



**BOWERS** GROUP

# Export Catalogue

Connected Metrology Solutions



# Who Are We?



## Bowers Group

As a leading supplier of quality metrology instruments to organisations throughout the world, Bowers Group has developed into a respected global leader in the field of measurement. Our first-class reputation has been built on the continuing Group ethos of striving for excellence in both the comprehensive range of products that we supply and the many quality services that we provide to our customers. The Group's aim is to build on its hard-won reputation and continue to exceed customers' expectations. Our brands include:



## A Spear & Jackson Company

We are part of the world renowned Spear & Jackson Group. With a 250 year history, the Spear & Jackson Group is now a multi-national organization with divisions covering garden tools, metrology equipment, woodworking tools and magnetic equipment. In addition to the famous Spear & Jackson brand it owns other world famous brand names such as Bowers Group, Robert Sorby, Moore & Wright, Eclipse, WHS and Tyzack.



## Bowers

Internationally recognised as the world's leading Bore Gauge manufacturer, Bowers is at the forefront of internal measurement with its Made in Britain registered products. In response to customer demand and as a result of continued investment in cutting-edge technology, we produce an increasingly comprehensive range of affordable, quality instruments intended for other applications, such as depth and external gauging. A past recipient of the coveted Queens Award for Export, we currently export 82% of our output.



# WHO ARE WE?



## Baty

**Baty** has a rich history dating back to 1932 when it originally specialised in manufacturing high precision dial indicators and related instruments such as cylinder bore gauges. Over time, the company diversified into non-contact measurement, introducing Optical Profile Projectors and the renowned Baty 'Shadograph' series, which has set the industry standard. These acclaimed products are proudly made in Bradford, England, holding the prestigious Made in Britain Accreditation.

Building on its gauging heritage, Baty expanded its portfolio by acquiring John Bull and British Indicators, broadening its offerings to include calipers and flexible fixturing. The product range was further enhanced in the eighties with the introduction of Baty's pioneering camera-based Video Inspectors, later improved by Video Edge Detection (VED) technology, which significantly increased accuracy, repeatability, and measuring speed.

In 2010, Baty joined the Bowers Group, a move that strengthened its position in the metrology industry by offering a comprehensive range of metrology instruments, from hand tools to advanced vision systems, catering to diverse measurement needs in modern manufacturing. In 2023, the Baty manufacturing facility relocated to Bradford from Burgess Hill, integrating seamlessly with Bowers Group's operations to facilitate faster and more efficient production of Baty products.



## Moore & Wright

Welcome to the world of **Moore & Wright** precision measurement tools, where quality meets innovation.

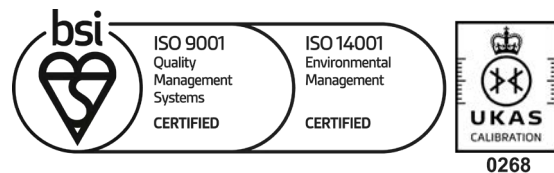
For over a century, Moore & Wright has been a trusted name in the industry, delivering precision instruments renowned for their accuracy and reliability. Founded in Sheffield, the company began by manufacturing a diverse range of engineer's tools, including calipers, screwdrivers, and punches.

Today, as part of the Bowers Group, Moore & Wright continues to deliver reliable solutions to industry. With a dedication to research and development, the brand remains committed to innovation, constantly seeking to stay ahead of the curve.

With a rich heritage and a dedication to staying at the forefront of technological advancements, Moore & Wright continues to provide professionals across a wide range of sectors, including engineering, manufacturing, aerospace, automotive, and R&D, with the tools they need to achieve precision in their work. Explore our extensive range and discover the perfect instrument to meet your measurement needs.



# Our Commitment To Quality



We are proud that our calibration laboratory is accredited in accordance with International Standard ISO/IEC 17025:2017, which covers General Requirements for the competence of testing and calibration laboratories. In addition, we operate a Quality Management System which complies with the requirements of ISO 9001: 2015 for the following scope: Design, manufacture, distribution and service of precision measuring equipment and solutions. We are also proud to have achieved the environmental standard ISO 14001 across the Bowers Group business.

As approved members of the Made in Britain scheme, Bowers Group's UK manufactured products carry the prestigious Made in Britain trademark, which is a recognised symbol of both quality and reliability. We are also committed to keeping up with the latest developments in our key market sectors and are pleased to be members of the distinguished trade associations MTA and BTMA.

