious mechanical / electronic system render SmartPlugs the easiest to operate Bowers bore gauging system to date. The flexible nature of Bowers SmartPlugs range means that they can be supplied fitted with easy to read electronic indicators (ideal for automatic data collection), conventional analogue indicators, or transducer probes linked to remote digital readout units.

WiFi

see p251 for wireless options

RS232


Features

- Range 6 - 280mm
- Tough, robust construction
- Easy-to-use
- Long life
- High accuracy dedicated plug-gauges
- Flexible, modular
- Hand-held measurement
- Can be incorporated into automated measuring systems (in-series)
- Cost-effective
- Short delivery times
- High visibility display
- Protective indicator shroud (with some indicators)
- All setting rings supplied as standard with UKAS calibration certificates
- Coverplates as standard on all SmartPlugs
- Specials (e.g. blind bore) on request
- Repeatability $\leq 1 \mu\text{m}$
- Setting by means of a setting ring
- Quick and reliable measurement
- 2 - point measurement as standard
- Blind bore available on request
- Depth-stops available
- Extensions available for deeper bores
- Guide chamfer for easy entry into bore
- High durability, long-life plugs and contacts
- Easy to clean
- Plug body coatings: Hard-chrome (standard), T.i.N., Plain steel
- Measuring contacts: Tungsten carbide, (standard), hard-chrome, ruby, ceramic

SmartPlugs

Indicators



Type A
Waterproof MIni Indicator with Shroud
Preset value maximum 130mm



Type B
Mechanical Dial Gauge



Type C
Standard Digital Indicator also available with shroud



P10
Transducer Probe



P2B
Transducer probe

Holders



SMA001M
M6 Holder



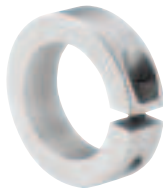
SMA002M
M6 Holder



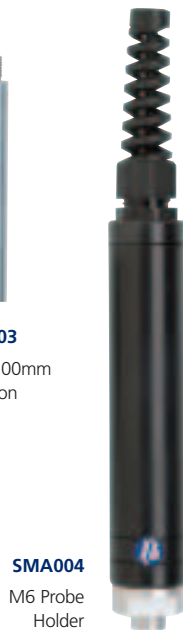
SMA003
M6 - 100mm Extension



SMA028
M6 - M10 Adapter



SMPDS00-09
Depth Stop



SMA004
M6 Probe Holder



SMA008
M10 Probe Holder



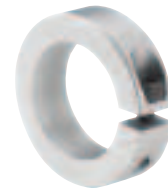
SMA007
M10 - 100mm Extension



SMA006M
M10 Holder



SMA005M
M10 Holder



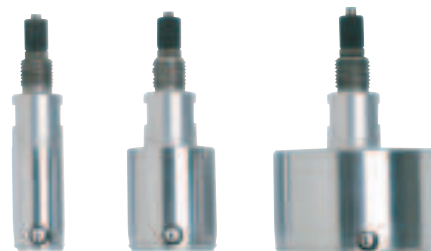
SMPDS00-09
Depth Stop

SmartPlugs

M6 THREAD RANGE 6 – 20mm
Please state size to be measured



M10 THREAD RANGE 15 – 280mm
Please state size to be measured



Contact Options: Tungsten Carbide (standard), Hard Chrome, Ruby, Ceramic
Plug-Body options: Hard Chrome Plated (standard), Titanium Nitride, Plain Steel

SmartPlugs

SmartPlug Applications & Options



SmartPlug with TiN coated body



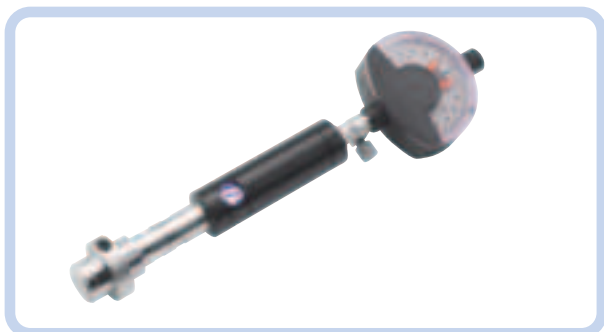
SmartPlug with ruby contacts



SmartPlug with ceramic contacts



SmartPlug for blind bore measurement



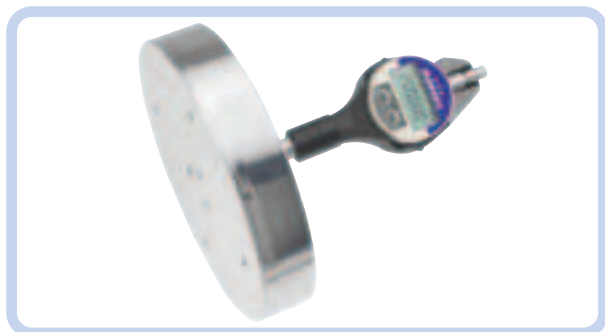
SmartPlug with depth stop



SmartPlug with extension



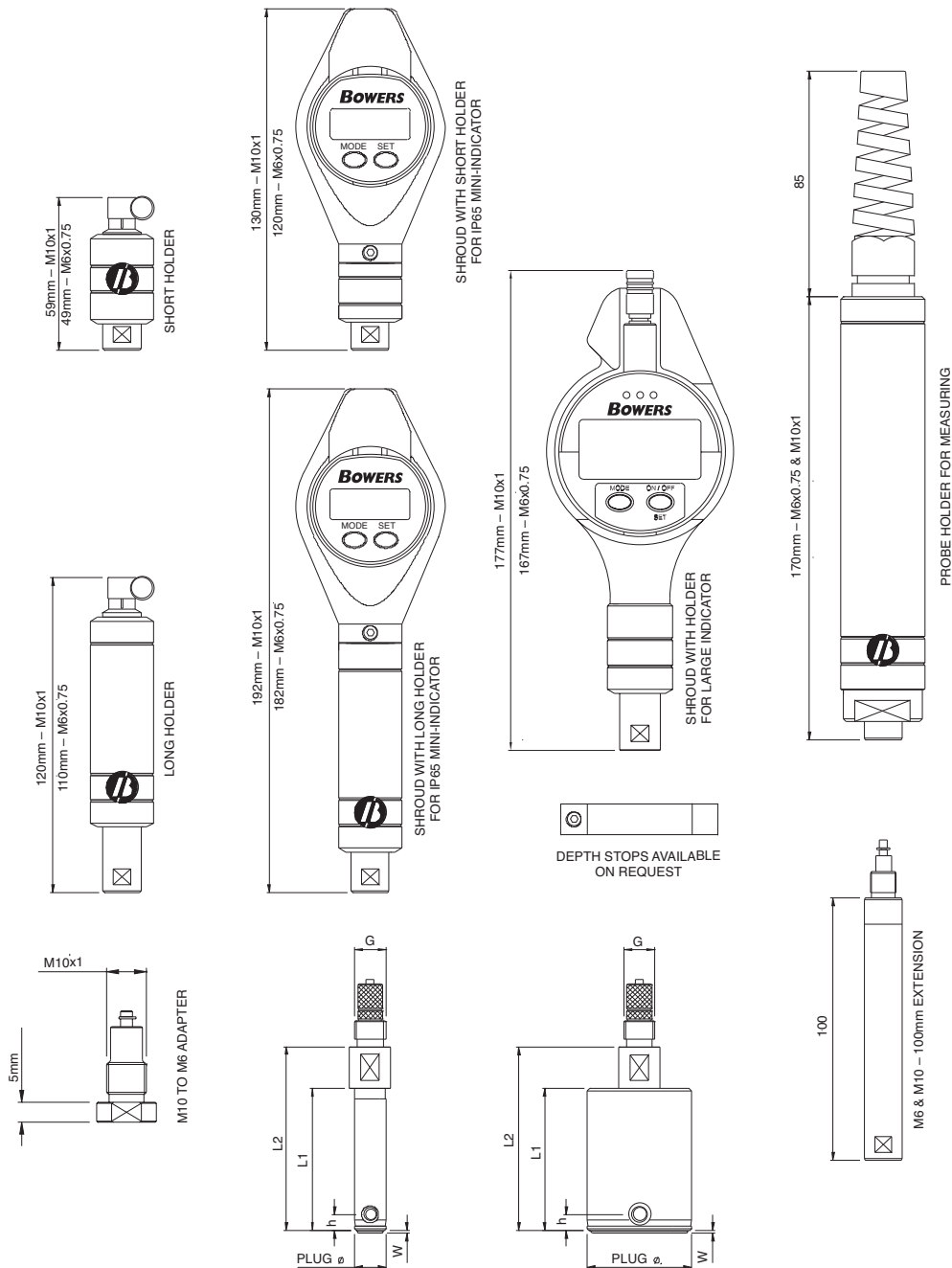
SmartPlug with transducer holder and standalone display



SmartPlug for large diameters (up to 280mm)

SmartPlugs

SmartPlug Technical Detail



SMARTPLUGS

Size (mm)	Range	h	L1	L2	W	G
6 - 7.8*	0.15	3	27	35	0.5	M6x0.75
7.9 - 20	0.15	3	27	35	0.5	M6x0.75
15 - 45	0.2	3.5	28	43.5	1	M10x1
45.1 - 70	0.2	4	28	44	1.5	M10x1
70.1 - 280	0.2	4	35	44	1.5	M10x1

* max measuring depth 27mm between 6 and 7.8mm

SmartPlugs

SMARTPLUGS

SmartPlug Standard	Bore diameters	Connecting thread	Price (£)	
SMP010	>6 - 20mm / 0.236" - 0.787"	M6x0.75	£236.00	I
SMP012	>15 - 25mm / 0.590" - 0.984"	M10x1	£247.00	I
SMP014	>25 - 35mm / 0.984" - 1.378"	M10x1	£263.00	I
SMP016	>35 - 45mm / 1.378" - 1.772"	M10x1	£273.00	I
SMP018	>45 - 60mm / 1.772" - 2.362"	M10x1	£304.00	I
SMP020	>60 - 80mm / 2.362" - 3.150"	M10x1	£336.00	I
SMP022	>80 - 100mm / 3.150" - 3.937"	M10x1	£378.00	I
SMP024	>100 - 125mm / 3.937" - 4.921"	M10x1	£452.00	I
SMP026	>125 - 150mm / 4.921" - 5.906"	M10x1	£567.00	I
SMP028	>150 - 175mm / 5.906" - 6.890"	M10x1	£667.00	I
SMP030	>175 - 200mm / 6.890" - 7.874"	M10x1	£772.00	I
SMP032	>200 - 225mm / 7.874" - 8.858"	M10x1	£830.00	I
SMP034	>225 - 250mm / 8.858" - 9.843"	M10x1	£867.00	I
SMP036	>250 - 280mm / 9.843" - 11.025"	M10x1	£908.00	I

SmartPlug Blind-bore

SMP010BB	>6 - 20mm / 0.236" - 0.787"	M6x0.75	£362.00	I
SMP012BB	>15 - 25mm / 0.590" - 0.984"	M10x1	£362.00	I
SMP014BB	>25 - 35mm / 0.984" - 1.378"	M10x1	£415.00	I
SMP016BB	>35 - 45mm / 1.378" - 1.772"	M10x1	£446.50	I
SMP018BB	>45 - 60mm / 1.772" - 2.362"	M10x1	£499.00	I
SMP020BB	>60 - 80mm / 2.362" - 3.150"	M10x1	£552.00	I
SMP022BB	>80 - 100mm / 3.150" - 3.937"	M10x1	£625.00	I
SMP024BB	>100 - 125mm / 3.937" - 4.921"	M10x1	£646.00	I
SMP026BB	>125 - 150mm / 4.921" - 5.906"	M10x1	£719.00	I

Sizes above 150mm on request

SMARTPLUG ACCESSORIES

Accessories – M6 thread		Price (£)	
SMA001M	M6 Holder short 8mm stem	£48.00	C
SMA002M	M6 Holder long 8mm stem	£70.00	C
SMA003	M6 100mm extension	£38.00	C
SMA004	M6 Probe holder 8mm stem	£109.00	C
SMA009M	*Type A Mini indicator with shroud & M6 short holder 8mm stem*	£198.00	C
SMA011M	*Type A Mini indicator with shroud & M6 long holder 8mm stem	£219.00	C
SMA013	Type C Indicator with shroud & M6 holder 8mm stem	£412.00	C
SMA028	M6-M10 Adapter (to use M10 holders with M6 plugs)	£16.00	C

Accessories – M10 thread			
SMA005M	M10 Holder short 8mm	£48.00	C
SMA006M	M10 Holder long 8mm stem	£70.00	C
SMA007	M10 100mm extension	£38.00	C
SMA008	M10 Probe holder 8mm stem	£109.00	C
SMA015M	*Type A Mini indicator with shroud & M10 short holder 8mm stem	£198.00	C
SMA017M	*Type A Mini indicator with shroud & M10 long holder 8mm stem	£219.00	C
SMA019	Type C Indicator with shroud & M10 holder 8mm stem	£412.00	C

Indicating Units

SMA021	*Type 'A' digital Mini indicator. Res. 0.001mm	£179.00	C
SMA022	Type 'B' mechanical dial-gauge. 0.001mm graduation	£144.00	C
SMA023	Type 'C' digital indicator. Res. 0.001mm	£299.00	C
30-900-0994	Transducer probe P2B	£235.00	I
30-804-1050	D50S digital readout 0.001 / 0.0001mm Res.	£499.00	I
30-804-1080	D80S digital readout unit 0.001 / 0.0001mm Res.	£1,082.00	I
30-804-1101	D100S digital readout unit 0.001 / 0.0001mm Res.	£1,479.00	I

* Type A Mini indicators preset values up to 130mm only.

TiN coated body

Ceramic contacts

Ruby contacts

WiFi

see p251 for wireless options

RS232



SmartPlug Setting Rings

- Complete with UKAS Calibration Certificates

SETTING RINGS. GRADE NOMINAL

(+/- 0.005mm and marked to actual size)

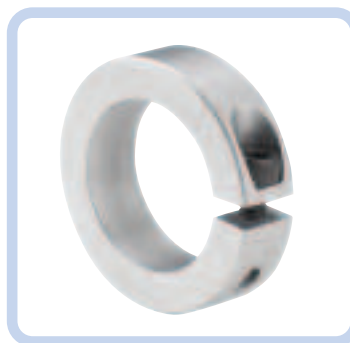
Code No		Price (£)	
SPR002N	1.5 - 2mm	£146.00	
SPR003N	2 - 3mm	£114.00	
SPR004N	3 - 4mm	£98.00	
SPR005N	4 - 5mm	£90.00	
SPR006N	5 - 6mm	£90.00	
SPR010N	6 - 10mm	£90.00	
SPR020N	10 - 20mm	£84.00	
SPR025N	20 - 25mm	£85.00	
SPR030N	25 - 30mm	£90.00	
SPR040N	30 - 40mm	£94.00	
SPR050N	40 - 50mm	£98.00	
SPR060N	50 - 60mm	£113.00	
SPR070N	60 - 70mm	£144.00	
SPR080N	70 - 80mm	£151.00	
SPR090N	80 - 90mm	£160.00	
SPR100N	90 - 100mm	£165.00	
SPR115N	100 - 115mm	£215.00	
SPR130N	115 - 130mm	£232.00	
SPR145N	130 - 145mm	£277.00	
SPR160N	145 - 160mm	£305.00	
SPR170N	160 - 170mm	£326.00	
SPR180N	170 - 180mm	£384.00	
SPR190N	180 - 190mm	£460.00	
SPR200N	190 - 200mm	£505.00	
SPR210N	200 - 210mm	£640.00	
SPR220N	210 - 220mm	£640.00	
SPR230N	220 - 230mm	£727.00	
SPR240N	230 - 240mm	£727.00	
SPR250N	240 - 250mm	£727.00	
SPR260N	250 - 260mm	£831.00	
SPR270N	260 - 270mm	£831.00	
SPR280N	270 - 280mm	£831.00	

SETTING RINGS. GRADE "X"

Code No		Price (£)	
SPR002X	1.5 - 2mm	£150.00	
SPR003X	2 - 3mm	£117.00	
SPR004X	3 - 4mm	£100.00	
SPR005X	4 - 5mm	£92.00	
SPR006X	5 - 6mm	£92.00	
SPR010X	6 - 10mm	£92.00	
SPR020X	10 - 20mm	£86.00	
SPR025X	20 - 25mm	£87.00	
SPR030X	25 - 30mm	£92.00	
SPR040X	30 - 40mm	£96.00	
SPR050X	40 - 50mm	£100.00	
SPR060X	50 - 60mm	£116.00	
SPR070X	60 - 70mm	£148.00	
SPR080X	70 - 80mm	£155.00	
SPR090X	80 - 90mm	£165.00	
SPR100X	90 - 100mm	£170.00	
SPR115X	100 - 115mm	£221.00	
SPR130X	115 - 130mm	£238.00	
SPR145X	130 - 145mm	£285.00	
SPR160X	145 - 160mm	£314.00	
SPR170X	160 - 170mm	£336.00	
SPR180X	170 - 180mm	£395.00	
SPR190X	180 - 190mm	£474.00	
SPR200X	190 - 200mm	£520.00	
SPR210X	200 - 210mm	£659.00	
SPR220X	210 - 220mm	£659.00	
SPR230X	220 - 230mm	£749.00	
SPR240X	230 - 240mm	£749.00	
SPR250X	240 - 250mm	£749.00	
SPR260X	250 - 260mm	£856.00	
SPR270X	260 - 270mm	£856.00	
SPR280X	270 - 280mm	£856.00	

SETTING RINGS. GRADE "XX"

Code No		Price (£)	
SPR002XX	1.5 - 2mm	£188.00	
SPR003XX	2 - 3mm	£148.00	
SPR004XX	3 - 4mm	£126.00	
SPR005XX	4 - 5mm	£115.00	
SPR006XX	5 - 6mm	£115.00	
SPR010XX	6 - 10mm	£114.00	
SPR020XX	10 - 20mm	£108.00	
SPR025XX	20 - 25mm	£110.00	
SPR030XX	25 - 30mm	£116.00	
SPR040XX	30 - 40mm	£122.00	
SPR050XX	40 - 50mm	£115.00	
SPR060XX	50 - 60mm	£149.00	
SPR070XX	60 - 70mm	£189.00	
SPR080XX	70 - 80mm	£198.00	
SPR090XX	80 - 90mm	£211.00	
SPR100XX	90 - 100mm	£231.00	
SPR115XX	100 - 115mm	£283.00	
SPR130XX	115 - 130mm	£312.00	
SPR145XX	130 - 145mm	£362.00	
SPR160XX	145 - 160mm	£399.00	
SPR170XX	160 - 170mm	£432.00	
SPR180XX	170 - 180mm	£544.00	
SPR190XX	180 - 190mm	£607.00	
SPR200XX	190 - 200mm	£667.00	
SPR210XX	200 - 210mm	£797.00	
SPR220XX	210 - 220mm	£797.00	
SPR230XX	220 - 230mm	£909.00	
SPR240XX	230 - 240mm	£909.00	
SPR250XX	240 - 250mm	£909.00	
SPR260XX	250 - 260mm	£1,038.00	
SPR270XX	260 - 270mm	£1,038.00	
SPR280XX	270 - 280mm	£1,038.00	



DEPTH STOPS

Code No	Diameter range	Price (£)	
SMPDS00	below 6mm	£28.00	
SMPDS01	6 - 8.5mm	£28.00	
SMPDS02	8.5 - 13mm	£28.00	
SMPDS03	13 - 17.5mm	£39.00	
SMPDS04	17.5 - 25mm	£45.00	
SMPDS05	25 - 32.5mm	£45.00	
SMPDS06	32.5 - 40mm	£45.00	
SMPDS07	40 - 47.5mm	£45.00	
SMPDS08	47.5 - 55mm	£91.00	
SMPDS09	55 - 62.5mm	£91.00	
SMPDS10	62.5 - 70mm	£91.00	
SMPDS11	70 - 77.5mm	£91.00	
SMPDS12	77.5 - 85mm	£91.00	
SMPDS13	85 - 92.5mm	£91.00	
SMPDS14	92.5 - 100mm	£91.00	

Air Gauging

Air Gauging is a fast, user friendly method of providing high precision results in even the most challenging of shop-floor environments. Using air flow volumes and pressures to measure parts, air gauging is a reliable, repeatable technology well-suited for applications such as precision medical tapers where tolerances are tight. Air gauging technology is flexible; enabling measurement of not only dimensions but geometric and relational characteristics, such as squareness and parallelism; ovality, taper, and straightness of bores; and distance between hole centres.

Bowers PC-2200 Air/Electronic Column

The **Bowers PC-2200** is a state of the art flexible electronic/air column capable of operating with air gauging products and measuring probes. The advanced new column contains a multitude of measuring functions including static and dynamic gauging, classification grading, probe mixing, (A+B), (A-B), etc.

Features

- Metric/Imperial
- 3 colour LED display
- Digital display
- Status indicator
- 2 probe input
- 4 probe input option
- Probe mixing, (A+B), (A-B), etc.
- Compatible with most electronics probes
- Air convertor option (1 or 2)
- Dynamic mode Max, Min, TIR, etc.
- Tolerance limit setting
- Approach limit setting
- Calibration, single or Max/Min
- Accuracy 0.5% full scale +/- resolution
- 6 range settings
- Resolution 0.1um (5 settings)
- Grading (1-100)
- RS-232 output
- Can be linked to PLC or Logic controller
- Dual supply voltage (220 / 110 volt)



WiFi

see p251 for wireless options

RS232



Concentricity



Squareness



Runout



Ovality



Flatness



Diameter



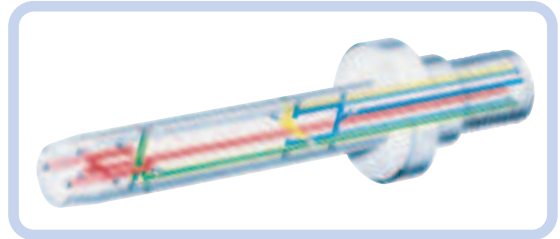
Parallelism

Bowers Air Plugs and Rings

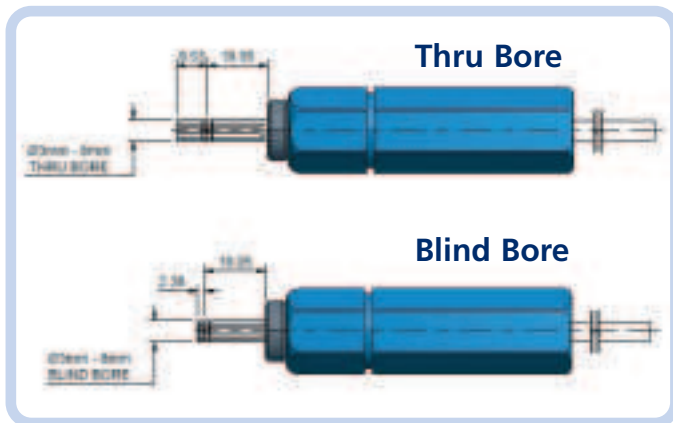
Bowers offers the most comprehensive range of standard air plugs, rings, calipers, etc, currently available. To complement this service we also produce bespoke air gauging products to help solve customer's specific measuring problems. Our hi-tech manufacturing plant incorporates a first class UKAS calibration laboratory, ensuring the quality and accuracy of our air gauging products.