## Quality Policy Statement

Bowers Group's commitment to the very highest levels of quality is continued and unflinching. Quality underpins everything we do as a business, from the development of innovative products, the talent and commitment of our employees, to the quality of the metrology solutions that we provide. We strive to ensure that our metrology solutions contribute to the future of manufacturing, making processes smarter, improving standards and data acquisition, as well as contributing to a sustainable future.



# Our Journey To Net Zero

## WHO ARE WE?



We are pleased to report a reduction of 14% in the total Greenhouse Gas Emissions for the year FY23 ending 30th September 2023.

This total across Scope 1, 2 and 3 totalled 2,698 tCO<sub>2</sub>e. Scope 1 and 2 emissions represent 13% of the total emissions and Scope 3 emissions represent 87% of the total emissions.

The most significant emissions source is from the embedded emissions in goods and services that Bowers Group purchases - this Scope 3 category accounted for 35% of the company's total carbon footprint but this has reduced by 19% from the base year calculation.

All emissions have been calculated following the GHG Protocol's Corporate Accounting and Reporting Standard. All seven greenhouse gases defined by the Kyoto Protocol have been accounted for and reported on a tonnes of carbon dioxide equivalent tCO<sub>2</sub>e basis.

We have now set our targets for the reductions for Scope 1 and 2 and then for Scope 3. Our initial aim is to reduce Scope 1 & 2 by 50% by 2030 and Scope 3 by 30% again by 2030.

Our commitments to reducing our Carbon Footprint continues as we seek to play our part in the global reduction of Greenhouse Gas Emissions.

# New Eco-Friendly Packaging

Bowers Group is proud to announce a major step forward in its sustainability journey with the introduction of new eco-friendly and fully recyclable packaging cases for its range of Bowers branded products. This marks a significant step forward in the company's ongoing commitment to reducing its environmental footprint and achieving net zero emissions.

The move to the new, sustainable cases is a key part of our broader sustainability strategy and journey to net zero. Made from a composite material containing approximately 70% renewable resources, including glucose, natural waxes, minerals, and fibres, these cases significantly reduce dependence on fossil fuels and promote circular material cycles through full recyclability. By adopting this eco-conscious packaging, we are strengthening our commitment to the following:

- Lowering carbon emissions
- Reducing waste
- Contributing to a more sustainable manufacturing industry

As part of our long-term plan to achieve net zero by 2050, every aspect of the business is being evaluated for opportunities to minimise environmental impact. The shift to sustainable packaging represents a key action point within our green strategy, aligning packaging solutions with sustainable practices while maintaining high standards for product protection and customer satisfaction.



# New Products For 2025

|               | Page No. |
|---------------|----------|
| Bowers Figura | 121      |

Bowers Group is delighted to introduce our latest product lineup, catering to both our valued existing customers and those new to our connective metrology solutions. Our new range includes the Bowers Surface Finish & Geometry products Figura.

Explore our new product pages for more information on these innovative new additions.





# Contents

| Bowers              | Page No. |
|---------------------|----------|
| Bore Gauging        | 11       |
| Application Gauging | 49       |
| Universal Gauging   | 81       |
| Air Gauging         | 99       |
| Hand Tools          | 113      |
| Surface Finish      | 121      |



# Bowers

”

We find Bowers Group’s products very reliable as well as accurate. The internal bore mics are easy to use, accurate, and the adjustable fit is very useful. The guys on the shop floor love them; they are so precise and straightforward.

**Leigh Howarth - Business Development Manager - M-CNC**



| Contents                                     | Page No. |
|--|----------|
| Bore Gauging                                 |          |
| XTA / XTA Micro Analogue Bore Gauge          | 13       |
| XT3 Digital Bore Gauge                       | 17       |
| XT3 Holematic Digital Pistol Grip Bore Gauge | 21       |
| MicroGauge 2-point Bore Gauge                | 25       |
| Indicator/ Microgauge Floating Table Stand   | 28       |
| XT Digital Lever Bore Gauge                  | 29       |
| XTHSY Pistol Grip Bore Gauge with Indicator  | 31       |
| 11 Ultima Electronic Bore Gauge              | 33       |
| XT500 Large Diameter 3-point Bore Gauge      | 37       |
| SmartPlugs                                   | 39       |
| SmartPlugs Indicators                        | 40       |
| SmartPlugs Holders                           | 41       |
| SmartPlugs Applications & Options            | 43       |
| SmartPlugs Accessories                       | 46       |
| SmartPlug Setting Rings                      | 47       |


Bore Gauging





# Analogue Bore Gauges

At a Glance



Range: 2-300mm  
0.080"-12"

## Features

- 2-6mm 2 point / 6-300mm 3 point measurement
- Graduation XTA Micro 2-6mm: 0.001mm, 6-20mm: 0.002mm
- Graduation XTA 20-300mm: 0.005mm
- Graduation XTA Micro 0.080"-1/4": 0.0001", 1/4"-3/4": 0.0001"
- Graduation XTA 3/4-12": 0.00025"
- 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 gauges
- Serial number on all gauges
- Bore gauges manufactured according to DIN 863, part 4
- Supplied in a fitted case

## XTA Micro Features

- More compact mechanical controller
- Lighter and ergonomically designed
- Improved functionality
- Vernier scale added to 2-20mm range to improve resolution



# Analogue Bore Gauges

## BORE GAUGING

**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.

Bowers has developed XTA Micro to cover the measuring range 2-20mm. The XTA Micro incorporates a more compact mechanical controller and Vernier scale for improved resolution.





# Analogue Bore Gauges

| XTA Micro: Individual instruments supplied with setting ring and UKAS |            |               |            |                   |         |              |                 |              |                     |
|---|------------|---------------|------------|-------------------|---------|--------------|-----------------|--------------|---------------------|
| Code No   | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) | Code No | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) |
| MXTA1M  | 2-2.5      | 0.004         | 9          | 2.50              | MXTA1i  | 0.080-0.100  | 0.00015         | 0.35         | 0.1000              |
| MXTA2M  | 2.5-3      | 0.004         | 9          | 2.50              | MXTA2i  | 0.100-0.120  | 0.00015         | 0.35         | 0.1000              |
| MXTA3M  | 3-4        | 0.004         | 12         | 4.00              | MXTA3i  | 0.120-0.160  | 0.00015         | 0.47         | 0.1600              |
| MXTA4M  | 4-5        | 0.004         | 18         | 4.00              | MXTA4i  | 0.160-0.200  | 0.00015         | 0.70         | 0.1600              |
| MXTA5M  | 5-6        | 0.004         | 18         | 5.00              | MXTA5i  | 0.200-0.250  | 0.00015         | 0.70         | 0.2000              |
| MXTA6M  | 6-8        | 0.004         | 58         | 8.00              | MXTA6i  | 1/4-5/16     | 0.00015         | 2.28         | 0.3125              |
| MXTA8M  | 8-10       | 0.004         | 58         | 8.00              | MXTA8i  | 5/16-3/8     | 0.00015         | 2.28         | 0.3125              |
| MXTA10M   | 10-12.5    | 0.004         | 58         | 12.50             | MXTA10i | 3/8-1/2      | 0.00015         | 2.28         | 0.500               |
| MXTA12M   | 12.5-16    | 0.004         | 62         | 12.50             | MXTA12i | 1/2-5/8      | 0.00015         | 2.44         | 0.500               |
| MXTA16M   | 16-20      | 0.004         | 62         | 20.00             | MXTA16i | 5/8-3/4      | 0.00015         | 2.44         | 0.750               |