Features

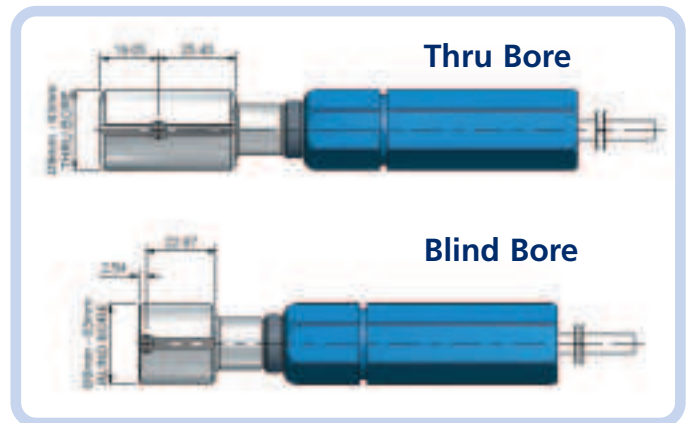
- High resolution
- 3mm to 150mm diameter
- High repeatability
- Non contact
- Static or dynamic measurement
- Multi parameter measurement
- Compatible with instruments from other sources
- Air plugs for internal measurement
- Air rings and calipers for external measurement
- In-cycle, in-process and post-process



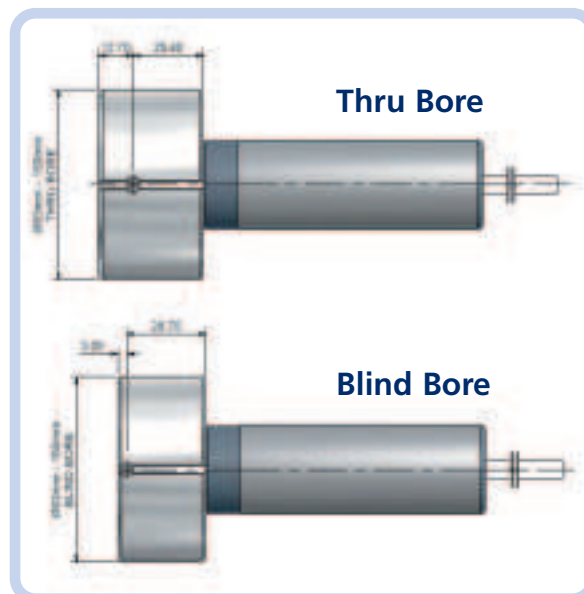
Standard: 3-8mm



Standard: 8-63mm

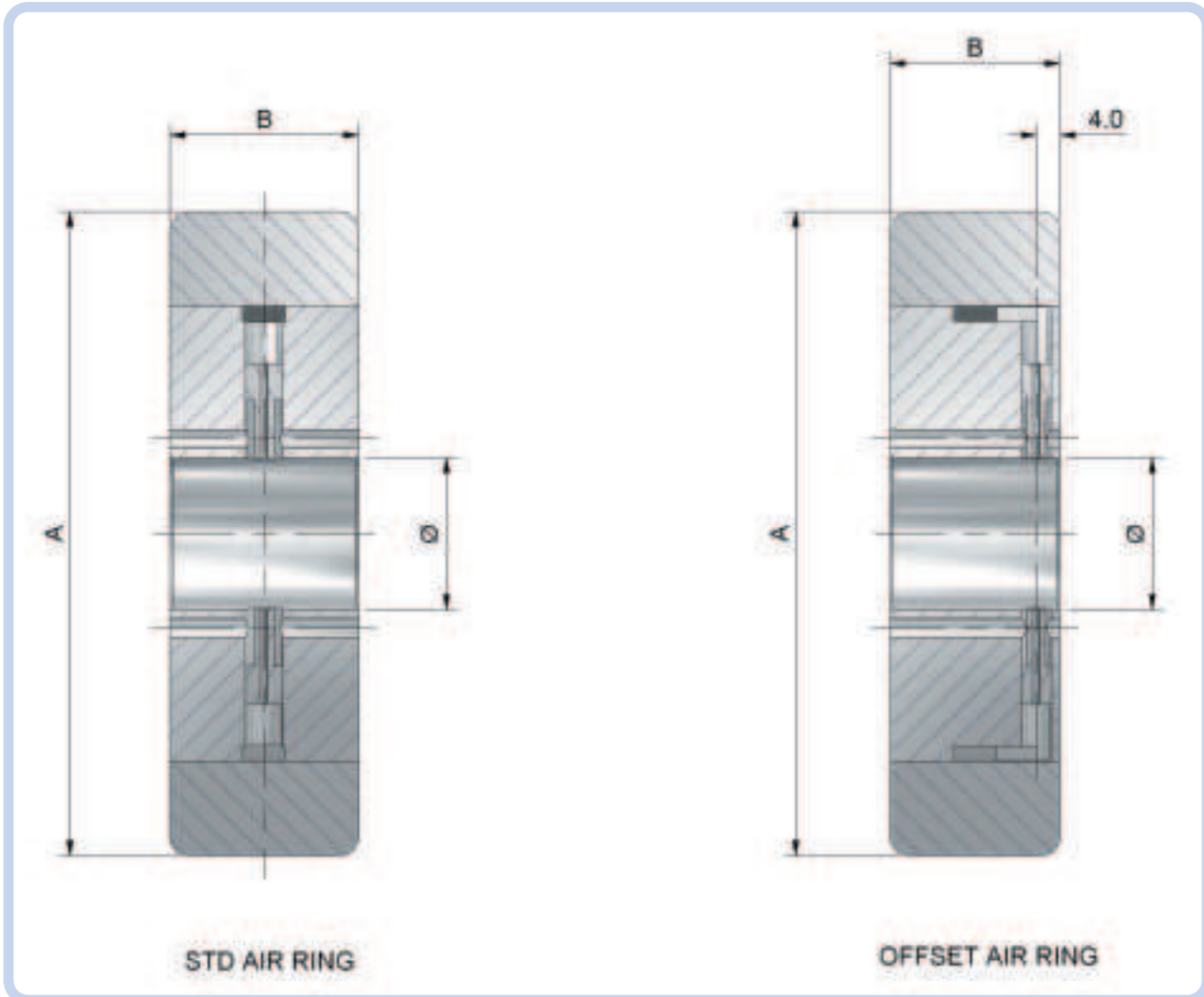


Standard: 63-150mm



Bowers Air Rings

Air Rings - Standard & Offset

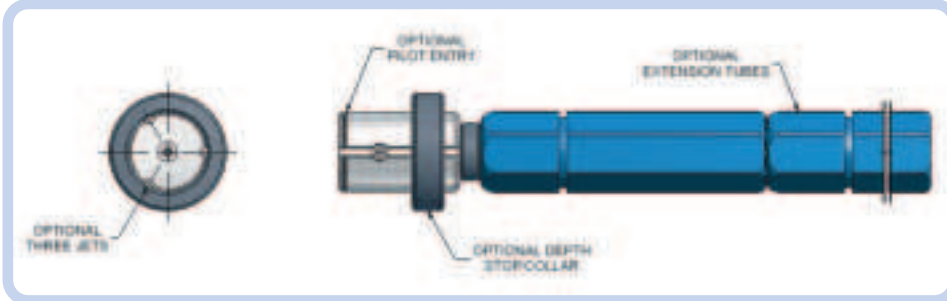


AIR RINGS - SPECIFICATION

Size Range Ø	A (mm)	B (mm)
3.0 - 6.3	63.5	25.4
6.3 - 25.4	82.6	28.6
25.4 - 38.1	108	31.8
38.1 - 50.8	120.7	31.8
50.8 - 63.5	133.4	31.8

Air Gauging Options and Applications

Options



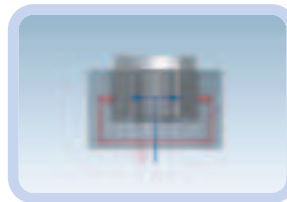
Applications



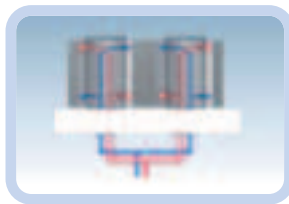
Straightness



Concentricity of 2 Inside Diameters



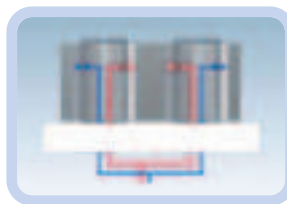
Simultaneous Int/Ext Measurement



Parallelism of 2 Bores



Taper



Centre Distance of 2 Holes

PC-2200 Electronic Column

Code No	Description	Price (£)
55-MCOL2	PC-2200 Column mm/inch	£859.00
55-MAIND2	A-IND2 analogue board (HBT) - 2 channels	£119.00
55-MAIND4	A-IND4 analogue board (HBT) - 4 channels	£233.00
55-MALVD2	A-IND2 analogue board (LVDT) - 2 channels	£119.00
55-MALVD4	A-IND4 analogue board (LVDT) - 4 channels	£233.00
55-MACAP2	A-CAP2 analogue board (Sylvac) - 2 channels	£182.00
55-MACAP4	A-CAP4 analogue board (Sylvac) - 4 channels	£365.00

PC-2200 Air / Electronic Column

Code No	Description	Price (£)
55-MCOL2	PC-2200 Column mm/inch	£859.00
55-MC	AIR Converter + regulator	£333.00
55-MAIR1	AIR1 1 channel analogue board	£125.00
55-MAIR2	AIR2 2 channels analogue board	£238.00
55-PC2332	Cable, column to A/E converter	£23.00
55-WKXT4248	Air Regulator / Filter	£116.00

Accessories

Code No	Description	Price (£)
55-PC2302	Power jump cable	£8.00
55-PC2311	RS232 cable (9p/M/F)	£16.00
55-PC2312	Output cable (9p/M-> no connector)	£12.00
55-PC2312	External control cable (9p/M-> no connector)	£12.00
55-PC2312	DC-out cable (9p/M-> no connector)	£12.00
55-PC2321	Foot pedal with cable for 1 col.	£19.00
55-PC2341	Switch box (4 functions) with cable for 1 col.	£64.00
55-PC2332	CH-BUS cable for 2 col.	£23.00
55-SOFTWARE	Programming Software	£119.00

Aluminium Base plates

Code No	Description	Price (£)
55-MALP 1	For 1 Column	£46.00
55-MALP 2	For 1 Column & 1 Converter	£54.00
55-MALP 3	For 1 Column & 2 Converters	£74.00
55-MALP 4	For 2 Column & 2 Converters	£98.00
55-MALP 5	For 2 Column & 3 Converters	£128.00
55-MALP 6	For 2 Column & 4 Converters	£162.00

Bowers Mechanical & Digital Cylinder Bore Gauge

Recent improvements to the popular **Bowers Cylinder Bore Gauges**, such as the introduction of tungsten carbide contact points have ensured even greater reliability, ease of use and superior wear resistance. Suitable for use in most environments, these gauges are particularly useful for detecting ovality, or taking measurements relatively deep inside bores.

WiFi
see p251 for wireless options

RS232

Standard Features

- Fast simple checking for bore size, ovality, taper, etc
- Tungsten carbide contact points
- Lightweight glass reinforced nylon gauge shroud for extra strength and protection
- Thermally insulated for extra stability
- Bore gauges available up to 2m (6 feet) long for deep hole measurement
- Large sets available on request



Digital Features

- RS232 output
- Inch / metric conversion
- Displays actual bore diameter or comparative results



MECHANICAL & DIGITAL CYLINDER BORE GAUGE

Series	Code No	Capacity	Resolution	Graduation	Measuring Depth	Price (£)
600	TGB652M	12.5 - 22mm	0.01mm	0 - 50 - 0	150mm	£325.00 C
12.5 - 22mm	TGB655M	12.5 - 22mm	0.002mm	0 - 10 - 0	150mm	£346.00 C
600D	CBGD010	12.5 - 22mm	0.001mm	Digital	150mm / 6"	£557.00 Q
700	TGB702M	22 - 50mm	0.01mm	0 - 50 - 0	150mm	£312.00 C
22 - 50mm	TGB717M	22 - 50mm	0.002mm	0 - 10 - 0	150mm	£330.00 C
700 D	CBGD020	22 - 50mm	0.001mm	Digital	150mm / 6"	£582.00 Q
750	TGB752M	50 - 150mm	0.01mm	0 - 50 - 0	250mm	£312.00 C
50 - 150mm	TGB765M	50 - 150mm	0.002mm	0 - 10 - 0	250mm	£330.00 C
750D	CBGD030	50 - 150mm	0.001mm	Digital	250mm / 10"	£628.00 Q
800	TGB802M	150 - 300mm	0.01mm	0 - 50 - 0	380mm	£503.00 C
150 - 600mm	TGB812M	150 - 300mm	0.002mm	0 - 10 - 0	380mm	£524.00 C
	TGB821M	150 - 600mm	0.01mm	0 - 50 - 0	380mm	£676.00 C
	TGB851M	150 - 600mm	0.002mm	0 - 10 - 0	380mm	£676.00 C
800D	CBGD040	150 - 300mm	0.001mm	Digital	380mm / 15"	£786.00 Q
820D	CBGD050	150 - 600mm	0.00005"	Digital	380mm / 15"	£931.00 Q
900	TGB910M	12.5 - 50mm	0.01mm	0 - 50 - 0	150mm	£505.00 C
12.5 - 150mm	TGB920M	12.5 - 50mm	0.002mm	0 - 10 - 0	150mm	£522.00 C
	TGB930M	22 - 150mm	0.01mm	0 - 50 - 0	150 - 250mm	£517.00 C
	TGB940M	22 - 150mm	0.002mm	0 - 10 - 0	150 - 250mm	£541.00 C
	TGB950M	12.5 - 150mm	0.01mm	0 - 50 - 0	150 - 250mm	£762.00 C
	TGB960M	12.5 - 150mm	0.002mm	0 - 10 - 0	150 - 250mm	£775.00 C

Gauges to measure up to 2m deep are available on request.

Note: Imperial range available on request

Moore & Wright Cylinder Bore Gauge Sets 316 Series

Features include:

- With interchangeable contact points
- Set of carbide tipped contact points included
- Unique self centring device
- Supplied with dial indicator, resolution 0.01mm / 0.0001" / 0.0005"
- Packed as set with all necessary accessories to measure the complete range as shown

CYLINDER BORE GAUGES

Code No	Range	Resolution	Price (£)
MW316-01	6 - 10mm	0.01mm	£75.00 T
MW316-02	10 - 18mm	0.01mm	£72.00 T
MW316-03	18 - 35mm	0.01mm	£60.00 T
MW316-04	35 - 50mm	0.01mm	£60.00 T
MW316-05	50 - 160mm	0.01mm	£65.00 T
MW316-06	160 - 250mm	0.01mm	£72.00 T

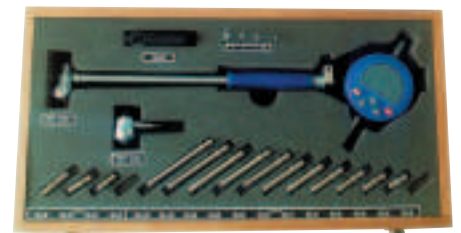


Digital Bore Gauge Sets

- Supplied with digital indicator with bar graph and numerical display

DIGITAL BORE GAUGE SET

Code No	Range	Resolution	Price (£)
MW316-12D	35 - 160mm	0.01mm / 0.00005"	£371.00 T



Universal Gauge

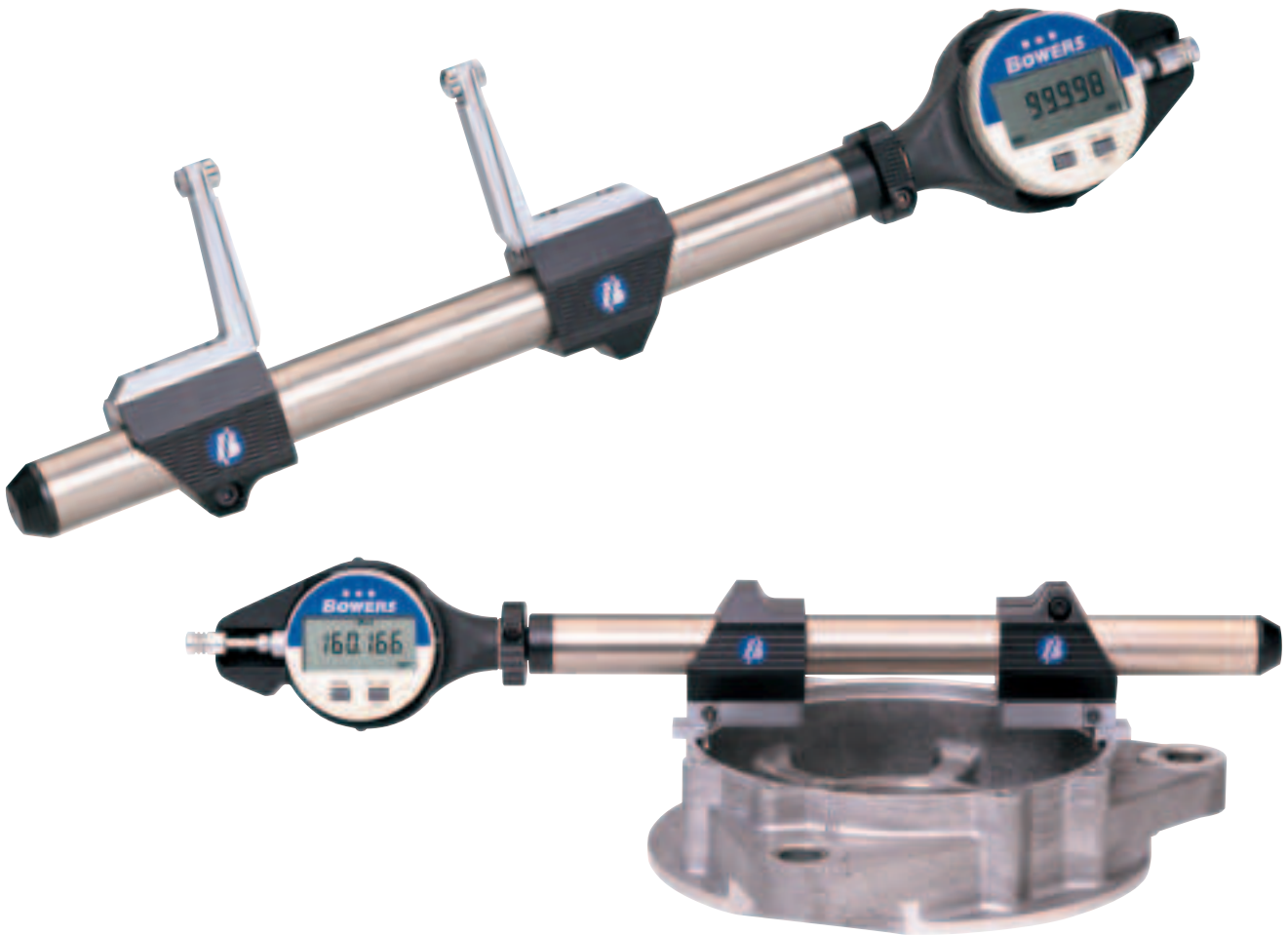
The **Bowers Universal Gauge's** ingenious modular format enables it to be quickly configured to suit almost any measuring challenge. Whether measuring internally or externally, the Universal's clever constant pressure device ensures accuracy and consistency of reading. The gauge's findings are displayed on its built in clear digital readout.

The unique modular construction of the Bowers Universal Gauge facilitates the fitting of a large variety of measuring contacts and adaptors, enabling countless measuring tasks to be completed with ease. Accessories for the measurement of threads, grooves, splines, gears, hole centres, and many others are available as standard, whilst special adaptations for more unusual applications can be quoted on request.