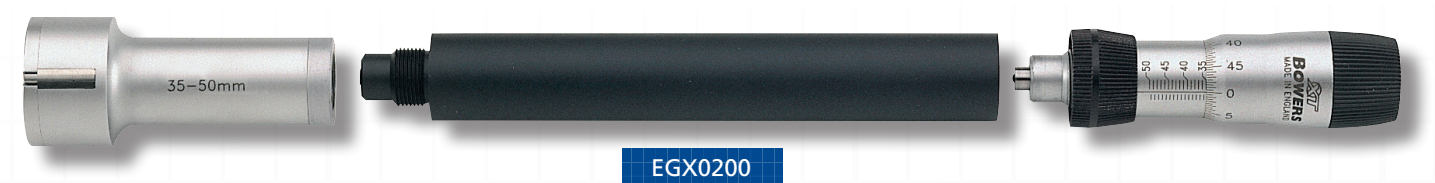
| XTA Standard: Individual instruments supplied with setting ring and UKAS |            |               |            |                   |         |              |                 |              |                     |
|--|------------|---------------|------------|-------------------|---------|--------------|-----------------|--------------|---------------------|
| Code No  | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) | Code No | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) |
| XTA20M   | 20-25      | 0.004         | 66         | 20.00             | XTA20i  | 3/4-1        | 0.00015         | 2.62         | 0.750               |
| XTA25M   | 25-35      | 0.004         | 66         | 35.00             | XTA25i  | 1-1 3/8      | 0.00015         | 2.62         | 1.375               |
| XTA35M   | 35-50      | 0.004         | 80         | 35.00             | XTA35i  | 1 3/8-2      | 0.00015         | 3.15         | 1.375               |
| XTA50M   | 50-65      | 0.005         | 80         | 65.00             | XTA50i  | 2-2 5/8      | 0.00020         | 3.15         | 2.625               |
| XTA65M   | 65-80      | 0.005         | 80         | 65.00             | XTA65i  | 2 5/8-3 1/4  | 0.00020         | 3.15         | 2.625               |
| XTA80M   | 80-100     | 0.005         | 100        | 80.00             | XTA80i  | 3 1/4-4      | 0.00020         | 3.94         | 3.250               |
| XTA100M  | 100-125    | 0.006         | 115        | 125.00            | XTA100i | 4-5          | 0.00025         | 4.53         | 5.000               |
| XTA125M  | 125-150    | 0.006         | 115        | 125.00            | XTA125i | 5-6          | 0.00025         | 4.53         | 5.000               |
| XTA150M  | 150-175    | 0.007         | 115        | 175.00            | XTA150i | 6-7          | 0.00030         | 4.53         | 7.000               |
| XTA175M  | 175-200    | 0.007         | 115        | 175.00            | XTA175i | 7-8          | 0.00030         | 4.53         | 7.000               |
| XTA200M  | 200-225    | 0.008         | 118        | 225.00            | XTA200i | 8-9          | 0.00030         | 4.65         | 9.000               |
| XTA225M  | 225-250    | 0.008         | 118        | 225.00            | XTA225i | 9-10         | 0.00030         | 4.65         | 1.375               |
| XTA250M  | 250-275    | 0.009         | 118        | 275.00            | XTA250i | 10-11        | 0.00035         | 4.65         | 11.000              |
| XTA275M  | 275-300    | 0.009         | 118        | 275.00            | XTA275i | 11-12        | 0.00035         | 4.65         | 11.000              |

# Analogue Bore Gauges

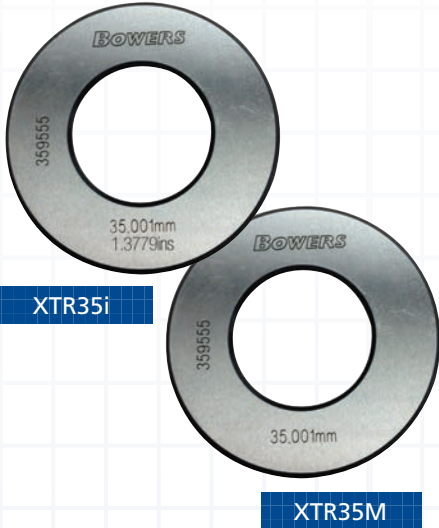
| XT Setting Rings |                   |         |                     |
|------------------|-------------------|---------|---------------------|
| Code No          | Setting Ring (mm) | Code No | Setting Ring (inch) |
| XTR3M            | 2.5               | XTR3i   | 0.1000              |
| XTR5M            | 4.00              | XTR5i   | 0.1600              |
| XTR7M            | 5.00              | XTR7i   | 0.2000              |
| XTR8M            | 8.00              | XTR8i   | 0.3125              |
| XTR12M           | 2.50              | XTR12i  | 0.500               |
| XTR20M           | 12.50             | XTR20i  | 0.750               |
| XTR35M           | 35.00             | XTR35i  | 1.375               |
| XTR65M           | 65.00             | XTR65i  | 2.625               |
| XTR80M           | 80.00             | XTR80i  | 3.250               |
| XTR125M          | 125.00            | XTR125i | 5.000               |
| XTR175M          | 175.00            | XTR175i | 7.000               |
| XTR225M          | 225.00            | XTR225i | 9.000               |
| XTR275M          | 275.00            | XTR275i | 11.000              |