WiFi

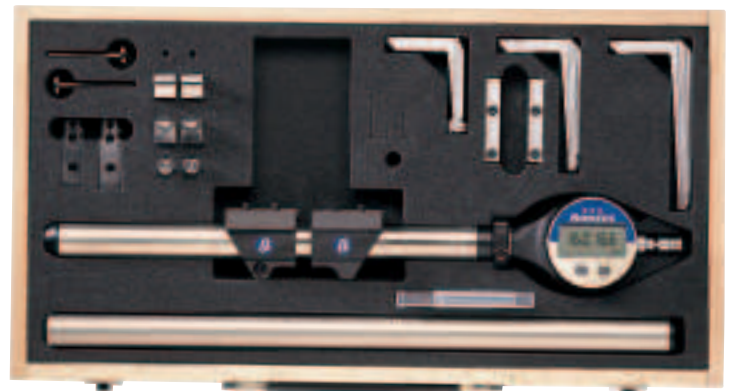
see p251 for wireless options

RS232



Features

- Internal and external measurement
- Large measuring range possible 0 - 3000mm (0 - 118")
- Constant measuring force
- Digital or mechanical readout display
- Large range of accessories for standard measurement of threads, grooves, splines, diameters, lengths, shallow spigots and recess diameters etc
- Special anvil designs available P.O.A



UNIVERSAL GAUGE

Code No.	Description	Price (£)
TGUDEMO	Universal Gauge Full Set	£2,998.00

Universal Gauge Sets

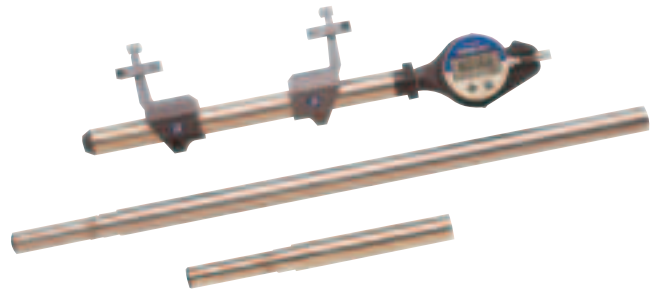
Universal Gauge (extension compatible version) standard features:

- Range 30 - 250mm internal / 0 - 215mm external 15mm anvil travel
- Constant measuring pressure
- Digital or mechanical readout
- 150mm and 500mm extensions available. Can be screwed together in multiples (up to maximum 3m recommended)
- Measuring table and supports available for conversion to bench gauge for the measurement of small components
- Covers approx 90% of all applications

WiFi
see p251 for wireless options

RS232

TGUDEMO2



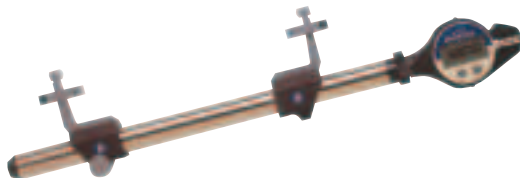
SET CONTENTS - STANDARD VERSION

Code No.	Description	Price (£)
TGUDEMO2	Set with box	£1,856.00
TGU1000	Universal Gauge - supplied boxed Compatible with Extensions	
TGUA001	Digital indicator with cowl	
TGUA003	Clamping inserts (each)	
TGUA005	Spherical contacts (each)	
TGUA006	Measuring arms 50mm (pair)	
TGUA010	Depth-stops (pair)	

Universal Gauge (slide guideway version) standard features:

- Range 30 - 335mm internal / 0 - 300mm external 15mm anvil travel
- Slide guideway for rapid measuring contact alignment
- Constant measuring pressure
- Digital or mechanical readout
- Measuring table and supports available for conversion to bench gauge for the measurement of small components
- Covers approx 90% of all applications

TGUGSET01



SET CONTENTS - SLIDE GUIDEWAY VERSION

Code No.	Description	Price (£)
TGUGSET01	Slide Guideway version - Set	£1,897.00
TGU1000G	Universal Gauge - supplied boxed Not Compatible with Extensions	
TGUA001	Digital indicator with cowl	
TGUA003	Clamping inserts (each)	
TGUA005	Spherical contacts (each)	
TGUA006	Measuring arms 50mm (pair)	
TGUA010	Depth-stops (pair)	



Slide Guideway

Universal Gauge and Accessories

Standard Gauge

Code No	Price (£)
TGU 1000	£1,049.00

Measuring Range Internal:
30 - 250mm (1.20 - 10.030")
Measuring Range External:
0 - 215mm (0 - 8.50")

Slide guideway version

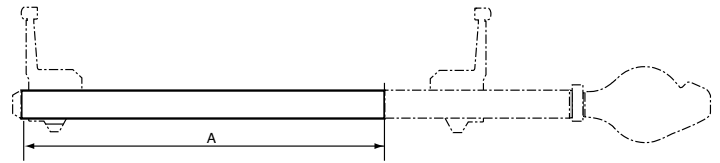
Code No	Price (£)
TGU 1000G	£1,090.00

Measuring Range Internal:
30 - 335mm (1.20 - 13.20")
Measuring Range External:
0 - 300mm (0 - 11.80")

Extensions (for standard gauge only)

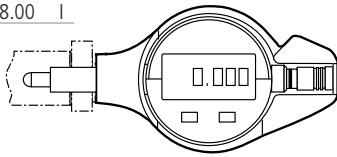
A	Code No	Range Internal	Range External (£)	Price
150mm	TGUA033	30 - 400mm (1.2 - 15.00")	0 - 365mm (0 - 14")	£94.00
500mm	TGUA032	30 - 750mm (1.2 - 29.00")	0 - 715mm (0 - 28.0")	£313.00

Intermediate and additional lengths can be made up by using 150 or 500mm extensions



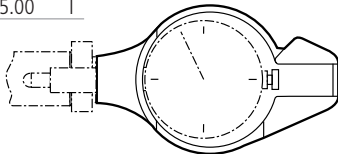
Digital Indicator and Protective Shroud

Code No	Price (£)
TGUA 001	£458.00



Protective Shroud for Dial/Digital Indicator

Code No	Price (£)
TGUA 002	£85.00

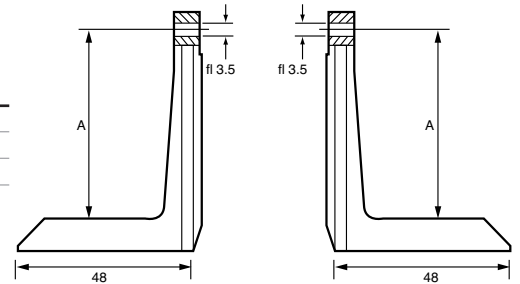


Measuring Arms

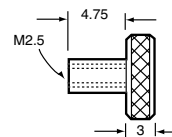
(reversible for inside/outside diameters)

A	Code No	Price (£)
50	TGUA 006	£173.00
75	TGUA 007	£184.00
100	TGUA 008	£212.00

(Price Per Pair)

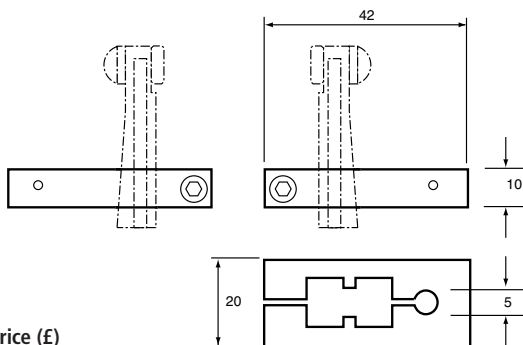


Clamping Insert

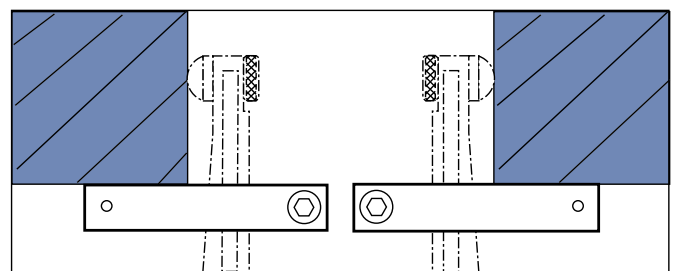


Code No	Price (£)
TGUA 003	£7.00 (each)

Adjustable Depth Stops For Measuring Arms



Code No	Price (£)
TGUA 010	£135.00 (per pair)

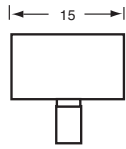
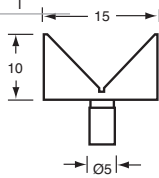


Universal Gauge

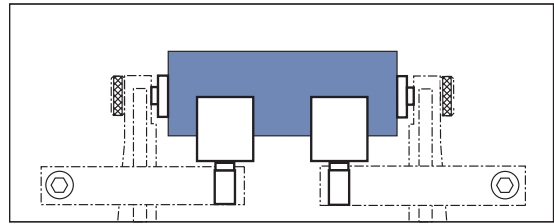
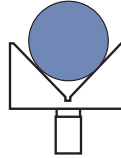
Vee Support For Length Measurement

Code No	Price (£)
TGUA 022	£140.00

(Price per pair)



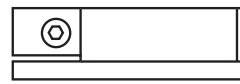
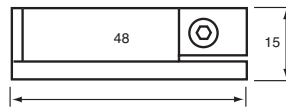
Model No
TGUA 022



Mounting Attachments For Use With The Following Anvils

Code No	Price (£)
TGUA 009	£186.00

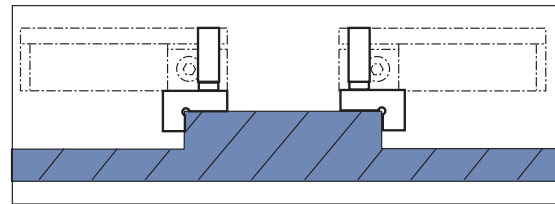
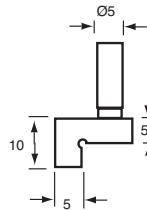
(Price per pair)



Shoulder Anvils Flat Outside Spigot Diameter

Code No	Price (£)
TGUA 011	£177.00

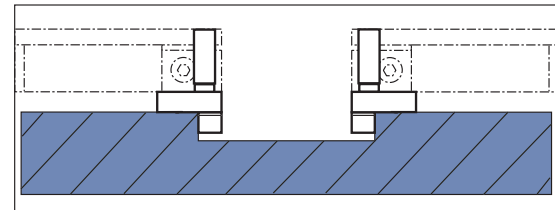
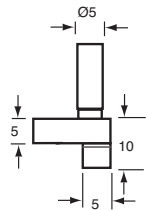
(Price per pair)



Semi-Cylindrical Anvils For Inside Register Diameters

Code No	Price (£)
TGUA 012	£177.00

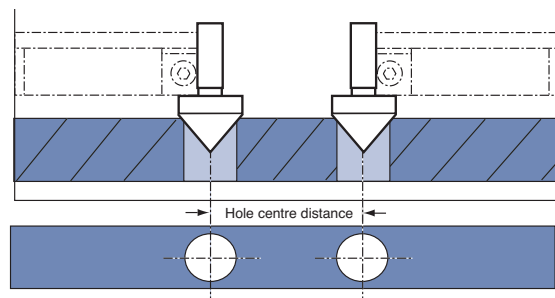
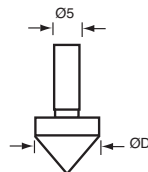
(Price per pair)



Cone Anvils For Measuring Hole Centre Distance

Code No	Diameter 'D'	Price (£)
TGUA 019	13	£148.00
TGUA 020	25	£164.00
TGUA 021	50	£207.00

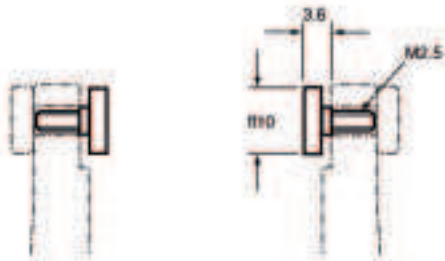
(Price per Pair)



Universal Gauge

CONTACTS FOR USE WITH MEASURING ARMS

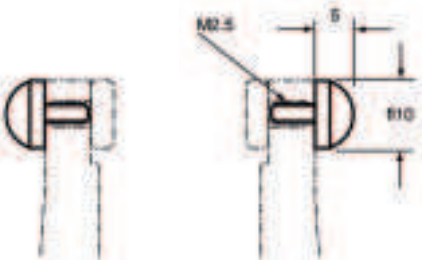
Flat for Outside Diameter/Length



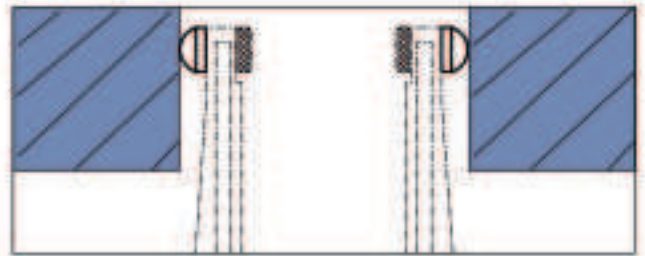
Code No	Price (£)
TGUA 004	£20.00 Each



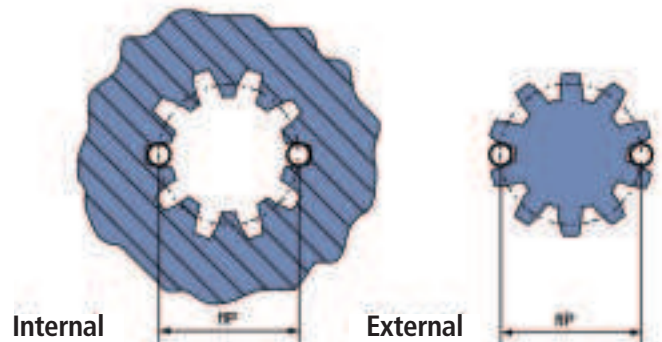
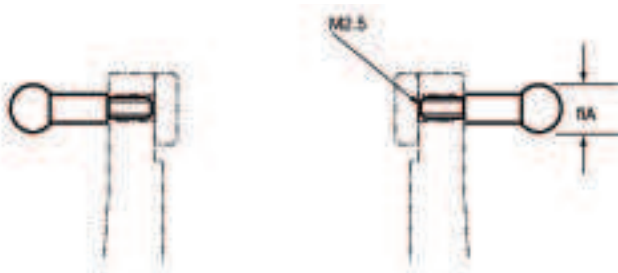
Spherical for Inside Diameters



Code No	Price (£)
TGUA 005	£11.00 Each



Ball Anvils for Measurement of the Pitch Diameter (P) on Internal or External Gears/Splines



Module	Nominal Ball Dia 'A'	Code No.	Price (£)
0.6	1.0	TGUA 100	Visit bowers.co.uk for latest prices
0.7	1.25	TGUA 101	Visit bowers.co.uk for latest prices
0.9	1.5	TGUA 102	Visit bowers.co.uk for latest prices
1.0	1.75	TGUA 103	Visit bowers.co.uk for latest prices
1.25	2.0	TGUA 104	Visit bowers.co.uk for latest prices
1.5	2.5	TGUA 105	Visit bowers.co.uk for latest prices
1.75	3.0	TGUA 106	Visit bowers.co.uk for latest prices
2.0	3.5	TGUA 107	Visit bowers.co.uk for latest prices
2.5	4.0	TGUA 108	Visit bowers.co.uk for latest prices
2.75	4.5	TGUA 109	Visit bowers.co.uk for latest prices
3.0	5.0	TGUA 110	Visit bowers.co.uk for latest prices
3.25	5.5	TGUA 111	Visit bowers.co.uk for latest prices
3.5	6.0	TGUA 112	Visit bowers.co.uk for latest prices
4.0	7.00	TGUA 113	Visit bowers.co.uk for latest prices
5.0	9.00	TGUA 114	Visit bowers.co.uk for latest prices
6.0	10.00	TGUA 115	Visit bowers.co.uk for latest prices

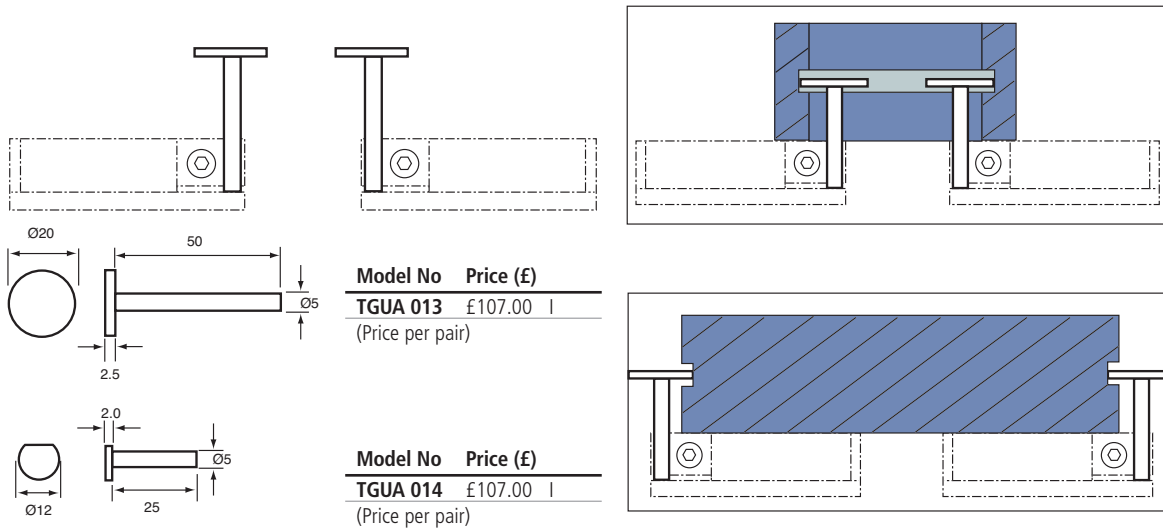
Special ball diameters available on request

DP	Nominal Ball Dia 'A'	Code No.	Price (£)
40	0.043	TGUA 150	Visit bowers.co.uk for latest prices
36	0.049	TGUA 151	Visit bowers.co.uk for latest prices
32	0.054	TGUA 152	Visit bowers.co.uk for latest prices
24	0.071	TGUA 153	Visit bowers.co.uk for latest prices
20	0.089	TGUA 154	Visit bowers.co.uk for latest prices
16	0.108	TGUA 155	Visit bowers.co.uk for latest prices
12	0.144	TGUA 156	Visit bowers.co.uk for latest prices
10	0.177	TGUA 157	Visit bowers.co.uk for latest prices
8	0.216	TGUA 158	Visit bowers.co.uk for latest prices
6	0.295	TGUA 159	Visit bowers.co.uk for latest prices
5	0.354	TGUA 160	Visit bowers.co.uk for latest prices
4	0.394	TGUA 161	Visit bowers.co.uk for latest prices

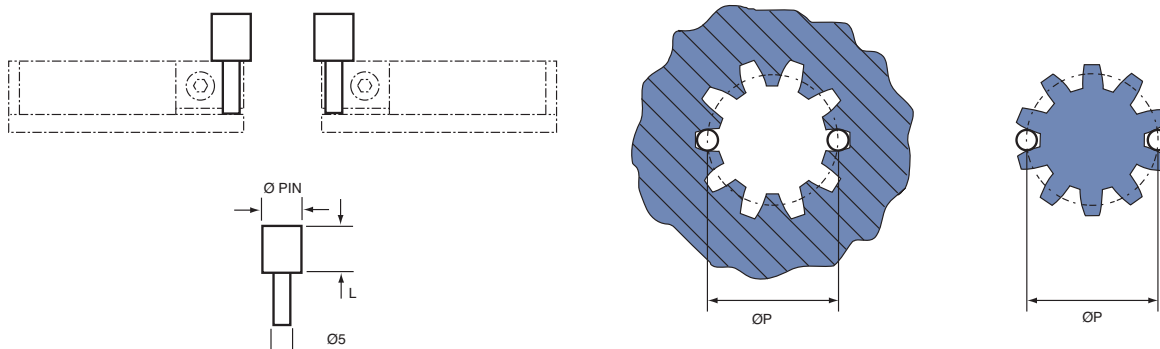
Universal Gauge

Although extremely comprehensive, the collection of Universal Gauge accessories cannot cover every measuring application. If your particular gauging need is not catered for within our standard range, specialised adaptors, contact points, etc can be quoted from a customer supplied component drawing.

DISC Anvils for measuring Groove Diameter



Cylindrical measuring pins for internal and external gear measurement



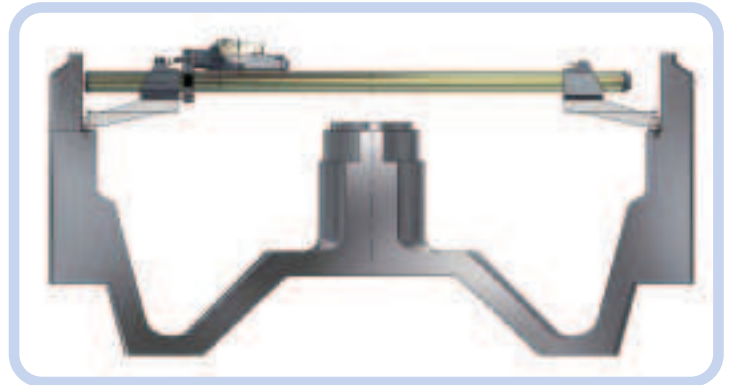
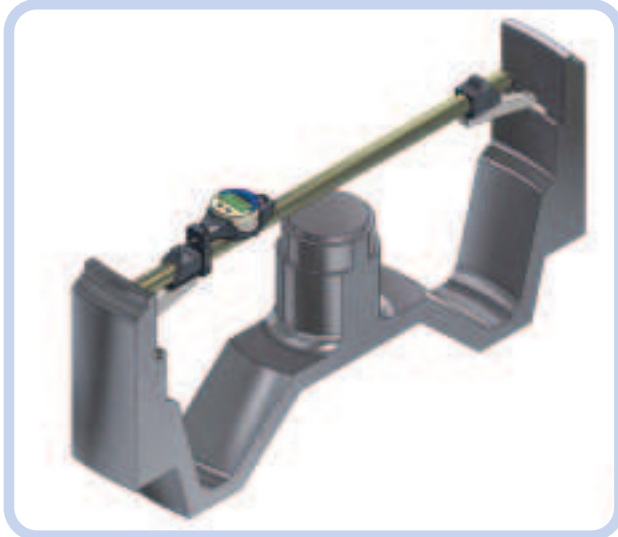
TECHNICAL SPECIFICATIONS

Module	Nominal Pin Dia	Length (L)	Code No.	Price (£)	Nominal DP	Pin Dia	Length (L)	Code No.	Price (£)
1.25	2.0	10 (0.4")	TGUA 200	Visit bowers.co.uk for latest prices	20	0.089	10 (0.4")	TGUA 250	Visit bowers.co.uk for latest prices
1.5	2.5	10 (0.4")	TGUA 201	Visit bowers.co.uk for latest prices	16	0.108	10 (0.4")	TGUA 251	Visit bowers.co.uk for latest prices
1.75	3.0	15 (0.6")	TGUA 202	Visit bowers.co.uk for latest prices	12	0.144	15 (0.6")	TGUA 252	Visit bowers.co.uk for latest prices
2.0	3.5	15 (0.6")	TGUA 203	Visit bowers.co.uk for latest prices	10	0.1777	20 (0.8")	TGUA 253	Visit bowers.co.uk for latest prices
2.5	4.0	15 (0.6")	TGUA 204	Visit bowers.co.uk for latest prices	8	0.216	20 (0.8")	TGUA 254	Visit bowers.co.uk for latest prices
2.75	4.5	20 (0.8")	TGUA 205	Visit bowers.co.uk for latest prices	6	0.295	25 (1.0")	TGUA 255	Visit bowers.co.uk for latest prices
3.0	5.0	20 (0.8")	TGUA 206	Visit bowers.co.uk for latest prices	5	0.354	25 (1.0")	TGUA 256	Visit bowers.co.uk for latest prices
3.25	5.5	20 (0.8")	TGUA 207	Visit bowers.co.uk for latest prices	4	0.394	25 (1.0")	TGUA 257	Visit bowers.co.uk for latest prices
3.5	6.0	20 (0.8")	TGUA 208	Visit bowers.co.uk for latest prices					
4.0	7.0	25 (1.0")	TGUA 209	Visit bowers.co.uk for latest prices					
5.0	9.0	25 (1.0")	TGUA 210	Visit bowers.co.uk for latest prices					

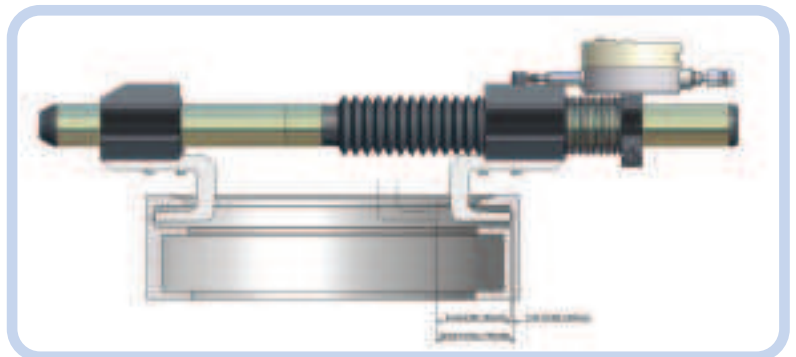
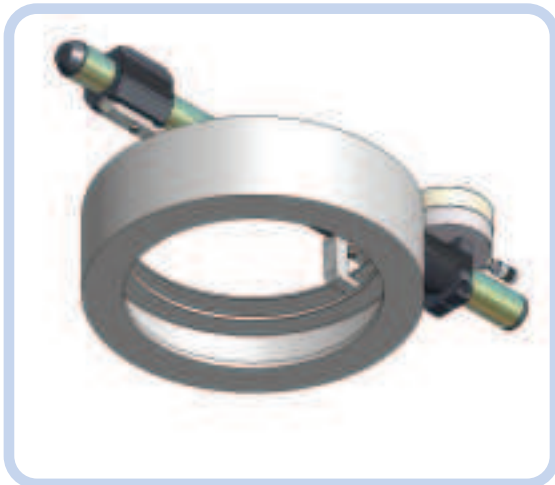
Other sizes available P.O.A

Bowers Universal Gauge Specials

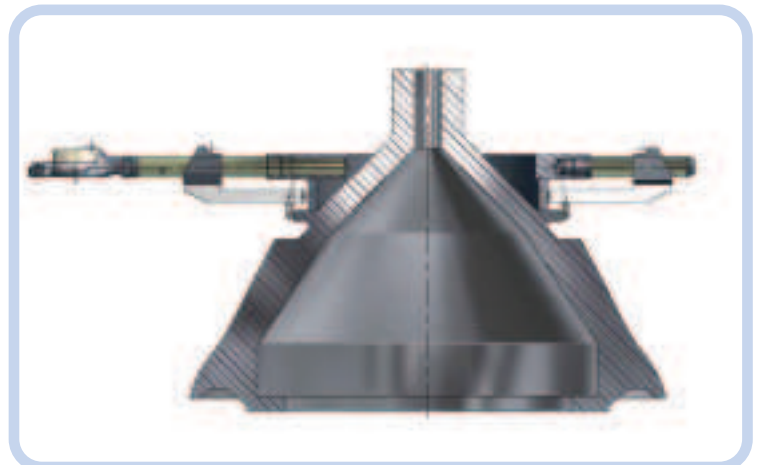
Universal Gauge incorporating on-board indicator and extra reach contact points.



Extended Travel Special Application Universal Gauge.



Special Universal Gauge measuring across large diameter component with central boss.



INTEX Comparator Beam Gauge

Developed to measure both internal and external diameters and lengths, the Intex gauge's aluminium extrusion beam gives it a rigid yet lightweight quality, making it ideal for shop-floor environments. The simple release of a locking thumbscrew enables the gauge's measuring direction to be changed quickly and easily.

WiFi
see p251 for wireless options

RS232

Features

- Lightweight and rigid
- Measuring ranges: 200-400mm, 400-600mm, 600-800mm, 800-1000mm
- Sizes over 1000mm available on request
- Internal and external measurement
- 2mm travel on moving contacts
- Adjustable fixed contacts with up to 250mm adjustment range
- Digital or analogue indicator available
- Hardened steel wear pads locate gauge onto component aiding repeatability and prolonging service life
- Setting master required to set the instrument



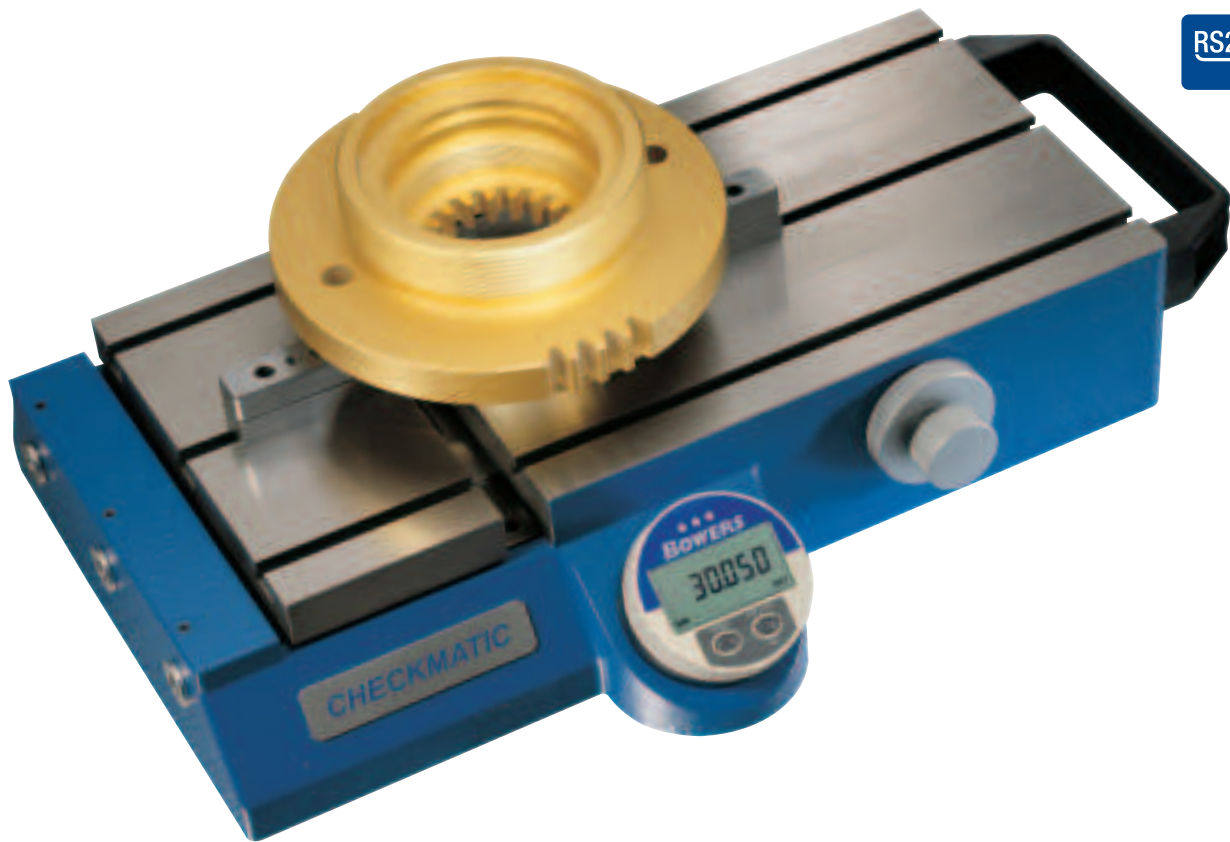
INTEX BEAM GAUGE

Code No.	Measuring Range	Price (€) Without Indicator	
INTEX01	200-400 mm	£989.00	
INTEX02	400-600 mm	£1,040.00	
INTEX03	600-800 mm	£1,091.00	
INTEX04	800-1000 mm	£1,143.00	

Universal Bench Fixture - Checkmatic

Bowers Checkmatic is a multifunction horizontal bench gauge, which is capable of being configured in a multitude of ways to enable most internal and external measuring tasks to be undertaken. The revolutionary accurate gauge can be supplied with an easy to read integral digital display or can be fitted with a wide variety of indicators and transducer probes.

The comprehensive range of quick-fit Checkmatic accessories means that this ingenious instrument can be rapidly set-up to enable most common internal or external measuring tasks to be performed with ease. Special accessories, contact points etc. can also be quoted to enable the accurate gauging of the most difficult of features.



WiFi

see p251 for wireless options

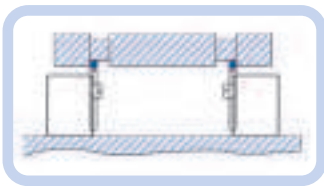
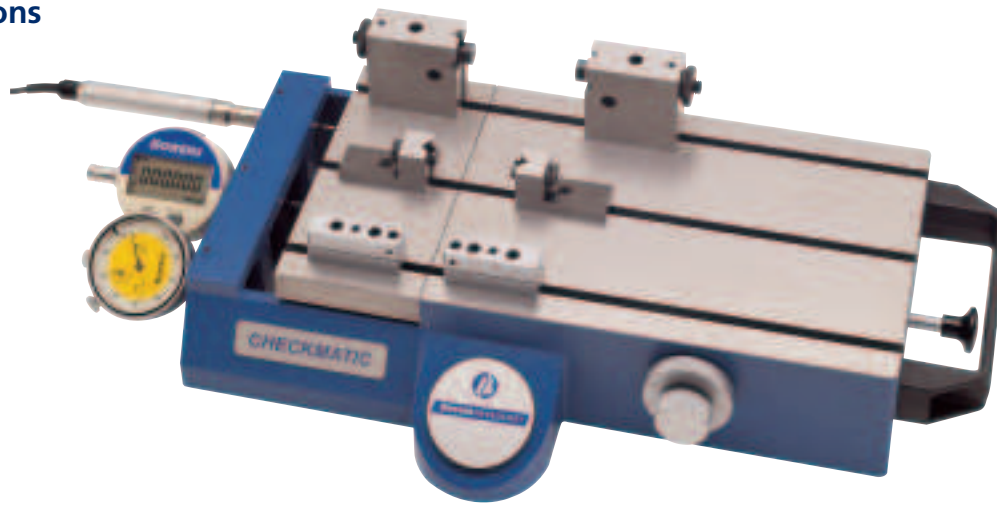
RS232

Features

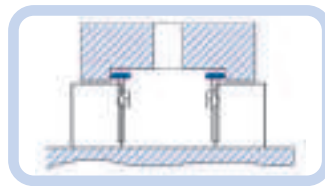
- Optional Integral Electronics
- 0.01 / 0.001mm (0.0005" / 0.00005") Switchable Resolution
- Inch – Metric conversion
- Preset
- Preset recall
- Zero settings
- Memory hold
- Ref 1 and Ref 2 Memories
- Min / Max
- Tolerance input
- RS - 232 output
- 1 year battery life
- Three additional measurement positions
- Nominal 15mm table travel
- Reversible measuring force
- Variable measuring force 7 - 9 Newtons
- Robust construction
- Central float position
- Caged ball technology

Universal Bench Fixture - Checkmatic

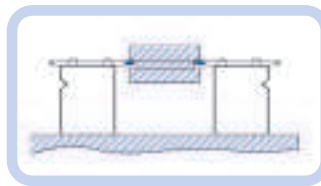
Applications



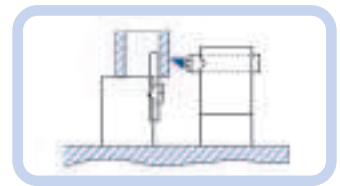
Bearing face distance



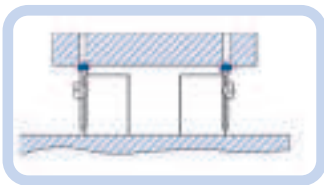
Internal diameters



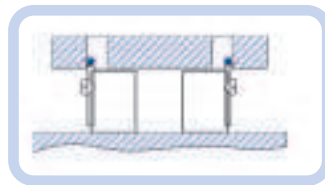
External diameters



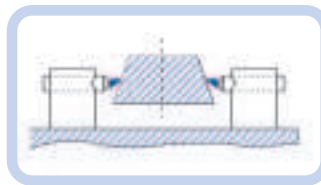
Concentricity/wall thickness



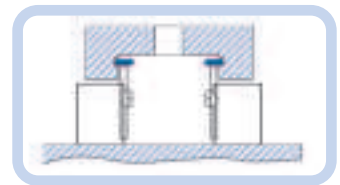
External splines



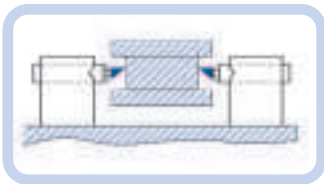
Hole position



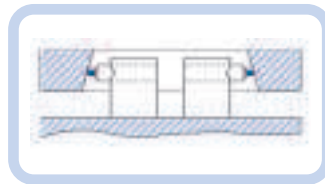
External tapers



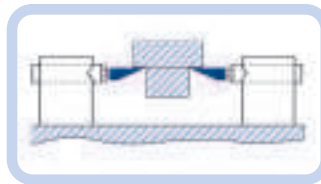
Internal recess diameter



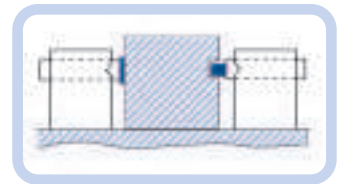
Recess diameters



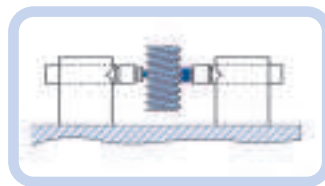
Internal tapers



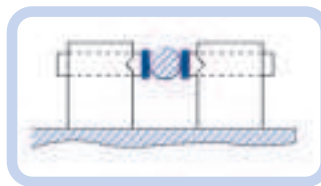
Rolling gear test



Slot depth



Thread measurement



External diameters
(round parts)

Universal Bench Fixture - Checkmatic

Applications



Thread Rolls



Internal / External grooves

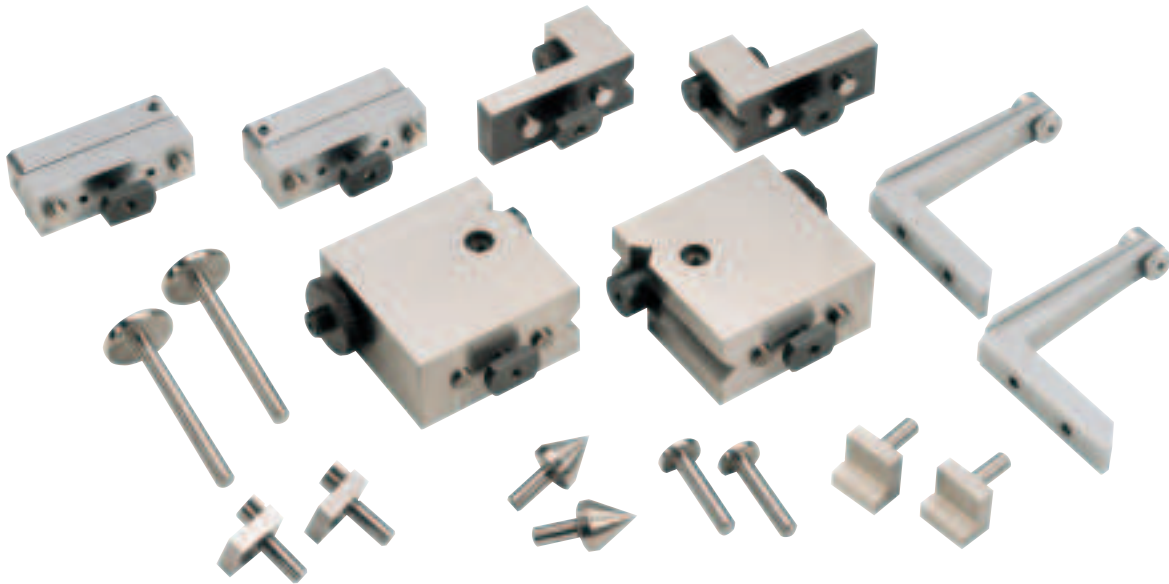


Internal / External diameters



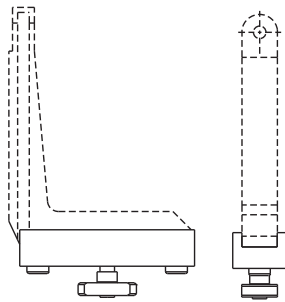
Centre axis distance (Max - Min)

Universal Bench Fixture Tooling



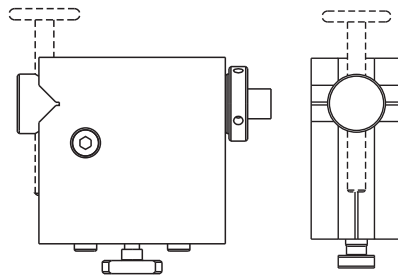
Tooling and accessories not included with Checkmatic basic gauge - See pages 32-35 for details of Accessories.

CKUA005



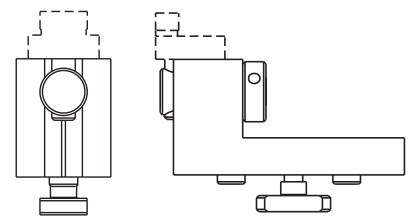
Universal Gauge
Tooling Adapter Arm

CKTB003



Large Tooling Block

CKTB004



Small Tooling Block

CHECKMATIC

Code No	Description	Price (£)
CHECK001	Checkmatic with digital indicator	£942.00
CHECK002	Checkmatic without indicator	£753.00
CKTB003	Large tooling blocks (pair)	£313.00
CKTB004	Small tooling blocks (pair)	£234.00
CKUA005*	Universal gauge tooling adapters (pair)	£47.00

CHECKMATIC

*Note: The CKUA005 Universal Gauge tooling adapters will be necessary to use the following accessories:

Code No	Description	Price (£)
TGUA006	Measuring arms 50mm (pair)	£173.00
TGUA007	Measuring arms 75mm (pair)	£184.00
TGUA008	Measuring arms 100mm (pair)	£212.00

Plastic Dial Caliper

Features

- Manufactured from glass reinforced nylon material
- Highly durable design
- $\pm 0.1\text{mm} / \pm 0.004''$ accuracy
- Plastic depth rod



CDP 150M

METRIC / IMPERIAL: DIAL CALIPER

Capacity	Resolution	Lock Type	Depth rod	Code No	Jaw Length	Price (£)
0 - 150mm	0.1mm	n/a	✓	CDP-150M	40mm	£22.00 V
0 - 6"	0.01"			CDP-006E	40mm	£25.00 V

Plastic Digital Caliper

Features

- Manufactured from glass reinforced nylon material
- Highly durable design
- Accuracy 0.05mm/0.002"
- Plastic depth rod
- Functions: mm/inch, zero setting, auto off



ECP 015D

METRIC / IMPERIAL: DIGITAL CALIPER

Capacity	Resolution	Lock Type	Depth rod	Code No	Jaw Length	Price (£)
0 - 150mm	0.01mm	n/a	✓	ECP-015D	40mm	£41.00 T
0 - 6"	0.0005"					

CV Rockwell Analogue Hardness Tester 600A / 600MA / 600MA/S

Manual and motorised bench hardness testers for regular and Superficial Rockwell scales.

Features

- Rockwell bench tester range offering accuracy, reliability and durability at an extremely affordable price
- Rugged construction; will withstand toughest shop-floor environments
- All regular Rockwell scales (Superficial - 600MA/S)
- Standard delivery includes range of test anvils, indenters and test blocks
- Accuracy conforms to EN-ISO 6508 and ASTM-E18
- Large capacity to accommodate large test specimens
- Calibration and UKAS Certification service available



TECHNICAL SPECIFICATIONS

	600A/600MA	600MA/S
Rockwell scales	A, B, C, F	HRT, HRN
Hardness resolution	0.5 of a Rockwell unit	0.5 of a Rockwell unit
Test loads	60, 100, 150kgf (10kgf preload)	15, 30, 45kgf (3kgf preload)
Display	Dial indicator	Dial indicator
Test cycle	Manual 600A, Motorised 600MA	Motorised (preload applied manually)
Dwell time	0 - 30 sec (5 sec. step) (600A manually controlled)	2-99 sec (5 sec. step)
Data output	Non	Non
Accuracy	Conforms to EN-ISO 6508	Conforms to EN-ISO 6508 and ASTM E-18
Specimen accommodation	Vertical space 110mm (6.1") Horizontal space from centerline 165mm (6.5")	Vertical space 170 mm (6.7") Horizontal space from centerline 165 mm (6.5")
Specimen access	External surfaces Cylindrical surfaces down to 3mm diameter	External surfaces Cylindrical surfaces down to 3mm diameter
Power supply	220V 50Hz (CV-600A - non)	110-220V, 50-60Hz
Machine dimensions	Approx. 700mm x 150mm x 485mm (H x W x D)	Approx. 760mm x 200mm x 520mm (H x W x D)
Machine weight	Approx. 85kg	Approx. 85kg

ROCKWELL ANALOGUE HARDNESS TESTERS

Code No	Description	Price (£)
W-600A	Rockwell Tester, Manual, Analogue display	£1,795.00
W-600MA	Rockwell Tester, Motorised, Analogue display	£2,395.00
W-600MAS	Superficial Rockwell Tester, Motorised, Analogue Display	£2,595.00

Standard Delivery

- Main unit
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare lamps 6V - 12W (2 pcs) (600MA and MA/S)
- Hardness test block ±60HRC (±90HR15N-MA/S)
- Hardness test block ±25HRC (±75HR30N-MA/S)
- Hardness test block ±85HRB (±75HR30T-MA/S)
- Flat anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 40mm
- Power cable (600MA and MA/S)
- Fuse 0.5A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual

Optional Accessories

- UKAS Certified indenters and test blocks
- Test Anvils

CV Rockwell Basic Digital Hardness Tester 600BDL / 600MBDL / 600MBDL/S

Manual and motorised bench hardness testers for regular and Superficial Rockwell scales.