| XTA Standard Sets: Supplied with individual instrument, setting rings and UKAS |            |                 |               |         |              |
|--|------------|-----------------|---------------|---------|--------------|
| Code No  | Range (mm) | Measuring Heads | Setting Rings | Code No | Range (inch) |
| SXTA5M   | 20-50      | 3               | 2             | SXTA5i  | 3/4-2        |
| SXTA6M   | 50-100     | 3               | 2             | SXTA6i  | 2-4          |
| SXTA7M   | 100-150    | 2               | 1             | SXTA7i  | 4-6          |
| SXTA8M   | 150-200    | 2               | 1             | SXTA8i  | 6-8          |

| Extensions |             |               |                   |                     |
|------------|-------------|---------------|-------------------|---------------------|
| Code No    | Length (mm) | Length (inch) | To Fit Heads (mm) | To Fit Heads (inch) |
| EGX0200    | 63          | 2.5           | 6-10              | 1/4-3/8             |
| EGX0400    | 76          | 3.0           | 10-12.5           | 3/8-1/2             |
| EGX0500    | 100         | 4.0           | 12.5-20           | 1/2-3/4             |
| EGX0001    | 150         | 6.0           | 20-50             | 3/4-2               |
| EGX0004    | 150         | 6.0           | 50-300            | 2-12                |



| XTA Micro Sets: Supplied with individual instrument, setting rings and UKAS |            |                 |               |         |              |
|---|------------|-----------------|---------------|---------|--------------|
| Code No   | Range (mm) | Measuring Heads | Setting Rings | Code No | Range (inch) |
| SMXTA1M   | 2-3        | 2               | 1             | SMXTA1i | 0.080-0.120  |
| SMXTA2M   | 3-6        | 3               | 2             | SMXTA2i | 0.120-0.250  |
| SMXTA3M   | 6-10       | 2               | 1             | SMXTA3i | 1/4-3/8      |
| SMXTA4M   | 10-20      | 3               | 2             | SMXTA4i | 3/8-3/4      |





# Digital Bore Gauges

## At a Glance

**Range:** 2-300mm  
0.080" – 12"

**Bluetooth** Non Bluetooth is available upon request



## Features

- Ergonomic design with larger and clearer LCD display
- Simple 2-button operation
- 4 preset memories
- Proximity output with built-in Bluetooth
- Bi-directional communication
- 2-6mm 2 point/ 6-300mm 3 point measurement
- Tungsten carbide measuring faces on all 3-point heads from 12.5mm
- Blind bore measurement from 2mm – 6mm and above 12.5mm (0.500")
- RS-232C output
- IP67 Electronics
- 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 and 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)
- Bore gauges manufactured according to DIN 863, part 4
- Supplied in a fitted case



# Digital Bore Gauges

## BORE GAUGING

**Bowers' Bluetooth XT-BT digital** internal micrometers offer an ergonomic design - including a larger and clearer LCD display - along with IP67 electronics protection, proximity output; allowing bi-directional communication giving greater flexibility for data acquisition and storage. 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.

The **Bowers XT-BT** range can be supplied as individual instruments or in complete sets, with UKAS certification of both measuring head and setting ring as standard.





# Digital Bore Gauges

| Technical Specification: Individual instruments supplied with digital display unit, head, ring and UKAS |            |               |            |                   |                   |              |                 |              |                     |                        |
|---|------------|---------------|------------|-------------------|-------------------|--------------|-----------------|--------------|---------------------|------------------------|
| Code No (with BT)   | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) | Code No (with BT) | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) | Display Unit (with BT) |
| XTD1M-BT  | 2-2.5      | 0.004         | 9          | 2.50              | XTD1i-BT          | 0.080-0.100  | 0.00015         | 0.35         | 0.1000              | XTDU2M-BT              |
| XTD2M-BT  | 2.5-3      | 0.004         | 9          | 2.50              | XTD2i-BT          | 0.100-0.120  | 0.00015         | 0.35         | 0.1000              | XTDU2M-BT              |
| XTD3M-BT  | 3-4        | 0.004         | 12         | 4.00              | XTD3i-BT          | 0.120-0.160  | 0.00015         | 0.47         | 0.1600              | XTDU2M-BT              |
| XTD4M-BT  | 4-5        | 0.004         | 18         | 4.00              | XTD4i-BT          | 0.160-0.200  | 0.00015         | 0.70         | 0.1600              | XTDU2M-BT              |
| XTD5M-BT  | 5-6        | 0.004         | 18         | 5.00              | XTD5i-BT          | 0.200-0.250  | 0.00015         | 0.70         | 0.2000              | XTDU2M-BT              |
| XTD6M-BT  | 6-8        | 0.004         | 58         | 8.00              | XTD6i-BT          | 1/4-5/16     | 0.00015         | 2.28         | 0.3125              | XTDU6M-BT              |
| XTD8M-BT  | 8-10       | 0.004         | 58         | 8.00              | XTD8i-BT          | 5/16-3/8     | 0.00015         | 2.28         | 0.3125              | XTDU6M-BT              |
| XTD10M-BT   | 10-12.5    | 0.004         | 58         | 12.50             | XTD10i-BT         | 3/8-1/2      | 0.00015         | 2.28         | 0.500               | XTDU10M-BT             |
| XTD12M-BT   | 12.5-16    | 0.004         | 62         | 12.50             | XTD12i-BT         | 1/2-5/8      | 0.00015         | 2.44         | 0.500               | XTDU10M-BT             |
| XTD16M-BT   | 16-20      | 0.004         | 62         | 20.00             | XTD16i-BT         | 5/8-3/4      | 0.00015         | 2.44         | 0.750               | XTDU10M-BT             |
| XTD20M-BT   | 20-25      | 0.004         | 66         | 20.00             | XTD20i-BT         | 3/4-1        | 0.00015         | 2.62         | 0.750               | XTDU20M-BT             |
| XTD25M-BT   | 25-35      | 0.004         | 66         | 35.00             | XTD25i-BT         | 1-1 3/8      | 0.00015         | 2.62         | 1.375               | XTDU20M-BT             |
| XTD35M-BT   | 35-50      | 0.004         | 80         | 35.00             | XTD35i-BT         | 1 3/8-2      | 0.00015         | 3.15         | 1.375               | XTDU20M-BT             |
| XTD50M-BT   | 50-65      | 0.005         | 80         | 65.00             | XTD50i-BT         | 2-2 5/8      | 0.00020         | 3.15         | 2.625               | XTDU50M-BT             |
| XTD65M-BT   | 65-80      | 0.005         | 80         | 65.00             | XTD65i-BT         | 2 5/8-3 1/4  | 0.00020         | 3.15         | 2.625               | XTDU50M-BT             |
| XTD80M-BT   | 80-100     | 0.005         | 100        | 80.00             | XTD80i-BT         | 3 1/4-4      | 0.00020         | 3.94         | 3.250               | XTDU50M-BT             |
| XTD100M-BT  | 100-125    | 0.006         | 115        | 125.00            | XTD100i-BT        | 4-5          | 0.00025         | 4.53         | 5.000               | XTDU100M-BT            |
| XTD125M-BT  | 125-150    | 0.006         | 115        | 125.00            | XTD125i-BT        | 5-6          | 0.00025         | 4.53         | 5.000               | XTDU100M-BT            |
| XTD150M-BT  | 150-175    | 0.007         | 115        | 175.00            | XTD150i-BT        | 6-7          | 0.00030         | 4.53         | 7.000               | XTDU100M-BT            |
| XTD175M-BT  | 175-200    | 0.007         | 115        | 175.00            | XTD175i-BT        | 7-8          | 0.00030         | 4.53         | 7.000               | XTDU100M-BT            |
| XTD200M-BT  | 200-225    | 0.008         | 118        | 225.00            | XTD200i-BT        | 8-9          | 0.00030         | 4.65         | 9.000               | XTDU200M-BT            |
| XTD225M-BT  | 225-250    | 0.008         | 118        | 225.00            | XTD225i-BT        | 9-10         | 0.00030         | 4.65         | 9.000               | XTDU200M-BT            |
| XTD250M-BT  | 250-275    | 0.009         | 118        | 275.00            | XTD250i-BT        | 10-11        | 0.00035         | 4.65         | 11.000              | XTDU200M-BT            |
| XTD275M-BT  | 275-300    | 0.009         | 118        | 275.00            | XTD275i-BT        | 11-12        | 0.00035         | 4.65         | 11.000              | XTDU200M-BT            |