Features

- Basic Rockwell bench tester range offering accuracy, reliability and durability at an extremely affordable price
- Rugged construction; will withstand the toughest shopfloor environments
- All regular Rockwell scales (Superficial - 600MBDL/S)
- Standard delivery includes range of test anvils, indenters and test blocks
- Accuracy conforms to EN-ISO 6508 and ASTM-E18
- Large capacity to accommodate large test specimens
- Calibration and UKAS Certification service available
- OLED full colour, multi function display
- Automatic conversion to all common Rockwell scales



TECHNICAL SPECIFICATIONS

	600BDL/600MBDL	600MBDL/S
Rockwell scales	A, B, C, D, E, F, G, K, L, M, P, R, V	HRN, T, W, X, Y
Hardness resolution	0.1 of a Rockwell unit	0.1 of a Rockwell unit
Test loads	60, 100, 150kgf (10kgf preload)	15, 30, 45kgf (3kgf preload)
Display		Digital Fascia
Test cycle	Manual 600BDL, Motorised 600MBDL	Motorised
Dwell time	0 - 30 sec (5 sec. step) (Manually controlled)	Motorised load system
Data output	Non	Non
Specimen accommodation	Vertical space 170mm (6.7") Horizontal space from centerline 165mm (6.5")	Vertical space 170mm (6.7") Horizontal space (from centre-line) 165mm (6.5")
Specimen access	External surfaces Cylindrical surfaces down to 3mm diameter	External surfaces Cylindrical surfaces down to 3mm diameter
Power supply	220V 50Hz	110V/220V 60/50Hz
Machine dimensions	700mm x 150mm x 485mm (H x W x D)	760mm x 200mm x 520mm (H x W x D)
Machine weight	Approx. 85kg	85kg
Indications on display	Progress bar for preload, preload applied, main load applied, dwell time, invalid reading, invalid measurement, invalid procedure, Rockwell value, scale applied	Progress bar for pre-load, pre-load applied, main load applied, dwell time, invalid reading, invalid measurement, invalid procedure, Rockwell value, scale applied

ROCKWELL DIGITAL HARDNESS TESTERS

Code No	Description	Price (£)
W-600BDL	Rockwell Tester, Manual, LED display	£2,495.00 I
W-600MBDL	Rockwell Tester, Motorised, LED display	£2,995.00 I
W-600MBDL/S	Superficial Rockwell Tester, Motorised, LED Display	£3,750.00 I

Standard Delivery

- Main unit
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Hardness test block ±60HRC (±90HR15N-BD/S)
- Hardness test block ±25HRC (±75HR30N-BD/S)
- Hardness test block ±85HRB (±75HR30T-BD/S)
- Flat anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 40mm
- Power cable
- Fuse 0.5A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual
- Spare lamps 6V-12W (2pcs) (600MBDL and MBDL/S)

Optional Accessories

- UKAS Certified indenters and test blocks
- Test Anvils

CV Rockwell Digital Hardness Tester 600D

Bright LCD display with hardness conversion, tolerance judgement, built-in printer and data-output.

RS232

Features

- Digital LCD reading of 15 regular Rockwell scales!
- Conversion to all other hardness scales such as Vickers and Brinell
- Menu operated LCD screen with many functions such as GO/NO GO judgement, Conversions, Load cycle indication, Date, Time
- Integrated printer for test result and statistics
- Curvature correction feature
- RS232 data output facility
- Accuracy, reliability and durability at an extremely affordable price
- Rugged construction, will stand up to the harshest environments
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Easy load force selection by robust dial knob
- Large working space accommodates large specimens
- Standard delivery includes all accessories ready for testing
- Calibration and UKAS Certification service available



Range of test anvils

TECHNICAL SPECIFICATIONS

Rockwell scales	A, B, C, D, E, F, G, H, K, L, M, P, R, S & V
Display conversion to	HV, HB, HR scales
Hardness resolution	0.1 of a Rockwell unit
Test loads	60, 100, 150kgf (10kgf preload)
LCD Display	Hardness value, Rockwell scale, Test force indicator, Dwell time, limits with judgement GO/NG, number of tests, X-bar average, standard deviation, range R
Data entry	Membrane keypad
Test force application	Automatic main load application
Dwell time	2-99sec
Data output	Built-in printer and RS232C
Accuracy	Conforms to EN-ISO 6508 and ASTM E-18
Specimen accommodation	Vertical space 170mm (6.7") Horizontal space (from centre-line) 165mm (6.5")
Specimen access	External surfaces, Cylindrical surfaces down to 3mm diameter
Power supply	110-230V 60/50Hz
Machine dimensions	227mm x 516mm x 715mm
Net weight	85kg

Standard Delivery

- CV-600D main unit
- Built-in printer
- Data-output RS232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Flat anvil \varnothing 63mm
- Hardness test blocks \pm 60HRC, \pm 40HRC, \pm 85HRB
- Power cable
- Fuse 2A (2 pcs)
- Adjustable feet (4pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & users manual

Optional Accessories

- UKAS Certified indenters, test blocks & balls

CV ROCKWELL DIGITAL HARDNESS TESTER

Code No	Description	Price (£)
W-600D	Digital Rockwell Tester	£4,995.00

Eseway® Premium Rockwell Hardness Tester EW650

RS232

LCD touch screen, superior functionality, ultra high precision, 3 models available

Features

- Measures all standard Rockwell hardness values
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine cast frame, allowing larger dimension work pieces
- ASTM, ISO, JIS compliant
- ESELOAD™ unique motorised load application system, auto selection of main loads depending on HR scale (656 & 657 only)
- Superior depth measuring system through Heidenhain (Germany) transducer
- ESETOUCH™ advanced LCD touch screen & operator panel with user friendly menu operation in multiple languages
- High speed preload, loading and unloading procedure for ultra high efficiency
- ESELIFT™ (657 only) motorised elevating screw simplifies and speeds up test operation
- Automatic measurement procedure, load / dwell / unload (655 & 656 models)
- ESEMATIC™ fully automatic positioning and measuring procedure (positioning, preload, load, dwell, unload (657 only))
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 99 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including electronic linearity calibration, tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Connects with PC or SPC network via built-in bi-directional USB2 connector



Standard Delivery

- Main unit
- Built-in thermal printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat testing anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 50mm
- Hardness test blocks: ±60 HRC, ±25 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

TECHNICAL SPECIFICATIONS

Rockwell scales	A,B,C,D,E,F,G,K,L,M,P,R,V
Conversion to	HV, HB, other HR scales
Hardness resolution	0.1 of a Rockwell unit
Pre-load	10kgf
Main loads	60, 100, 150kg
Pre-load application	Manual (automatic for 657 ESEMATIC™)
Test load application	Fully automatic
Data output	Built in high speed printer & USB2
LCD Display	Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics
Specimen accommodation	Vertical space 275mm Horizontal space (from centre of elevator) 190mm
Power supply	110/240V, 50 – 60Hz
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)
Net weight	Approx. 140kg

ESEWAY® PREMIUM ROCKWELL TYPE HARDNESS TESTER

Code No	Description	Price (£)
W-EW-655	ESETOUCH Manual load, Manual elevator lead screw	£5,545.00
W-EW-656	ESELOAD Automatic load selection, Manual elevator lead screw	£5,835.00
W-EW-657	ESEMATIC Automatic load selection, motorised elevator lead screw / Full automatic	£6,410.00

Optional Accessories

- Clamping and indenter protection nose
- UKAS, DKD, ASTM/NIST Certified test blocks
- UKAS, DKD, ASTM/NIST Indenters & balls
- Pedestal spot anvil ø 10mm
- Special support systems for large work pieces

Eseway® Premium Twin Scale Rockwell Hardness Tester EW670

LCD touch screen, superior functionality, ultra high precision, 3 models available

Features

- Measures all Standard & Superficial Rockwell hardness values
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine cast frame allowing large dimension work pieces
- ASTM, ISO, JIS compliant
- ESELOAD™ unique motorised load application system, auto selection of main loads depending on HR scale (676 & 677 only)
- Superior depth measuring system through Heidenhain (Germany) transducer
- ESETOUCH™ advanced LCD touch screen & operator panel with user friendly menu operation in multiple languages
- High speed preload, loading and unloading procedure for ultra high efficiency
- ESELIFT™ (677 only) motorised elevating screw simplifies and speeds up test operation
- Automatic measurement procedure, load / dwell / unload (677 only)
- ESEMATIC™ fully automatic positioning and measuring procedure (positioning, preload, load, dwell, unload (676 and 677 models))
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 99 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including electronic linearity calibration, tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Connects with PC or SPC network via built-in bi-directional USB2 connector

TECHNICAL SPECIFICATIONS

Rockwell scales	Standard	A,B,C,D,E,F,G,K,L,M,P,R,V
	Superficial	15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Conversion to	HV, HB, other HR scales	
Hardness resolution	0.1 of a Rockwell unit	
Pre-load	3kgf / 10kgf	
Main loads	15, 30, 45, 60, 100, 150kg	
Pre-load application	Manual (automatic for 677 ESEMATIC™)	
Test load application	Fully automatic	
Data output	Built-in high speed printer & USB2	
LCD Display	Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics	
Specimen accommodation	Vertical space 275mm Horizontal space (from centre of elevator shaft) 190mm	
Power supply	110/240V, 50 – 60Hz	
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)	
Net weight	Approx. 140 kg	

ESEWAY® PREMIUM ROCKWELL TYPE HARDNESS TESTER

Code No	Description	Price (£)
W-EW-675	ESETOUCH Manual load, Manual elevator lead screw	£5,575.00
W-EW-676	ESELOAD Automatic load selection, Manual elevator lead screw	£5,865.00
W-EW-677	ESEMATIC Automatic load selection, Motorised elevator lead screw, full automatic	£6,845.00

RS232



Standard Delivery

- Main unit
- Built-in printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat testing anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 50mm
- Hardness test blocks: ±60HRC, ±25HRC, ±85HRB, ±50HR30N, ±80HR30N, ±70HR30T
- Power cable
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

Optional Accessories

- Clamping and indenter protection nose
- UKAS, DKD, ASTM/NIST Certified test blocks
- UKAS, DKD, ASTM/NIST Indenters & balls
- Pedestal spot anvil
- Special support systems for large work pieces

Eseway® Premium Closed Loop Rockwell Hardness Tester EW6000

High accuracy and repeatability through closed loop and load cell combined system, 4 models available

Features

- Measures a choice of Standard, Superficial or combined Rockwell hardness values
- Superior GR & R results!
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame allowing large dimension work pieces
- ASTM, ISO, JIS and other global standards compliant
- Unique closed loop and load cell combined system, guaranteeing that pre- and main loads are applied with absolute accuracy, no variation between testers and individual operators
- Superior depth measuring system through high precision Heidenhain (Germany) glass scale
- No elevating screw; simplifies test operation and enhances accuracy
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 99 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Connects with PC or SPC network via built-in bi-directional RS232C connector

The EW-6000 series model offers as standard a fully automatic system with the advantage of a fixed measuring table.

Also available as a MASTER Rockwell configuration for calibration of reference hardness test blocks.

TECHNICAL SPECIFICATIONS

Rockwell scales	Standard	A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
	Superficial	15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y, HRBM, HRRM, HR30TM
Conversion to	HV, HB, other HR scales	
Hardness resolution	0.1 of a Rockwell unit	
Pre-load	3kgf / 10kgf	
Main loads	15, 30, 45, 60, 100, 150kg through controlled closed loop system	
Pre-load application	Fully automatic	
Test load application	Fully automatic	
Data output	Built-in high speed printer & RS 232C	
LCD Display	Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics, and many more	
Specimen accommodation	Vertical space 250mm Horizontal space (from centre of elevator shaft) 220mm	
Power supply	110/240V, 50 – 60Hz	
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)	
Net weight	Approx. 120kg	

ESEWAY® PREMIUM ROCKWELL TYPE HARDNESS TESTER

Code No	Description	Price (£)
W-EW6000R	Load cell / Closed loop Standard Rockwell	Visit bowers.co.uk for latest prices
W-EW6000SR	Load cell / Closed loop Superficial Rockwell	Visit bowers.co.uk for latest prices
W-EW6000TR	Load cell / Closed loop Standard & Superficial Rockwell	Visit bowers.co.uk for latest prices
W-EW6000 ESEMASTER	Load cell / Closed loop Standard & Superficial Rockwell	Visit bowers.co.uk for latest prices



Standard Delivery

- Main unit
- Built-in printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat testing anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 40mm
- Hardness test blocks: ±60HRC, ±25HRC, ±85HRB, ±50HR30N, ±80HR30N, ±70HR30T UKAS certified
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

Optional Accessories

- Clamping and indenter protection nose
- UKAS, DKD, ASTM/NIST Certified test blocks
- UKAS, DKD, ASTM/NIST Indenters & balls
- Pedestal spot anvil ø 10mm
- Special support systems for large work pieces

'King' Brinell Portable Hardness Tester

The 'King' Brinell Portable Hardness Tester is a lightweight, full load (3000kg) instrument capable of accurately testing a large variety of metal specimens. The testers portability allows it to be used in any plane, conventionally for full load (3000Kg), in-situ Brinell testing of large components.

Features

- Wide measuring range to 3000kgf
- Simple handling and low test expenditure
- High accuracy
- Conforms to ASTM BS and NIST Brinell Standards

Standard Delivery

- Main unit
- 10mm Brinell ball
- Flat, dome and V-anvils

Optional Accessories

- Chain adapter
- Test blocks
- Reverse direction adapters
- Low pressure test head
- Video measurement microscope system

TECHNICAL SPECIFICATION

Pressure exerted	Up to 3000kgf
Pressure gauge indication	True load and load reached indication
Max specimen height	14", (20" optional model)
Max specimen depth	4", (6" optional model)
Brinell ball	Standard 10mm, optional 2.5mm, 5mm etc
Accuracy	0.5 of 1% of load ASTM/BS certifiable

BRINELL PORTABLE HARDNESS TESTER

Code No	Description	Price (£)
W-WHB-120	King Brinell Tester	£4,117.00
W-WHB-MIC	20X Microscope for King Brinell	£595.00



Kingscan III Automatic Brinell Video Microscope

Features

- Major improvement in accuracy and repeatability of measurement
- Reduced cost of testing 2 sec test time typical
- 6ft and 15ft camera cables
- High specification Notebook PC included
- LED array lighting to maximise test accuracy under any condition
- Remote measure facility

BRINELL VIDEO MICROSCOPE

Code No	Description	Price (£)
W-WHB-KIIIK	KingScanIII Video Microscope System	Visit bowers.co.uk for latest prices



Load Cell Closed Loop Brinell Hardness Tester EW-3000 Series

The advanced Load Cell, Force Feedback Closed Loop, load application system of the EW-3000 allows a wide variety of test loads ranging from 30kgf to 3000kgf in one hardness test frame.

Features

- Large multi function LCD display, Brinell microscope and built/in hardness calculator
- Shows Brinell hardness value directly on the display; converts to Rockwell, Vickers, Leeb's and tensile strength
- Allows testing of both Brinell HB and Vickers HV scales (EW-3002 only)
- Connect an (optional) electronic eyepiece and enter Brinell or Vickers diagonals directly into the CPU system at the touch of a button
- Innovaview Computer & CCD (USB camera) technology allows measurement of HB indents automatically and stores them in the system's database program, or export CSV files to Excel
- Motorised automatic elevator spindle available for easy work-piece positioning and running fully automatic test procedures; positioning, main load, dwell, unload. Automatic start sequence option (EW-3002 only)
- Fast, silent thermal data printer available (optional)
- Frame types:
 - Standard: vertical capacity - 300mm, throat depth - 150mm
 - XL: vertical capacity - 500mm, throat depth - 250mm



TECHNICAL SPECIFICATION

W-3001	30, 31.25, 62.5, 100, 125, 187.5, 250, 500, 1000, 1500, 3000 Kgf (Brinell)
W-3002	30, 31.25, 62.5, 100, 125, 187.5, 250, 500, 1000, 1500, 3000 Kgf (Brinell) 30, 40, 50, 60, 80, 100, 120 Kgf (Vickers)
Test force selection	Electronic, closed loop, load cell, force feedback system, indication in kgf or N. Test force selectable over menu operation
Test procedure	Automatic, loading/dwell/unloading
Hardness value	5 digits
Loading speed	variable depending on load application
Test force accuracy	<1% full range
User display	Diameter of indent, Length of diagonals, hardness value, converted value, test force, online statistics
Display resolution	0.1 HB, HV
Hardness conversion	Rockwell, Vickers, Brinell, Leeb & Tensile 2 scale simultaneously
Standardization	EN, ISO 6507, EN ISO 6506, EN ISO 4545, ASTM E-384, ASTM E-10-08, ASTM E-384
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Control panel	Start test, stop test, light intensity, dwell time, print, clear
Memory	Large memory for testing results
Data output	RS-232, Bi-Directional, USB
Dwell time setting	Default 10 seconds, user defined 1 to 99 seconds
Printer	Optional silent high speed printer
Eyepiece microscope	Analogue or optional bright dual line filar eyepiece with 15x magnification, 0.1um reading
Vertical capacity	Standard 300mm, optional 500mm
Horizontal capacity	135mm (from centre line) optional 250mm
Humidity	10% to 90% non condensing
Weight	130Kg, XL version 160Kg
Power	220V/110V, 50/60Hz, single phase

EW-3000 SERIES TESTER

Code No	Description	Price (£)
W-3001	Load Cell Closed Loop Brinell Hardness Tester	Visit bowers.co.uk for latest prices
W-3002	Load Cell Closed Loop Brinell / Vickers HV Hardness Tester	Visit bowers.co.uk for latest prices

Standard Delivery

- Main unit
- Flat anvil 200mm
- Analogue microscope 20x (Brinell)
- Analogue microscope 60x (W-3002 only)
- Brinell test blocks & indenters
- RS232 data output
- 4 adjustable feet
- Fuse
- Installation & user manual
- Quality certificate
- Colour: laboratory white

Optional Accessories

- Motorised spindle
- Analogue microscope with LED light 30x, 40x, 100x
- Electronic microscope with objectives
- HB100 Video measuring and database system
- Extended height/width frame
- Motorised X-Y stage
- Certified indenters & test blocks
- Indenters & test blocks for Brinell and Vickers
- Solid tester table & storage cabinet
- Specify alternative colour of unit

CV-400 Series Micro-Hardness Tester

Micro-Vickers Hardness Testers are particularly suited for high precision testing of small or thin specimen. These state-of-the-art digital and analogue Micro-hardness testers offer a choice to suit most applications, test load requirements and budget.

Features

- Choice of four models available offering high quality and functionality at unbeatable value
- High quality optical system
- Digital measurement microscope (W-400DAT, DTS, DM)
- Analogue measurement microscope (W-400AAT)
- Dual optical paths for optional video measurement system
- Built-in high speed thermal printer, RS232 Output
- XY stage 100x100mm
- Dual indenter option (Vickers and Knoop)
- Calibration and UKAS Certification service available
- CCD Video measurement option available on all models (manual to full automation)



W-400DAT



TECHNICAL SPECIFICATIONS

Vickers scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 (HV2)
Display	Dwell time (sec), hardness value menu operated user interface, drill down structure through key path operation, shows: hardness readings, general settings, diagonals, dwell time, RS232 connections, printer settings, illumination settings
Test loads	10 - 25 - 50 - 100 - 200 - 300 - 500 - 1000gf (2000gf optional)
Accuracy	Conforms to EN-ISO 6507 and ASTM E384
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Microscope	
Objectives	10x, 40x
Eyepiece magnification	15x / mechanical thumbwheel, digital/analogue encoder built-in
Total magnification	150x (observation), 600x (measurement)
Measuring range	200µm
Resolution	0.03µm
XY stage	
Dimensions	100mm x 100mm
Travel range	25mm x 25mm
Resolution	0.01mm (micrometers)
Specimen	
Maximum height	85mm (2.55")
Maximum depth	90mm (3.35") (from the center)
Power supply	110-220V, 50Hz
Dimensions	470mm x 210mm x 420mm (H x W x D)
Weight	36kg

Standard Delivery

- Main unit
- Motorised turret
- Diamond indenter Vickers
- Objectives 10x, 40x
- Eyepiece 15x
- XY-stage with micrometers
- Adjustable feet (3pcs)
- Clamping devices (3pcs)
- Extension tube for CCD-camera
- Eyepiece incl. protection cover
- Spirit level
- Micro-Vickers test plates (2pcs)
- Spare light bulb 12V-30W
- Spare fuses (2pcs)
- Installation and user manual
- CV Instruments certificate

Optional Accessories

- 2kg test load / scales
- Knoop indenter
- Precision vice
- Video filar system
- Certified indenters and test blocks
- Motic USB digital camera

Optional System

CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

400 SERIES MICRO-HARDNESS TESTER

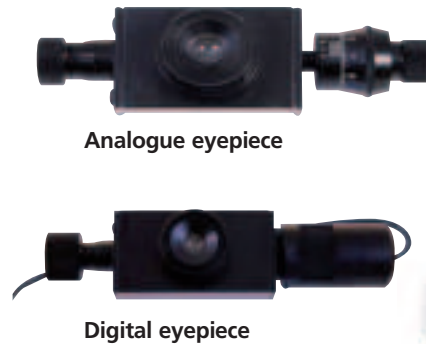
Code No	Description	Price (£)
W-400AAT	Analogue, Auto Turret	Visit bowers.co.uk for latest prices
W-400DAT	Digital, Auto Turret	Visit bowers.co.uk for latest prices
W-400DTS	Digital, Touch Screen, Auto Turret	Visit bowers.co.uk for latest prices
W-400DM	Digital, CCD Monitor, Auto Turret	Visit bowers.co.uk for latest prices

Premium Micro-Vickers Hardness Tester EW-410 / 420 Series

Motorised turret with analogue or digital measurement microscope and easy to use integrated hardness calculator.