# Digital Bore Gauges

| Sets: Supplied with one digital display unit, heads, rings and UKAS |            |                 |               |                   |              | Depth Stop |            |              |
|---|------------|-----------------|---------------|-------------------|--------------|------------|------------|--------------|
| Code No (with BT)   | Range (mm) | Measuring Heads | Setting Rings | Code No (with BT) | Range (inch) | Code No    | Range (mm) | Range (inch) |
| SXTD1M-BT   | 2-6        | 5               | 3             | SXTD1i-BT         | 0.080-0.250  | DSTOP01    | 2-6        | 0.080-0.25   |
| SXTD3M-BT   | 6-10       | 2               | 1             | SXTD3i-BT         | 1/4-3/8      |            |            |              |
| SXTD4M-BT   | 10-20      | 3               | 2             | SXTD4i-BT         | 3/8-3/4      |            |            |              |
| SXTD5M-BT   | 20-50      | 3               | 2             | SXTD5i-BT         | 3/4-2        |            |            |              |
| SXTD6M-BT   | 50-100     | 3               | 2             | SXTD6i-BT         | 2-4          |            |            |              |
| SXTD7M-BT   | 100-150    | 2               | 1             | SXTD7i-BT         | 4-6          |            |            |              |
| SXTD8M-BT   | 150-200    | 2               | 1             | SXTD8i-BT         | 6-8          |            |            |              |
| SXTD9M-BT   | 100-200    | 4               | 2             | SXTD9i-BT         | 4-8          |            |            |              |



The Sylvac Sylcom and Sylvac Anywhere apps allows communication with Bowers Bluetooth gauges. Android 8.0 IOS 10 Bluetooth 4.0 required

| Sets: Supplied with digital display units with each head, rings and UKAS |            |                 |               |                      |
|--|------------|-----------------|---------------|----------------------|
| Code No (with BT)  | Range (mm) | Measuring Heads | Setting Rings | Note                 |
| SXTD3U-BT  | 6-10       | 2               | 1             | with 2 display units |
| SXTD4U-BT  | 10-20      | 3               | 2             | with 3 display units |
| SXTD5U-BT  | 20-50      | 3               | 2             | with 3 display units |
| SXTD6U-BT  | 50-100     | 3               | 2             | with 3 display units |


| Extensions |             |               |                   |                     |
|------------|-------------|---------------|-------------------|---------------------|
| Code No    | Length (mm) | Length (inch) | To Fit Heads (mm) | To Fit Heads (inch) |
| EGX0200    | 63          | 2.5           | 6-10              | 1/4-3/8             |
| EGX0400    | 76          | 3.0           | 10-12.5           | 3/8-1/2             |
| EGX0500    | 100         | 4.0           | 12.5-20           | 1/2-3/4             |
| EGX0001    | 150         | 6.0           | 20-50             | 3/4-2               |
| EGX0004    | 150         | 6.0           | 50-300            | 2-12                |

**Note:** BT denotes Bluetooth. Non-BT available upon request




# Digital Pistol Grip Bore Gauge

At a Glance




Range: 2-300mm  
0.080" – 12"




Bluetooth

Non Bluetooth is available upon request




IP67



WiFi

Option



RS232

## Features

- Ergonomic design with larger and clearer LCD swivel display
- IP67 Electronics
- Simple 2-button operation
- 4 preset memories
- Proximity output with built-in Bluetooth
- Bi-directional communication
- Self-centring heads
- 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 for deep hole measurement
- Setting rings included with individual instruments and sets
- UKAS certificates supplied as standard with all setting rings and 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)
- Bore gauges manufactured according to DIN 863, part 4
- Supplied in a fitted case

Bowers' XTH Holematic offers an ergonomic design with a larger and clearer LCD display, along with IP67 electronics protection, proximity output with built-in Bluetooth; allowing bi-directional communication giving greater flexibility for data acquisition and storage. 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.


The Bowers XT3-BT range can be supplied as individual instruments or in complete sets, with UKAS certification of both measuring head and setting ring as standard.