Features

- Two models available with 10gf - 1 Kgf or 10gf - 2Kgf depending on model
- Fully automatic 4 position turret for Micro Vickers /Knoop measurements
 - Choice of turret configuration
 - 3 objectives and 1 indenter (up to 3 objectives for measuring)
 - 2 objectives and 2 indenter (Vickers & Knoop)
 - Dual indenter (Vickers/Knoop) turret optional
- High resolution analogue eyepiece
- Conversion to Rockwell scales
- Built in high speed printer
- New user friendly display interface



TECHNICAL SPECIFICATIONS

Test force selection	Manual
Test procedure	Automatic, loading/dwell/unloading
Hardness value	5 digits
Turret	4 positions over 360°, fully automatic, memorized start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives
Test force accuracy	< +/-1% for force from 100gr to 2kg, < +/-1,5% for force below 100 gr
User display	Length of diagonals, hardness value, converted value, test force, online statistics
Display resolution	0.1 HV, HK
Hardness conversion	Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile (D models)
Standardisation	ENISO 6507, ASTM E-384, EN150 4545
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Control panel	Start test, stop test, light intensity, dwell time, print, clear. Menu operation for date, time, scale and load settings, language (D models)
Firmware	V2.01, German, English, French (standard), V2.02, English, Italian, Spanish
Memory	19 positions memory for testing results, with INNOVAVIEW® unlimited positions
Data output	RS-232 Bi-Directional
Dwell time setting	Default 10 seconds, user defined 1 to 99 seconds
Printer	Built in, silent high speed thermal printer
Eyepiece microscope	Bright Dual line filar eyepiece with 15x magnification, 0.1um reading
Light source	Halogen 12V, 30 Watt, green filter, dimmable
Optical path	2 way, eyepiece / camera
Vertical capacity	90mm (maximum specimen height)
Horizontal capacity	130mm (from centre line)
Stage dimensions	100x100mm, travel 20x20mm, reading 0,01mm
Operating temperature	5°C to 40°C (+/-20° for force 25gr and 50gr)
Humidity 1	0% to 90% non condensing
Dimensions	420 x 250 x 490mm
Weight	37.5kg
Power requirements	100VAC to 240VAC, 50/60Hz, single phase
Power consumption	390W

Standard Delivery

- Main unit
- Manual X-Y stage
- Objectives according to model (10x & 20x or 10x, 20x & 40x)
- Analogue eyepiece 15x
- Digital eyepiece 15x (DAT models)
- Vickers test block
- Built-in thermal printer
- RS-232 data output
- 4 adjustable feet
- Spare halogen bulb
- Fuse
- Installation & user's manual
- Eseyway quality certificate

Optional Accessories

- Choice of objective configuration
- CCD Video measuring systems
- Dual Indenter Vickers & Knoop
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Set of work piece fixtures - vice, chuck & clamp
- Metal support table with storage cabinet
- Indenter & test blocks
- Certified indenter & test blocks
- Motic USB digital camera

Optional System

- CV-CCD system for semi and automatic traverses, pattern testing through PC support and motorised XY stage

PREMIUM MICRO-VICKERS HARDNESS TESTER

Code No	Description	Price (£)
W-412AAT	1 KG Analogue, 2 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-413AAT	1 KG Analogue, 3 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-412DAT	1 KG Digital, 2 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-413DAT	1 KG Digital, 3 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-422AAT	2 KG Analogue, 2 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-423AAT	2 KG Analogue, 3 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-422DAT	2 KG Digital, 2 objectives for measuring/observation	Visit bowers.co.uk for latest prices
W-423DAT	2 KG Digital, 3 objectives for measuring/observation	Visit bowers.co.uk for latest prices

Premium Closed Loop Micro/Macro Vickers, Knoop & Brinell Hardness Tester EW-4000™ Series

High-end Vickers/Knoop/Brinell hardness testers with low and high forces ranging from HV0.02 to HV50. The EW-4000 series features state of the art Closed Loop, Load Cell, and Force feedback technology for a reliable fast measurement procedure.

Features

STAGES:

- Manual X-Y stage
- Motorised X-Y stage
- Motorised X-Y-Z stage
- CV-CCD system with Video filar level 1, 2, or 3
- CV-CCD system with auto focus and Video filar level 4

TURRET SYSTEM:

- Fully automatic 4 position turret for Micro Vickers / Macro Vickers or Knoop measurements
- Featuring 3 objectives at choice, all 3 objectives can be used for measuring and observation

INDENTERS:

- Vickers 136°
- Knoop 172.5° x 130°
- Brinell 1 & 2.5mm

EYEPIECE:

- Electronic eyepiece microscope with precision encoder providing 15x magnification

OBJECTIVES:

- 5x for 75x magnification
- 10x for 150x magnification
- 20x for 300x magnification
- 40x for 600x magnification
- 60x for 900x magnification



Standard Delivery

- Main unit
- Manual X-Y stage
- Flat anvil 60mm
- Objectives 5x, 10x, 20x
- Digital eyepiece 15x
- Vickers test block
- Built in thermal printer
- RS232 data output
- 4 adjustable feet
- Spare halogen lamp
- Installation & user manual
- Eseyaw quality certificate
- Set of work piece fixtures, vice, chuck, clamp

Optional Accessories

- Objectives 40x, 60x
- CCD video measuring system
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Indenters & test blocks
- Certified indenters & test blocks
- Solid tester table & storage cabinet
- Motic USB digital camera

EW-4000™ SERIES TESTER

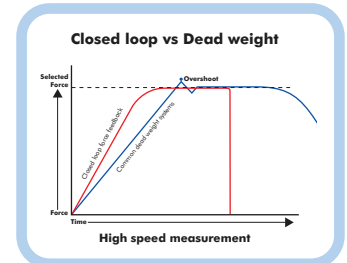
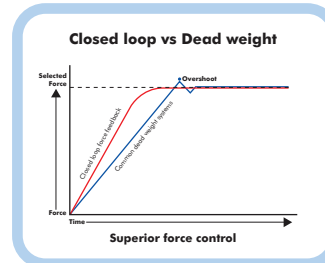
Code No	Scales	Load Configuration	Price (£)
W-4300	Vickers/Knoop	1Kgf - 30Kgf	Visit bowers.co.uk for latest prices
W-4301	Brinell	1Kgf - 31.25Kgf	Visit bowers.co.uk for latest prices
W-4302	Macro Vickers/Knoop	300gf - 30Kgf	Visit bowers.co.uk for latest prices
W-4303	Micro/Macro Vickers/Knoop	20gf - 30Kgf	Visit bowers.co.uk for latest prices
W-4304	Micro/Macro Vickers/Knoop/Brinell	20gf - 31.25Kgf	Visit bowers.co.uk for latest prices
W-4500	Vickers/Knoop	1Kgf - 50Kgf	Visit bowers.co.uk for latest prices
W-4501	Brinell	1Kgf - 62.5Kgf	Visit bowers.co.uk for latest prices
W-4502	Macro Vickers/Knoop	300gf - 50Kgf	Visit bowers.co.uk for latest prices
W-4503	Micro/Macro Vickers/Knoop	100gf - 50Kgf	Visit bowers.co.uk for latest prices
W-4504	Micro/Macro Vickers/Knoop/Brinell	100gf - 62.5Kgf	Visit bowers.co.uk for latest prices

Premium Closed Loop Micro/Macro Vickers, Knoop & Brinell Hardness Tester EW-4000™ Series

High accuracy and repeatability through Closed Loop, Load Cell and Force feedback system, 10 models available

TEST PROCEDURE CONTROL

Traditional hardness testing systems use a “dead weight” mechanical design or inaccurate spring force mechanism to apply the test force. Such systems lack test control as there is no feedback on the actual applied force. The Closed Loop technology with a force feedback system, as applied in the EW-4000 series, constantly measures and controls the applied force on the tester’s indenter and tested surface. Consequently, this superior control system offers an almost unlimited selection of test loads and test rates for virtually any test condition imaginable.



ACCURACY, RELIABILITY & EFFICIENCY

Elimination of overshoot due to sophisticated algorithms detecting contact with the indenter and the tested object’s surface.

The application and removal of the test force is fully automatic, as well as the positioning of the indenter and the pre-determined objective. The result is an absolute vibration-free operation while reducing the operator’s workload to a minimum.

UPGRADE

Upgrades on the EW-4000 series are available on request. For instance, your budget and your requirements allow a Vickers tester; your choice could be an Eseyway Vickers / Knoop tester 4300. After your purchase you can upgrade your tester from, for instance, Vickers to Macro, Micro Vickers or even to Brinell at a fixed price. The upgrades are possible in the 4300 or 4500 range. Investing in an EW-4000 series tester guarantees access to almost any load application in the Vickers, Knoop and Brinell range up to 62.5kg.



Analogue eyepiece



Digital eyepiece

TECHNICAL SPECIFICATION

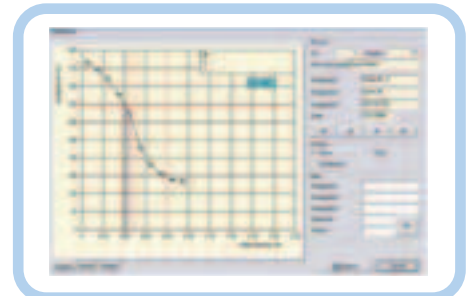
Test force selection	Electronic, Closed Loop, Load Cell, Force feedback system, indication in Kgf or N. Test force selectable over menu operation
Test procedure	Automatic, loading/dwell/unloading
Hardness value	5 digits
Loading speed	Variable, depending on load application
Turret	4 positions over 360°, fully automatic, memorised start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives
Test force accuracy	< +/-1% for force from 100gr to 30kg, < +/-1,5% for force below 100 gr
User display	Length of diagonals, hardness value, converted value, test force, online statistics
Display resolution	0.1 HV, HK and HB
Hardness conversion	Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile
Standardisation	EN, ISO 6507, EN ISO 6506, EN ISO 4545, ASTM E-384, ASTM E-10-08, ASTM E-384
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Control panel	Start test, stop test, light intensity, dwell time, print, clear, menu operation for date, time, scale and load settings, language
Firmware	V2.01, German, English, French (standard), V2.02, English, Italian, Spanish
Memory	Memory for 19 test results, with INNOVAVIEW software unlimited results
Data output	RS-232 Bi-Directional
Loading mechanism	Fully automatic, Closed Loop, Force feedback, loading, dwell, unloading
Dwell time setting	Default 10 seconds, user defined 1 to 99 seconds
Printer	Built in, silent high speed thermal printer
Eyepiece microscope	Bright dual line filar eyepiece with 15x magnification, 0.1um reading
Light source	Halogen 12V, 30 watt, green filter, dimmable
Optical path	2 way, eyepiece / camera
Vertical capacity	160mm (maximum specimen height)
Horizontal capacity	135mm (from centre line)
Stage dimensions	100x100mm, travel 20x20mm, and reading 0.01mm
Operating temperature	5°C to 40°C (+/-20° for force 25gr and 50gr)
Humidity	10% to 90% non condensing
Dimensions	220 x 540 x 650mm
Weight	51Kg
Power	220V/110V, 50/60Hz, single phase

INNOVAVIEW INV Hardness Imaging CCD System

The new INNOVAVIEW® INV manual and automatic hardness indent imaging systems are designed to increase productivity, accuracy and efficiency.

The entry level system, INV-1, offers the possibility of viewing the indentations on a large screen and storing the readings and images in a file system or directly in Microsoft Excel.

More upgraded systems such as the INV-2, 3 and 4 offer additional functionality such as automatic traverse and preset pattern testing by the motorised X-Y or X-Y-Z stage. All 4 systems print personalised reports with all statistic details or hardness case depth. The INNOVAVIEW® INV hardness imaging systems are a state of the art option for the EW-400 series of Micro-Vickers hardness testers and the EW-4000 series of Closed Loop hardness testers, working flawlessly as an integrated system. The new INNOVAVIEW® INV manual and automatic hardness indent imaging systems are designed to increase productivity, accuracy and efficiency. The entry level system, INV-1, offers the possibility of viewing the indentations on a large screen and storing the readings and images in a file system or directly in Microsoft Excel.



INNOVAVIEW INV Hardness Imaging CCD System

Features

- High resolution CCD camera
- Save, print and store images
- Manual & automatic image measuring mode
- Report generator
- Data export to Excel or other MS applications
- Filar image measurement
- Pattern saving and recall
- Return to position and re-measure option
- Variable distance point plotting

INV-1

- PC- based video indent measuring system
- Manual measurement of the indent on the LCD screen
- Store, file, handle images and data on the hard disk

INV-2

- PC- based video indent measuring system
- Manual measurement of the indent on the LCD screen
- Store, file, handle images and data on the hard disk
- Digital micrometers to measure stage displacement to control accurate indent coordinates
- Auto measuring optional

INV-3

- PC- based video indent measuring system
- Manual measurement of the indent on the LCD screen
- Store, file, handle images and data on the hard disk
- Digital micrometers to measure stage displacement to control accurate indent coordinates
- Motorised X-Y stage, automatic pattern and traverse system, work piece position control over PC operation
- CCD system shows real time measurement
- Automatic measuring optional
- Semi-Automatic system

INV-4

- PC- based video indent measuring system
- Manual measurement of the indent on the LCD screen
- Store, file, handle images and data on the hard disk
- Digital micrometers to measure stage displacement to control accurate indent coordinates
- Motorised X-Y stage, automatic pattern and traverse system, work piece position control over PC operation
- Turret, Z-axis and X-Y table controlled by computer
- Fully automatic system
- Allows a series of automatic test with storage of test results without operator interference

INNOVAVIEW INV HARDNESS IMAGING SYSTEM

Code No	Description	Price
W-INV-1	PC- based video indent measuring system	Visit bowers.co.uk for latest prices
W-INV-2	PC- based video indent measuring system plus digital micrometers	Visit bowers.co.uk for latest prices
W-INV-3	PC- based video indent measuring system plus digital micrometers. Semi-automatic system	Visit bowers.co.uk for latest prices
W-INV-4	PC- based video indent measuring system plus digital micrometers. Fully automatic system	Visit bowers.co.uk for latest prices

CV Universal Hardness Tester 700

An economically priced analogue universal tester for reliable Rockwell, Brinell and Vickers testing.

Features

- Dead-weight universal hardness tester with rugged design
- Rockwell, Brinell and Vickers testing procedures combined
- Moving table between indenter and measuring microscope
- Magnification by objective lenses 37.5x and 75x
- Conforms to DIN-EN-ISO 6506, 6507, 6508 and ASTM
- Simple test cycle by operation lever
- Wide test load range up to 187.5kgf
- Elevating spindle with precision guide bushing with high precision bearings which eliminate back-lash from the system



Standard Delivery

- Main unit
- 37.5x and 75x objective
- Test table
- Test platform \varnothing 60mm
- V-anvil \varnothing 40mm and \varnothing 60mm
- Flat anvil \varnothing 60mm
- Hardness test block \pm 450HV
- Hardness test block \pm 200HB
- Hardness test block \pm 60HRC
- Hardness test block \pm 30HRC
- Hardness test block \pm 85HRB
- Fuse 7A (2 pcs)
- Spare light bulb 6V/15W (2 pcs)
- External lamp for Brinell measurements
- Power cable
- CV Instruments certificate
- Installation and user manual

Optional Accessories

- Motic USB digital camera



TECHNICAL SPECIFICATION

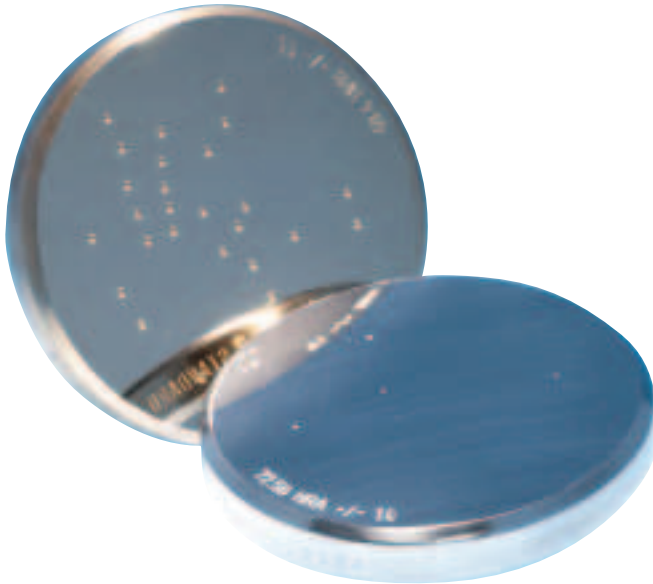
Hardness parameters	Rockwell, Brinell, Vickers	
Optics	Eyepiece magnification 15x	
Objectives	Interchangeable 37.5x and 75x magnification	
Standards	Conforms to DIN-EN-ISO 6506, 6507, 6508 and ASTM	
Test loads	6 load types	
Test load type	Dead weights, load step adjustable	
Test cycle	Operation lever system	
Test loads	Rockwell	60 - 100 - 150 kg
	Brinell	31.25 - 62.5 - 187.5 kg
	Vickers	30 - 100 kg
Indenter types optional	Rockwell	Diamond cone 120°, Balls 1/16"
	Brinell	Balls 2.5 - 5mm
	Vickers	Diamond cone 136°
Load duration	Conforms to standards	
Data output	Non	
Specimen accommodation	Maximum test height 180mm, maximum depth 200mm (from the centre)	
Specimen access	External surfaces, Cylindrical surfaces down to 3mm diameter	
Power supply	220V/50Hz or 110V/60Hz	
Machine dimensions	760mm x 260mm x 560mm (H x W x D)	
Machine net weight	90kg	

CV UNIVERSAL HARDNESS TESTER

Code No	Description	Price (£)
W-700	Universal Hardness Tester, analogue display	£2,550.00

Hardness Test Blocks

The Bowers CV range of **Hardness Test Blocks** are produced to provide an excellent uniformity of hardness, combined with a very large testing area. Each high quality Bowers CV test block is supplied with a UKAS certificate to all relevant accreditations ASTM, BS EN ISO, NIST. The blocks are high quality, attractively priced and supplied with a swift delivery time.



Features

- High quality engineering
- Excellent uniformity of hardness
- Supplied with UKAS calibration certificates to ASTM, BS EN ISO, NIST, DIN Standards
- Large testing area
- All other hardness test scales available on request
- Large range of replacement indenters, balls and accessories



Hardness Scale	Scales Available	Price (£)
Standard Rockwell	HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRH and HRK	£123.00 Q
Superficial Rockwell	HR15N, HR30N, HR45N, HR15T, HR30T and HR45T HRL, HRM, HRP, HRR, HRS, HRV, HRW, HRX, HRY	£123.00 Q
Vickers	HV 0.2, HV 0.3, HV 0.5, HV 1, HV 2, HV 3, HV 5, HV 10, HV 20, HV 30, HV 50 and HV 100	£209.00 Q
Micro-Vickers	HMV 0.01, HMV 0.025, HMV 0.050, HMV 0.1	£295.00 Q
Brinell	HB 2.5/187.5, HB 5/250, HB 5/750, HB 10/1000 and HB 10/3000	£209.00 Q

All test blocks supplied to within:

- +/- 2 Rockwell points
 - +/- 25 Vickers points
 - +/- 25 Brinell points
- of requested nominal test block value.

When ordering please state hardness scale, test load and nominal hardness required.

CV Portable Analogue Hardness Tester - CV Instrumatic

A fully mechanical instrument of the highest precision, robust, and maintenance free. The large clearly marked dials on these unique instruments cover a full range of hardness values in Vickers, Brinell, Rockwell a, b, c, and Kp/mm² covering to national and international standards.

Features

- Accurate and easy to use
- No batteries required
- UKAS certified test block supplied
- Optional bench stand with V base for round parts
- Precision Instrument



The Instrument

The system is entirely mechanical employing the use of special pre-loaded springs which provide a load of about 15Kg to the diamond. Maximum penetration of the diamond into the specimen is 0.125mm (0.005").

Operation and Use

The simplicity of the tester enables it to be used in almost any direction, without affecting accuracy. It can be used 'on site' with complete success. The grips are depressed to the fullest extent by using the palms of the hands and the hardness value can be read off the appropriate scale. Repeatability is excellent and the calibration can be checked by the user against a UKAS certified reference test block supplied with each instrument. Each tester is supplied complete with case and detailed operating instructions.

PORTABLE ANALOGUE HARDNESS TESTER

Code No	Scale	Range	Price (£)	
POR0001	No 1	Vickers Pyramid	100 - 1000	£1,090.00 C
		Brinell	100 - 500	
		Rockwell C	20 - 70	
POR0002	No 2	Rockwell A	40 - 85	£1,090.00 C
		Rockwell B	50 - 100	
		Rockwell C	20 - 70	
POR0003	No 3	Vickers Pyramid	100 - 1000	£1,090.00 C
		Brinell	100 - 400	
		Rockwell B	50 - 99	
POR0004	No 4	Rockwell C	20 - 70	£1,090.00 C
		Kg/mm ²	35 - 140	
		Brinell	100 - 400	
POR0005	No 5	Rockwell B	50 - 99	£1,090.00 C
		Rockwell C	20 - 70	
		Vickers Pyramid	40 - 300	
POR0006	No 6	Brinell	40 - 300	£1,090.00 C
		Vickers Pyramid	40 - 300	
POR0007	No 7	Brinell	100 - 600	£1,196.00 C
POR0008	No 8	Vickers Pyramid	20 - 106	£1,090.00 C
PBS0001	Precision Bench Stand			£620.00 C

- Model to suit most user requirements
Models 3 and 5 most popular
- Able to test even thin materials due to low penetration of indenter (0.25mm and above)
- Bench stand available for testing small components
- No. 3 - general purpose
- No. 5 - for testing low to medium hardness materials

CV Portable Digital Hardness Tester

The **Bowers CV Rangemaster Plus Hardness Tester** represents an ideal solution to the problems associated with portable hardness testing. Its clear digital display, ease of use and ability to operate in all major international scales make it the most comprehensive unit of its type currently available. The optional sturdy bench stand adds further to the flexible nature of this ergonomic gauge.



A simplified version of the popular Rangemaster Plus, the Rockmaster shares many of the attributes of the more comprehensive unit and operates in either the Rockwell C or B scales.

Features

- Dynamic test indicator
- Large digital readout
- Hardness values in all major international scales with simple conversion facilities from one to the other
- RS232 output for connection to PC or serial printer
- Memory storage capacity for in excess of 400 readings
- Statistical summary
- Integral icon facility provides operator with easy visual identification of mode in which unit is operating
- Operates in temperatures from -5°C to +35°C
- Upper and lower control limits
- Last reading recall
- Supplied with two UKAS certified test blocks, adjuster key and carrying case



TECHNICAL SPECIFICATIONS

Hardness Scale	Vickers Pyramid No., Brinell, Rockwell B, Rockwell, Tensile Strength, Shore Scleroscope		
Testing Range	Vickers Pyramid No.	35 – 1000	
	Brinell	100 – 500	
	Rockwell B	30 – 100	
	Rockwell C	20 – 70	
	Tensile Strength ₂₅₅	– 1999 N/mm ²	
	Shore Scleroscope	24 – 97	
Resolution	1	Vickers Pyramid No., Brinell, Tensile Strength, Shore Scleroscope	
	0.1	Rockwell B, Rockwell	
Power	9V battery or adaptor		
Output	RS-232 serial output		

CV RANGEMASTER PLUS HARDNESS TESTER

Code No	Description	Price (£)	
RANP001	Rangemaster	£1,698.00	C
PBS0001	Bench Stand	£620.00	C
RAN0004	RS232 PC Connection Cable	£50.00	C

CV ROCKMASTER HARDNESS TESTER

Code No	Model	Scale	Price (£)	
ROC0001	C	HRC 20-70	£1,268.00	C
ROC0002	B	HRB 30-100	£1,268.00	C

Standard Delivery

- Main unit
- UKAS certified test block (Rangemaster: 2 blocks, Rockmaster – 1 block)
- Case
- Adjusting keys
- CV Instruments certificate
- Manual

Optional Accessories

- Bench stand

CV Hardness Tester - TH-170 Series



Handheld dynamic metal hardness tester with integrated Impact device D.

Features

- Impact device D integrated: no cables! (TH-170)
- Integrated impact device C featuring low impact energy for surface hardened components and thin walled components (TH-172)
- Integrated impact device DL featuring testing in confined spaces
- Wide measuring range
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb's HLD (TH-170)/Leeb's HLC (TH-172)/Leeb's HLDL
- For all metallic materials (TH-170), for steel and cast steel (TH-172/174), and cold work tool steel (TH-172)
- Provides testing at any angle
- Simple handling and low test expenditure
- High accuracy $\pm 0.5\%$
- Clear LCD display showing all functions and parameters
- Conforms to ASTM A 956 and DIN 50156
- Optional printer TA-220 available

TH-170

Material	HLD	HRC	HRB	HRA	HB	HV	HS
Steel & cast steel	300-900	20-68	39-100	59-86	81-654	81-955	32-100
Cold work tool steel	300-840	20-67	-	-	-	80-898	-
Stainless steel	300-800	20-62	46-101	-	85-655	80-802	-
Grey cast iron	360-650	-	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	-	131-387	-	-
Cast aluminium alloys	200-570	-	24-34	-	27-164	-	-
Brass	200-550	-	13-95	-	40-173	-	-
Bronze	300-700	-	-	-	60-290	-	-
Copper	-	-	-	-	45-315	-	-

TH-172

Material	HLD	HB	HRC	HV	HS
Steel & cast steel	350-960	80-683	20-69	80-996	31-102
Cold work tool steel	350-900	-	20-68	100-941	-

TH-174

Material	HLDL	HB	HRB	HRC	HV	HS
Steel & cast steel	560-950	81-646	37-100	21-68	80-950	80-96

TECHNICAL SPECIFICATIONS

Hardness parameter	HRC, HRB, HRA, HV, HB, HS, HLD or HLC or HLDL
Accuracy	Within ± 6 HLD (TH-170), Within ± 12 HLC (TH-172), Within ± 12 HLDL (TH-174)
Statistics	Average (max. 99)
Output	RS-232
Min. Surface Roughness of Workpiece	1.6 μ m (Ra) (TH-170/174), 0.4 μ m (Ra) (TH-172)
Impact device	D (standard) integrated (TH-170), C integrated (TH-172) or DL integrated (TH-174)
Needle front section of DL-device (TH-174)	Diameter = 4.2mm, Length = 50mm
Workplace max. hardness value	900HLD (TH-170), 960HLC (TH-172), 950HLDL (TH-174)
Workplace radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Workplace minimum weight	2kg-5kg on solid support (TH-170/174) 0.5kg-1.5kg on solid support (TH-172) (0.05kg-2kg with couplant paste) (TH-170/174) (0.02kg-0.5kg with couplant paste) (TH-172)
Workplace min thickness coupled	5mm (TH-170/134), 1mm (TH-172)
Workplace min. case hardened depth	0.8mm (TH-170/134), 0.2mm (TH-172)
Power	Rechargeable battery NiMH 3.6V, 70mAh
Charger	9V, 200mA (1.8VA)
Charging time	8 hours
Operating temperature	0°C to 40°C
Overall dimensions	155mm x 24mm x 55mm (TH-170/172) 210mm x 24mm x 55mm (TH-174)
Dimensions DL impact device (TH-174)	LxD 50mm x 4mm diameter
Weight	180g (TH-170/172) or 200g (TH-174)

CV ROCKWELL TYPE HARDNESS TESTER - TH-170 SERIES

Code No	Description	Price (£)
W-TH170	Universal type	£1,495.00 Q
W-TH172	Low impact force (for low weight parts)	£1,695.00 Q
W-TH174	For narrow or confined spaces	£1,995.00 Q



Standard Delivery

- Main unit integrated with impact Device D, C or DL
- Test block with HLD, HLC or HLDL value
- Cleaning brush
- Battery AAA 1.5V (2pcs)
- Certificate
- Manual
- Carrying case
- Charger
- Data cable (USB)

Optional Accessories

- Support rings for convex and concave surfaces
- Test blocks UKAS certified in any hardness parameter
- Dataview software TH-170

Universal Portable Hardness Tester - TH-1100 Series

The new entry-level TH-1100 offers a very affordable but accurate hardness testing solution for on-site testing in workshops and in field operations. The unit assures accurate and reliable measurement.

Any metallic products with a minimum solid mass of 2 kg can be tested according to the Leeb principle. The display shows hardness values in all common scales, such as HLD, HB, HRC, HRA, HRB, HV and HS. The instrument is equipped with chargeable batteries that provide 16 hours continuous operation.

Features

- Direct display of hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb's (HLD)
- Test results appear directly on the large display
- Impact Device D integrated: no cables
- Memory up to 99 data group files
- Tests at any angle, even upside down
- High quality LCD display
- Battery capacity display



TECHNICAL SPECIFICATIONS

Standard impact device	D integrated
Hardness scales	HLD, HB, HRC, HRA, HRB, HV, HS
Measuring range/materials	See table below
Tolerance	0.5% at 800HLD
Memory	99 data group files
Output	No
Min. surface roughness of workpiece	1.6µ (Ra)
Max. workpiece hardness	960HLD
Min. radius of workpiece (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Min. workpiece weight	2~5kg on stable support 0.05~2kg with compact coupling
Min. workpiece thickness coupled	5mm
Min. thickness of hardened layers	0.8mm
Charging time	3 hours
Continuous working time	16 hours
Power	Rechargeable Li battery
Operating temperature	0°C to 40°C
Overall dimensions	145x35x30mm
Weight	110g

Standard Delivery

- Main unit integrated with impact device
- Test block with HLD value
- Charger
- Cleaning brush
- Certificate
- Manual
- Carrying case

Optional Accessories

- Support rings

TH-1100

Material	HLD	HRB	HRA	HRC	HB	HV	HS
Steel & cast steel	300-900	38.4-99.8	59.1-85.8	20-68.4	81-654	81.1-955	32.5-99.5
Cold work tool steel	300-840	-	-	20.4-67.1	-	80-898	-
Stainless steel	300-800	46.5-101.7	-	19.6-62.4	85-655	85-802	-
Grey cast iron	360-650	-	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	-	131-387	-	-
Cast aluminium alloys	200-570	23.8-34.6	-	-	26.8-164	-	-
Brass	200-550	13.5-95.3	-	-	40-173	-	-
Bronze	300-700	-	-	-	60-290	-	-
Copper	200-690	-	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure

UNIVERSAL PORTABLE TESTER - TH-1100 SERIES

Code	Description	Price (€)
W-TH1100	Universal Tester	€979.00 Q

Dynamic Hardness Tester - TH-110

The new TH-110, part of the unbeatable series of CV Leeb type dynamic hardness testers offers a very affordable but accurate hardness testing solution for on-site testing in workshops and in field operations. The unit assures accurate and reliable measurement. All results and statistics can be directly printed on the built-in printer. Any metallic products with a minimum solid mass of 2 kg can be tested according to the Leeb principle and directly converted to any common hardness scale. All test results appear immediately on the display, while you toggle between scales and conversions.

Features

- Test results appear directly on the large display
- According to ASTM and DIN standard
- Display scales HV, HB, HRC, HRB, HRA, HS and conversion to tensile strength
- Highly accurate readings $\pm 0.5\%$ at 800 HL
- Correction for impact direction 360 degrees
- Chargeable battery pack to ensure many hours of undisturbed testing and printing
- Direct keys for easy set up of testing parameters
- Thermal mini-printer installed on the main unit
- Ridged ABS anti-shock casing with sealed keypad
- Optional impact devices available on request



TECHNICAL SPECIFICATIONS

Hardness scales	HL, HRC, HRB, HV, HB, HS
Tensile strength U.T.S range (steel only)	σ_b from 374 to 2652
Accuracy	Within $\pm 0.5\%$ at 800HL
Printer	Thermal printer showing all test results, settings and histogram
Statistics	Average value, min-max, upper-lower limits
Impact device	D (standard)
Optional impact devices	DC/D+15/DL/G/C/E
Workpiece max. hardness value	900HLD
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin = 10mm)
Min. Workpiece weight	2-5kg on stable support 0.05-2kg with compact coupling
Workpiece min. case hardened depth	0.8mm
Power	Rechargeable Li battery, 6V (1pc)
Charger	6V, 500mA (1.8VA)
Charger time	2.5 - 4 hours
Operating temperature	0 to 40°C
Overall dimensions	230mm x 90mm x 47mm
Weight	495 gr (including impact device and printer)

DYNAMIC HARDNESS TESTER TH-110

Code	Description	Price (£)
W-TH110	Dynamic Hardness Tester	£1,765.00 Q

Standard Delivery

- Main unit with impact device type D
- Printer (on top)
- Test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Table support for main unit
- Certificate
- Manual
- Plastic carrying case

Optional Accessories

- Special impact devices
- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces

Webster Type Portable Hardness Tester

The WEBSTER Hardness Testers are portable instruments that can perform on-site hardness testing on aluminium alloys, brass, copper and soft steel. A quick and easy test, the hardness value can be read out directly from the indicator with a simple clamp. Suitable for testing aluminium alloy profiles, tubings and sheet materials. Especially suitable for fast, non destructive quality inspection on the production site.

Features

- One hand operation and portability
- Variety of anvils permits testing a great variance of shapes
- Simple operation permits readings independent of the operator's skill
- Test is made by simply applying pressure to the handles until "bottom" is felt
- Easy-to-read dial indicator with 20 graduations permits use of the tester as "go" and "no-go" gauge
- Standard hardness gauge tests materials up to 13mm in thickness



TECHNICAL SPECIFICATIONS

Measuring Scope	0-20HW
Accuracy	0.5HW
Net Weight	0.5kg
Package Gross Weight	1.55kg
Package Dimensions	330mm×255mm×150mm

WEBSTER TYPE HARDNESS TESTER

Code No	Material	Hardness Range	Workpiece Thickness (mm)	Workpiece Inner Diameter (mm)	Price (£)
W-WH100	Aluminium alloy	25-110HRE 58-131HV	Max. 6	Max. 10	£799.00
W-WH110	Aluminium alloy	25-110HRE 58-131HV	Max. 13	Max. 10	£799.00
W-WH120	Aluminium alloy	25-110HRE 58-131HV	Max. 8	Max. 6	£799.00
W-WH130	Brass in hard/half hard state super-hard Aluminium alloy	63-105HRF	Max. 6	Max. 10	£799.00
W-WH140	Brass in hard/half hard state super-hard Aluminium alloy	63-105HRF	Max. 8	Max. 6	£799.00
W-WH150	Soft Brass, pure Copper	18-100HRE	Max. 6	Max. 10	£799.00
W-WH160	Soft Brass, pure Copper	18-100HRE	Max. 8	Max. 6	£799.00
W-WH170	Cold-rolled steel sheet, stainless steel	48-100HRB	Max. 8	Max. 6	£799.00

Portable Brinell Hardness Tester

The **HB1500** Portable Brinell Hardness Tester is designed following the Brinell hardness test method. The test force is controlled by a shear pin. After reading the diameter of the indentation with the reading microscope, the brinell hardness number can be obtained.

Features

- Solid framework
- Easy to operate
- Tolerance is controlled by a shear pin
- Three types of application: bench, C clamp and hammer impact
- Suitable for assemblies inconvenient to be taken to the lab and not allowed to be cut
- Accuracy is much higher than any other type hammer impact tester
- Used to test the hardness of forgings, castings, steels, nonferrous metal and its alloy products, and to test the hardness of annealed, normalizing and tempered mechanical parts



PORTABLE BRINELL HARDNESS TESTER

Code No	Description	Price (£)
W-HB1500	Brinell Hardness Tester	£1,289.00

Vickers Portable Hardness Tester 'Ultramatic' CV-HV400

This extremely accurate **UCI Hardness Tester** is designed to test even in the most difficult-to-access component areas. Using the ultrasonic contact impedance method this easy-to-use, portable unit gives instant, reliable results and is backed by advanced software features for data conversion, data logging and reporting.

TECHNICAL SPECIFICATIONS

Measuring principle	UCI method (ultrasonic contact impedance principle)		
Indenter type	Vickers diamond (angle 136°)		
Measuring range	Vickers	HV	10-3000 (direct)
	Rockwell	HRC	20-68 (conversion)
	Brinell	HB	76-447 (conversion)
	UTS	N/mm2	255-2180 (conversion)
Reproducibility	HV +/- 1%, HRC +/- 0.5, HB +/- 1%		
Test probes available	3N, 10N, 20N, 30N, 49N, 98N (30N standard)		
Display	Large backlit LCD, displays hardness HV, HRC, HB and UTS		
Calibration	20 preset calibrations for different materials (user definable)		
Memory	1000 readings, expandable to 30,000		
Statistics	Mean, min, max, std dev, Go-No-Go%		
Interface	Serial RS 232, RS 485 and parallel printer		
Power	Mains / rechargeable battery / shows continuous use		



PORTABLE HARDNESS TESTER - CV-HV400

Code No	Description	Price (£)	
W-HV400	UCI Vickers Portable Tester without probe	£3,381.00	I
W-HV400/08	30N Probe (standard)	£2,788.00	I
W-HV400/10	49N Probe	£2,788.00	I
W-HV Guide	Guide Support	£71.00	I

Standard Delivery

- Probe with one fixed load (30N as standard, others available)
- Charger 230V
- Certificate
- Manual
- Carrying case

Optional Accessories

- Probe SL type (slim nose)
 - Memory for 30,000 readings
 - Bench Stand TH-4S
 - Guide Support
- Call for full specification and accessory list.

Ultrasonic Portable Hardness Tester CV-HV450™

Portable hardness tester for accurate testing on metals, plastics and ceramics

Features

- Uses UCI principle of hardness testing
- Suitable for hardness testing of metals, plastics and ceramics
- Rockwell (HRC), Brinell (HB), Vickers (HV) and Shore (HSD)
- Leaves almost no visible indent on the tested article surface

Standard Delivery

- Main unit
- U1 ultrasonic probe
- Power unit
- Battery: NiMh, C size
- Carrying case
- CV Instruments certificate
- User and installation manual

Optional Accessories

- Hardness reference test blocks
- Precision holding fixture for probe
- Battery operated grinder
- Changeable headpiece to probe
- Probe stand



PORTABLE HARDNESS TESTER - CV-HV450

Code No	Description	Price (£)	
W-HV450	Ultrasonic Portable Hardness Tester	£2,955.00	I
W-HV450/10	Stand for HV450 probe	£1,695.00	I

Concrete Rebar Locator

The TC-100 /110 series of compact, lightweight rebar detection systems offer the power of non-destructive pulse-induction technology for the detection and analysis of rebar positions and concrete thickness. The instruments are compact, accurate, solid and can stand the harshest environments. The user interface is easy to operate and does not require special skills. The systems detect reinforcement bars and mesh, to measure their cover depth and to determine the bar diameter.

Features

- Detection of rebar and other metal building elements (such as steel pipes) and their orientation
- Easy and accurate measurement of concrete cover depth and rebar diameter
- Self correction function for the influence of neighbouring bars
- Large LCD display with backlight
- Optical as well as acoustic position signals
- RS-232 output and data memory
- Metric or imperial (mm/inch) setting



TC-110

TECHNICAL SPECIFICATIONS

Covering layer thickness range	small (1) 6 to 90mm large (2) 7 to 180mm
Rebar diameter measuring range	6 – 50mm
Accuracy	+/- 1% to +/- 4% tolerance at the end of the range
Real time graphic output	to screen and printer
Power	six 1.5 V for 45 h operation; 30 h with backlight on
Operating temperature	-15 C – 50C

Standard Delivery

- Main unit & probe
- User manual
- Charger & battery pack
- Calibration certificate
- Signal cables
- Data analysis PC software

CONCRETE REBAR LOCATOR

Code No	Description	Price (£)
W-TC-100	Concrete Rebar Locator	£1,966.00
W-TC-110	Concrete Rebar Locator with Probe Cart	£2,418.00

Concrete Thickness Gauge

The TC-300 concrete thickness testing instrument is a nondestructive, battery-powered, handheld system for measuring the thickness and integrity of concrete slabs, pavements, tunnel linings, walls and other plate-like structures. The handheld gauge records thickness information, has a handheld test head for generating and receiving sound waves and a telescoping pole for use on concrete slabs or overhead.

Features

- Rugged handheld with external displacement transducer / receiver
- No coupling agents required
- Works on cured, hardened concrete in air or on grade
- Works through paint and most types of bonded tile
- Sound alarm, signal strength bar are used to improve measuring accuracy
- Direct digital read-out on large LCD display
- Easy to read display for outdoors and switchable backlight for indoors
- Imperial or Metric thickness and spectralecho signal display
- Connection to a PC via USB/RS232
- Built in Data storage and Data logging
- Memory for 32,000 tests and 4000 components identification



Standard Delivery

- Main unit
- Transmitting transducer
- Receiving transducer
- Supporting bar
- Walk and talk set
- AA Battery
- AAA Battery
- Charger
- Signal cable
- Shoulder strap
- Key
- Instruction manual
- Calibration certificate
- Warranty card

TECHNICAL SPECIFICATIONS

Measuring range	50-350mm
Accuracy	± 1mm [When thickness = (50 - 260mm)] ± 2mm [When thickness = (261 - 350mm)]
Memory	16,000 data
Operation temperature	-10°C - +40°C
Relative humidity	<90%
Power supply	AA batteries x 6
Dimension	210mm x 153mm x 90mm
Weight	880g

CONCRETE THICKNESS GAUGE

Code No	Description	Price (£)
W-TC-300	Concrete Thickness Gauge	£2,418.00

CV Shore Durometers - Analogue / Digital

These advanced **Shore Scale Durometers** provide fast easy-to-read instruments ideal for testing rubber, plastic, leather and all other soft materials. The gauges can be used in hand held mode or mounted onto a sturdy bench stand for improved accuracy and repeatability.

Features: Analogue

- Fast and easy to read
- Portable
- Hand-held operation or via optional bench stand
- Available in either Shore A or Shore D
- Supplied with a setting / reference block
- Supplied with UKAS calibration certificate



CV SHORE DUROMETERS - ANALOGUE / DIGITAL

Code No	Model	Price (£)	
SHA0001	Analogue Shore 'A' Scale	£322.00	C
SHD0002	Analogue Shore 'D' Scale	£322.00	C
DSAS001	Digital 'A' Scale Durometer, Sylvac RS232 output	£432.00	C
DSDS001	Digital 'D' Scale Durometer, Sylvac RS232 output	£432.00	C
SHA0003	Shore 'A/D' Bench Stand	£522.00	I

Features: Digital

- Testing rubber, plastic, leather and all other soft materials
- Fast and easy to read
- Large digital display, digits 6mm high
- Portable
- Use by hand or mounted on a stand
- Supplied with a reference block
- Data output for SPC
- Zero setting
- Preset - value input options
- Auto display off
- Electronic module protection to IP65, even with data output
- Can be used in conjunction with Shore bench stand
- Supplied with UKAS calibration certificate



TECHNICAL SPECIFICATIONS - DIGITAL

Scale	Shore A	Shore D
Resolution	0.1	0.1
Standards	Conforms to DIN 53 505, ASTM, D2240 and ISO R/868	Conforms to DIN 53 505, ASTM, D2240 and ISO R/868
Display Range	0-100	0-100
Pressure foot	ø 18mm	ø 18mm
Indenter	Blunt taper	Sharp point
Tip angle	35°	35°
Indenter diameter	1.25mm	1.25mm
Battery	Lithium 3V, CR2032	Lithium 3V, CR2032
Data output	RS232 combined with external power supply	RS232 combined with external power supply

Manufactured in accordance with specifications DIN 53 505, ASTM D2240, ISO R/868. For all flexible materials i.e. rubber, leather, vinyl sheets, perspex and plastics using the Shore 'A' and 'D' Scales.

The bench stand is intended for use with 1Kg. loading for Shore 'A' scales and 5Kg. for Shore 'D' scales. Using the stand ensures a greater repeatability and better accuracy.

Moore & Wright Surface Roughness Tester - MTR110

The Surfmatic MTR110 is a pocket sized surface roughness measuring instrument ideally suited to rapid on-the-spot surface measurements. Conforms to ISO Class 3

Features include:

- Back-light LCD
- Dynamic Test Display: progress of cut-off length during testing
- Li-ion rechargeable batteries
- Protection slide on pick-up
- Auto-off after 90 seconds
- Pocket-size and economically priced
- Both Ra and Rz parameters in one instrument
- Features external calibration
- Large measuring range suitable for most materials
- Piezo-electric pick-up stylus for external surfaces
- Includes steel test piece



MTR-110

Ra and Rz:

- Rz is the mean of all of the maximum peak to valley heights, from each sampling length, within the assessment length
- Ra is the universally recognised and most used international parameter of roughness. It is the arithmetic mean of the absolute departures of the roughness profile from the mean line

TECHNICAL SPECIFICATION

		Code No	Price (£)
Functions:	Dynamic display during testing, sound signal start-test-ready, auto-off 90 sec, back-light LCD	MTR-110/UK	£809.00 Q
Roughness parameters:	Rz and Ra		
Measuring range:	Rz 0.10 - 50µm / Ra 0.05 - 15.0µm		
Cut-off lengths:	0.25mm, 0.8mm, 2.5mm		
Tracing length:	6mm		
Tracing speed:	1mm/sec		
Admissible temperature range:	0 - 40°C		
Power supply:	3.0 V / Li-ion batteries / low battery indication		
Dimensions and weight:	102mm x 70mm x 22mm - Weight 180g		
Charger:	9V DC		
Min. curvature of cylindrical surface	40mm diameter (V-grooved base)		

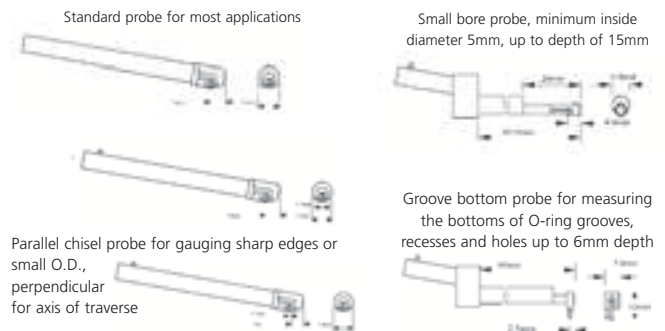
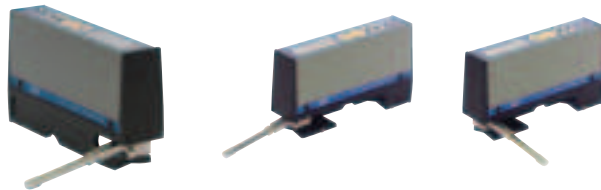
CV Surface Roughness Tester - R-130 / 135

The inexpensive, high quality, hand held **R-130** and **R-135** are the ideal instruments for general surface roughness testing. These extremely versatile gauges are suitable for testing a wide variety of materials, boasting a large measuring range and easy-to-read, digital display.



Features

- Ra and Rz parameters, switchable display
- Adjustable tracer also for 90° or 180° measurement plane
- Standard cut-off of 0.25mm, 0.8mm and 2.5mm, adjustable to 1, 3 or 5 times
- Large measuring range suitable for most materials
- Piezo-electric pickup stylus for external surfaces (diamond tip for latest ISO standard)
- Accuracy to DIN4772 Class 3



TECHNICAL SPECIFICATIONS

Measuring range	Ra 0.03 - 6.3µm (1µ" - 250µ") Rz 0.2µm - 25.0µm (8µ" - 999µ")
Display Resolution	0.01µm (1µ")
Cut-off lengths	1. 0.25mm / 0.0001", 2RC filter select 1-3-5 times 2. 0.8mm / 0.03", 2RC filter select 1-3-5 times 3. 2.5mm / 0.01", 2RC filter select 1 times
Accuracy	Meets ISO and DIN Standards
Stylus tip radius	2µm
Power	9V Alkaline battery
Output	RS232 (R135)
Optional Extras	Tracers for special applications, printer

Standard Delivery

- Protection cover for detector
- Roughness test plate Ra
- Certificate, manual and case
- Battery

CV SURFACE ROUGHNESS TESTER

Code No	Description	Price (£)
W-R130	Surface Roughness Tester	£1,189.00 I
W-R135	Surface Roughness Tester + RS232 output	£1,297.00 I
W-R130/1550	Standard Tracer for R-130, R-135	£344.00 I
W-R130/1560	Tracer for small bore R-130, R-135	£344.00 I
W-R130/1570	Tracer transverse chisel R-130, R-135	£344.00 I
W-R130/1580	Tracer parallel chisel R-130, R-135	£344.00 I
W-R130/1590	Tracer for grooves R130, R135	£344.00 I
W-R130/3200	Stand for R-130, R-135	£194.00 I
W-R130/4101	Data cable to PC or Printer (for R135 only)	£36.00 I



Optional bench stand

CV Surface Roughness Tester - TR-200

The comprehensive, hand-held **TR-200** represents the ideal multi-function solution for surface roughness testing. This compact gauge has a large measuring range, easy-to-read, backlit graphical and text display and is suitable for a wide variety of applications.



DataView PC Software

TECHNICAL SPECIFICATIONS

Roughness parameter	Ra, Rz, Ry, Rq, Rt, Rp, Rmax, Rm, R3z, S, Sm, Sk, tp
Assessed profiles	Primary profile (P), Roughness profile (R) Tp curve (material ratio Mr)
Profile recording magnification Vv:	200x - 20000x Vh: 20x, 50x, 200x
Standard	Conforms ISO / DIN / JIS / ANSI (menu selectable)
Measuring system	Metric μm , imperial μinch
Display resolution	0.001 μm / 0.04 μinch
Display features	Detector stylus position indicator Battery level indicator, Direct printing, Direct display of parameters and profiles,
Data output	RS-232 port
Measuring range	Ra, Rq : 0.01 - 40.0 μm Rz, Ry, Rp, Rt, R3z, : 0.02 - 160 μm Sm, S : 2 - 4000 μm Tp : 1 - 100% (% Ry)
Cut-off lengths	0.25mm / 0.8mm / 2.5mm
Evaluation length Ln	1 - 5 cut-off

Standard Delivery

- Certificate
- Main unit, Stylus TS100
- Protection nose piece
- Steel support for stand alone use
- Roughness test plate Ra
- Charger, carrying case

Optional Accessories

A large range of accessories are available including TA220 printer, pickups/extensions, measuring platform, PC software.

CV SURFACE ROUGHNESS TESTER

Code No	Description	Price (£)
W-TR200	TR-200 Surface Roughness Tester	£1,665.00
W-TA-220	Printer for TR200	£254.00
W-TS-100	Tracer, standard	£425.00
W-TS-110	Tracer, narrow skid, special	£425.00
W-TS-120	Tracer, with skid, bores from 2mm	£490.00
W-TSE/A	Extension arm, 50mm x 10mm	£85.00
W-TS-130	Tracer, deep grooves <3mm	£650.00
W-TS-131	Tracer, deep grooves <10mm	£1,075.00
W-TSE/B	Extension arm, 90°, 70mm x 25mm	£179.00
W-200/0320	DataView Software - Windows XP	£431.00
W-200/0500	Granite platform TA610 without 'L' attachment	£659.00
W-200/0510	'L' attachment for TR200	£68.00

TS-100



TSE-A



TSE-B

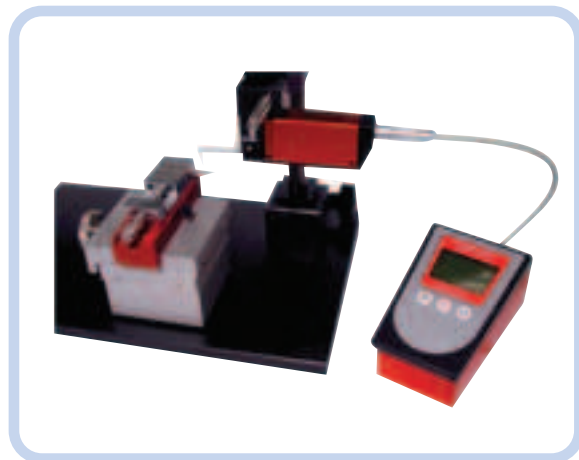


Surface Roughness Measurement - Diavite Compact

Compatible with the Diavite DH-7, the **Diavite Compact** is a simple and reliable portable surface roughness meter. Includes measuring and indicator unit with graphic display, four function buttons and traversing unit for VH tracers with skid.

Features

- Traversing unit integrated in the instrument, can also be connected with a cable to the instrument (option for VH) for measurement with stand or to reach difficult measuring points
- Cutoff firmly assigned to the traversing length
- Memory for 15 measuring profiles
- Automatic calibration
- Data output USB interface
- Data transfer to PC for further processing in MS Excel or with optional software DIASOFT
- Rechargeable battery for mobile applications
- Accuracy same as for DIAVITE DH-7 thanks to the application of the same traversing units and the same tracers



Accessories

- Numerous tracers with skid
- Measuring support MSHN (See page 187)
- Cross table KRT (See page 187)
- Fine engineer's vice WMV, for fixing small parts (See page 187)
- PC-software 'DIASOFT'
- Later updates to model DH-7 possible

DIAVITE COMPACT

Code No	Description	Price (£)
13-3080	Diavite Compact DCH / VH	£2,364.00
13-3085	Adaptor and connection cable DCH / AV	£275.00

Surface Roughness Tester - Diavite DH-7

The easy to use **Diavite DH-7** surface-measuring instrument is capable of measuring in most common surface finish scales and displaying results in its large digital display. A built-in printer, with graph capability and an RS232 output further enhance this extremely versatile gauge.



A standard multipurpose tracer is supplied with the Diavite DH-6 and a comprehensive collection of specialised tracers are available to suit a wide range of applications. Special tracers can be manufactured to suit customers more demanding measuring requirements.



Additional special probe tracers available

This is a direct digital display unit from which the measured value can be printed, graph recorded or RS232 transmitted to a computer for SPC or central data collection.

The standard tracer unit using a diamond-tip stylus determines surface roughness of bores from 8mm (0.300") diameter and 25mm deep. The standard tracer can also scan the periphery of balls or other convex or concave surfaces from 8mm (0.300") radius. Special stands and fixtures available. Measurement Values: Ra, Rq, Rz, Rmax, R3z, Rt.

With 4 different cut-off lengths.

DIAVITE DH-7 SURFACE MEASUREMENT		
Code No	Description	Price (£)
13-3052	Diavite model DH-7/VH with traversing unit VH. For use with tracers with skid	£3,462.00
13-3050	Diavite model DH-7/VHF with traversing unit VHF. For use with tracer with and without skid (free tracers)	£3,965.00
13-3074	Diavite Tracer Stand	£825.00

DH-7: Standard equipment

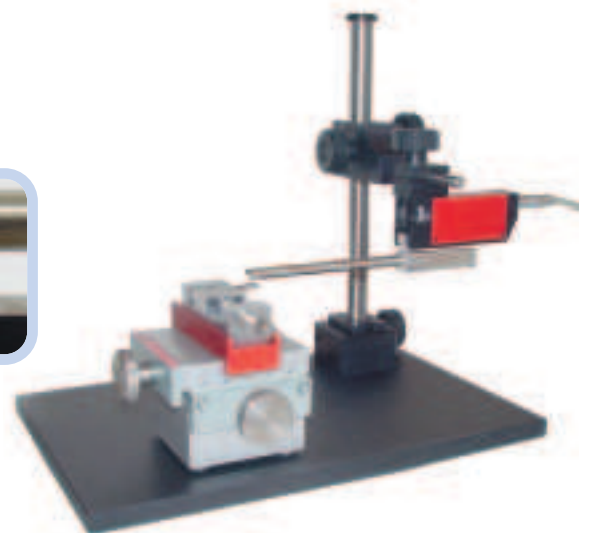
Includes the indicator unit, traversing unit VH or VHF according to type, with supporting shoe, standard tracer, connection cable, reference test piece of Ra 2.97µm, incorporated printer, battery charger, packing case and comprehensive operating instructions.

Surface Roughness Tester - Contour Gauge

The DH-7 now offers an option to precisely measure contours. For this purpose, a special contour measuring tracer is needed, in combination with special software and a PC.

Features:

- Measuring range X: from 0.5 to 15.0mm
- Measuring range Z: max. 6mm
- Tracing angle: falling flanks up to 88°, rising flanks up to 77°



DIAVITE DH-7 CONTOUR MEASUREMENT		
Code No	Description	Price (£)
13-3064	DH-7/VHF Complete System including Diasoft Standard & Diasoft Contour Software, Contour Tracer & Stand	Visit bowers.co.uk for latest prices

CV Ultrasonic Thickness Gauge - Delta TT-100 Series

The **Delta TT** series represents a range of quality, hand-held, ultrasonic gauges for accurate measurement of wall thickness of a variety of materials, displaying results on a clear digital display. Suitable for metals, glass and plastics.

Features

- Easy to operate ultrasonic wall thickness gauge
- Standard 5 MHz transducer included, special purpose types available
- Clear 4-Digit LCD display
- Retention of last 10 readings



TECHNICAL SPECIFICATIONS

Four models:	TT-100, TT-110, TT-120, TT-130
Measuring range (in steel)	1.2mm - 225.0mm with 5MHz transducer
Measuring restriction	Minimum 3mm thickness, 20mm dia
Transducer frequency	Standard 5 MHz, diameter probe 10mm
Display resolution	0.1mm (0.01mm for model TT-130)
Measuring accuracy	+/- 0.1mm (+/- 0.02mm for model TT-130)
Measuring units	mm
Sound velocity range	1000 - 9999m/s (5900m/s for TT-110, steel only)
Working temperature	All standard -15° C to + 150° C, Model TT120 up to 300° C max

Applications:

TT-100 for metal, glass, plastics etc (Standard model)
TT-110 for steel thickness only
TT-120 for high temperature steel (Up to 300° C)
TT-130 for metals, glass, plastics etc, 0.01mm resolution

Standard Delivery

- Transducer 5MHz
- Integrated steel calibration plate 4.0mm
- Ultrasonic couplant
- Operation manual
- Carrying case

ULTRASONIC THICKNESS GAUGE - DELTA TT-100

Code No	Description	Price (£)
W-TT100	Universal / 0.1mm reading / incl. transducers (5MHz)	£599.00
W-TT110	Steel only / 0.1mm reading / incl. transducers (5MHz)	£549.00
W-TT120	High temp., reading 0.1mm / incl. special transducer	£899.00
W-TT130	Universal / 0.01mm reading / incl. transducer (5MHz)	£795.00

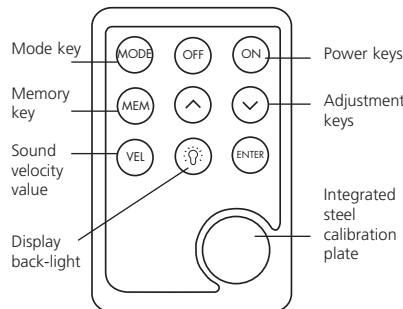
CV Ultrasonic Thickness Gauge - TT-300 Series

Handheld gauge with external transducer series for metals, glass and plastics.



Features

- Four models available
- Easy to operate ultrasonic wall thickness gauge for metals, glass, plastics
- Display resolution menu selectable
- Automatic zero setting
- Two-point calibration possible
- LCD display with back-light
- Min. mode for minimum thickness measurement
- Mm/inch selectable
- Data output RS-232
- Large internal memory for 500 readings
- Including protection case, couplant and carrying case



TECHNICAL SPECIFICATIONS

Measuring range (steel)	5 - 300mm with 2 MHz transducer 1.2 - 225mm with 5 MHz transducer
Transducer frequency	Standard 5 MHz, diameter probe 10mm
Display resolution	Menu selectable, low 0.1mm, high 0.01mm
Measurement accuracy	0.75 - 9.99mm: ± 0.05 mm 10 - 99.99mm: (0.5%H+0.01)mm 100mm - 300mm: (1%H+0.1)mm
Measuring units	mm/inch selectable
Sound velocity range	1000 - 9999m/s
Display	LCD with back-light
Display Min. mode	Display current thickness or minimum thickness (menu selectable)
Alarm function	Minimum / Maximum limits exceeding alarm
Calibration setting	Automatic zero setting, two-point calibration possible
Data output	RS-232 serial port, Baud rate selectable to printer or pc
Memory	Storage of 500 thickness readings
Surface temperature	Standard -10°C to +60°C (high temperature see TT-320)
Battery indicator	Low battery indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	With back-light 60 hours continuously Without back-light 100 hours continuously
Dimensions	152 x 74 x 35mm
Weight	370g



Standard Delivery

- Main unit
- Integrated steel calibration plate
- Transducer 5 MHz
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

Optional Accessories

- Transducers for special applications
- TA-220 printer with cable
- Software Dataview TT-300



ULTRASONIC THICKNESS GAUGE - TT-300

Code No	Description	Price (£)
W-TT300	Universal, 0.01mm resolution, 5MHz probe (std)	£1,095.00 Q
W-TT310	Universal, 0.10mm resolution, 5MHz	£995.00 Q
W-TT320	High temperature version, (300°C) 5MHz probe	£1,295.00 Q
W-TT340	Castings version, 2 MHz probe	£1,495.00 Q

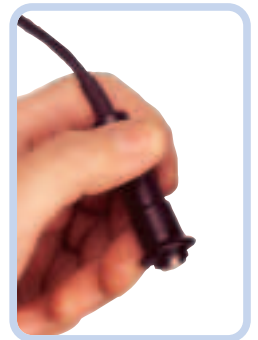
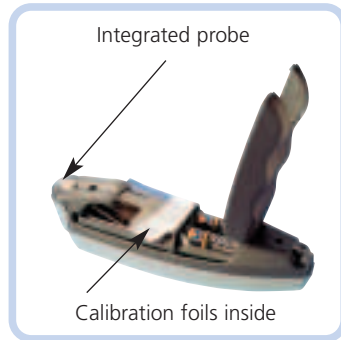
Coating Thickness Gauge CG-200 Series

The ergonomically designed **CG-200** range offers an ideal solution for coating thickness applications. Their user-friendly features include automatic, ferrous / non-ferrous substrate recognition (FN versions), data logging and statistical functions and simple to use, but comprehensive operating menus.



Features

- Compact, innovative design, integral or external probe
- Automatic substrate recognition (ferrous / non ferrous)
- User friendly operating menu
- Online statistics on display
- Data transmission



TECHNICAL SPECIFICATIONS

Measuring range	0 - 2000µm(µm/mills selectable)
Tolerance	+/- (2µm + 3% of readings)
Resolution	0.1µm
Display	Alphanumeric with backlight
Standards	DIN, ISO, ASTM, BS.
Min. measuring area	20mm diameter
Min. curvature radius	Convex 5mm, concave 60mm in centre, 35mm at the edges
Min substrate thickness	Type F 0.5mm, type N 50µm
Calibration	Factory setting, zero and foil calibration
Statistics	N, mean, standard dev, max/min, block stats (5...30)
Data memory	90 reading or 45 block values
Limits	Adjustable with acoustic alarm
Interface	RS 232 (to printer CG300 or PC)

COATING THICKNESS GAUGE - CG-200 SERIES

Code No	Description	Price (£)
W-CG200F	Integral probe, Ferrous Substrates	£689.00
W-CG200N	Integral probe, Non Ferrous Substrates	£741.00
W-CG200FN	Integral probe, Ferrous / Non Ferrous Substrates	£936.00
W-CG210F	External Probe, Ferrous Substrates	£798.00
W-CG210N	External Probe, Non Ferrous Substrates	£816.00
W-CG210FN	External Probe, Ferrous / Non Ferrous Substrates	£993.00

Standard Delivery

- Gauge + probe (F or N or FN)
- Zero plate (one or two according to model)
- Calibration foils (2 pieces)
- Manual/Certificate

Optional Accessories

- PC software for online and data transfer
- Interface cable for standard PC
- Portable data printer TA-200

CV Wall Thickness Gauge CG-500 Series

Handheld gauge for wall and coating thickness testing of metals, glass and plastics



Features

- Considerably improved measuring properties through SIDSP !
- Non-destructive wall thickness measurement up to 4mm and/or 10mm
- Up to 20 measurements per second
- For all non-magnetic materials such as plastics, wood, glass, ceramics, glass fiber, carbon fiber laminates, non-ferrous metals, etc.
- For hollow parts and containers of all kinds such as bottles, cans, injection moulding products, etc.
- Also for plastic sheets, automotive body parts, glass panes, SMC plastics other large-sized components, etc.
- Complete measuring technique is integrated in the sensor

With this totally new SIDSP procedure, all necessary measuring signals are created and processed in the sensor itself. Only the completely processed digital readings are transferred to the base unit for display, statistical evaluation and data storage. Unlike the commonly used analogue procedures, the SIDSP procedure excludes any error influences on the measuring data during transfer over the probe cable. The result is a measuring accuracy and constancy of readings, unmatched so far. Further innovations to increase measuring accuracy: the new process technology manufacture the reference balls used resulting in an increased reproducibility of over 0.5% and the calibration method enabling up to 5 calibration points. Calibration can be done over the complete range or over defined ranges.

Innovative menu control and data filing system

The new CV-CG500 is very easy to operate. The menu-controlled user surface offers a user-friendly data filing system similar to common PC applications and a context sensitive on-line help.

Data processing

The gauge features display of minimum and maximum readings, an offset mode (related to the set value), automatic storage of readings into the statistics as well as visual display of the continuously taken readings (real-time diagram).

WALL THICKNESS GAUGE - CG-500 SERIES

Code No	Description	Price (£)
W-CG500	Wall Thickness Gauge	£4,025.00
W-CG500/20	FH10 Probe	£3,511.00
W-CG500/150	RS232 Cable	£75.00
W-CG500/SOFT	Dataview Software	£98.00

Push-Pull Force Gauge

An ideal gauge for the measurement of push-pull forces to be applied or required in the process of material test, manufacturing assembly, automotive, electric and many other industries.

Features

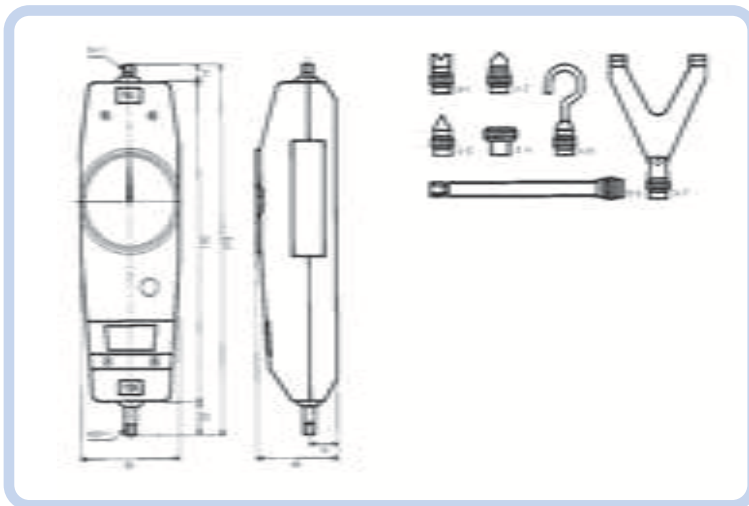
- Small portable light weight unit
- Easy zero adjustment by rotating bezel
- Peak load recording
- Eight versions from 1Kg to 50Kg
- Complete with set of attachments

Specifications

- Stroke 10mm
- Error $\pm 0.2\%$ of max. scale value
- Scale 150 incr.s for 3 & 30Kg
- Scale 100 incr.s for 1, 2, 5, 10, 20 & 50Kg
- Weight 0.75Kg



K-501 Testing Stand



PUSH-PULL FORCE GAUGE

Code	Model	Max. Scale	Min. Scale	Price (£)	
13-03212	MP-1	1Kg	10g	£304.00	C
13-03213	MP-2	2Kg	20g	£304.00	C
13-03214	MP-3	3Kg	30g	£304.00	C
13-03215	MP-5	5Kg	50g	£304.00	C
13-03216	MP-10	10Kg	100g	£304.00	C
13-03217	MP-20	20Kg	200g	£304.00	C
13-03218	MP-30	30Kg	300g	£304.00	C
13-03219	MP-50	50Kg	500g	£304.00	C
13-03220	K-501 Testing Stand - Manual			£541.00	I

Digital Push-Pull Force Gauge

These digital push-pull force gauges have a high resolution and can be used for many tension / compression applications such as testing connectors and switches.

Features

- Accuracy +/- 0.5% of full scale
- Peak hold function
- Tolerance setting
- Calculation of average values
- Lbf, Kgf and Newton units
- RS232 digital output
- Supplied with standard accessories



DIGITAL PUSH-PULL FORCE GAUGE

Code No	Model	Max. Scale Newtons	Min. Scale Newtons	Price (£)	
13-03611	SH-2	2	0.001	£334.00	Q
13-03612	SH-5	5	0.001	£334.00	Q
13-03613	SH-10	10	0.005	£334.00	Q
13-03614	SH-20	20	0.01	£334.00	Q
13-03615	SH-50	50	0.01	£334.00	Q
13-03616	SH-100	100	0.05	£334.00	Q
13-03617	SH-200	200	0.1	£334.00	Q
13-03618	SH-500	500	0.1	£334.00	Q
13-03650	Stand			£216.00	Q

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