# Digital Pistol Grip Bore Gauge

BORE GAUGING

Technical specification: Individual instruments supplied with digital pistol grip, head, ring and UKAS

| Code No (with BT) | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) | Code No (with BT) | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) | Display Unit (with BT) |
|-------------------|------------|---------------|------------|-------------------|-------------------|--------------|-----------------|--------------|---------------------|------------------------|
| XTH1M-BT          | 2-2.5      | 0.004         | 9          | 2.50              | XTH1i-BT          | 0.080-0.100  | 0.00015         | 0.35         | 0.1000              | XTPG01-BT              |
| XTH2M-BT          | 2.5-3      | 0.004         | 9          | 2.50              | XTH2i-BT          | 0.100-0.120  | 0.00015         | 0.35         | 0.1000              | XTPG01-BT              |
| XTH3M-BT          | 3-4        | 0.004         | 12         | 4.00              | XTH3i-BT          | 0.120-0.160  | 0.00015         | 0.47         | 0.1600              | XTPG01-BT              |
| XTH4M-BT          | 4-5        | 0.004         | 18         | 4.00              | XTH4i-BT          | 0.160-0.200  | 0.00015         | 0.70         | 0.1600              | XTPG01-BT              |
| XTH5M-BT          | 5-6        | 0.004         | 18         | 5.00              | XTH5i-BT          | 0.200-0.250  | 0.00015         | 0.70         | 0.2000              | XTPG01-BT              |
| XTH6M-BT          | 6-8        | 0.004         | 58         | 8.00              | XTH6i-BT          | 1/4-5/16     | 0.00015         | 2.28         | 0.3125              | XTPG02-BT              |
| XTH8M-BT          | 8-10       | 0.004         | 58         | 8.00              | XTH8i-BT          | 5/16-3/8     | 0.00015         | 2.28         | 0.3125              | XTPG02-BT              |
| XTH10M-BT         | 10-12.5    | 0.004         | 58         | 12.50             | XTH10i-BT         | 3/8-1/2      | 0.00015         | 2.28         | 0.500               | XTPG02-BT              |
| XTH12M-BT         | 12.5-16    | 0.004         | 62         | 12.50             | XTH12i-BT         | 1/2-5/8      | 0.00015         | 2.44         | 0.500               | XTPG02-BT              |
| XTH16M-BT         | 16-20      | 0.004         | 62         | 20.00             | XTH16i-BT         | 5/8-3/4      | 0.00015         | 2.44         | 0.750               | XTPG02-BT              |
| XTH20M-BT         | 20-25      | 0.004         | 66         | 20.00             | XTH20i-BT         | 3/4-1        | 0.00015         | 2.62         | 0.750               | XTPG03-BT              |
| XTH25M-BT         | 25-35      | 0.004         | 66         | 35.00             | XTH25i-BT         | 1-1 3/8      | 0.00015         | 2.62         | 1.375               | XTPG03-BT              |
| XTH35M-BT         | 35-50      | 0.004         | 80         | 35.00             | XTH35i-BT         | 1 3/8-2      | 0.00015         | 3.15         | 1.375               | XTPG03-BT              |
| XTH50M-BT         | 50-65      | 0.005         | 80         | 65.00             | XTH50i-BT         | 2-2 5/8      | 0.00020         | 3.15         | 2.625               | XTPG03-BT              |
| XTH65M-BT         | 65-80      | 0.005         | 80         | 65.00             | XTH65i-BT         | 2 5/8-3 1/4  | 0.00020         | 3.15         | 2.625               | XTPG03-BT              |
| XTH80M-BT         | 80-100     | 0.005         | 100        | 80.00             | XTH80i-BT         | 3 1/4-4      | 0.00020         | 3.35         | 3.250               | XTPG03-BT              |
| XTH100M-BT        | 100-125    | 0.006         | 115        | 125.00            | XTH100i-BT        | 4-5          | 0.00025         | 3.94         | 5.000               | XTPG04-BT              |
| XTH125M-BT        | 125-150    | 0.006         | 115        | 125.00            | XTH125i-BT        | 5-6          | 0.00025         | 3.94         | 5.000               | XTPG04-BT              |
| XTH150M-BT        | 150-175    | 0.007         | 115        | 175.00            | XTH150i-BT        | 6-7          | 0.00030         | 3.94         | 7.000               | XTPG04-BT              |
| XTH175M-BT        | 175-200    | 0.007         | 115        | 175.00            | XTH175i-BT        | 7-8          | 0.00030         | 3.94         | 7.000               | XTPG04-BT              |
| XTH200M-BT        | 200-225    | 0.008         | 118        | 225.00            | XTH200i-BT        | 8-9          | 0.00030         | 3.94         | 9.000               | XTPG04-BT              |
| XTH225M-BT        | 225-250    | 0.008         | 118        | 225.00            | XTH225i-BT        | 9-10         | 0.00030         | 4.05         | 9.000               | XTPG04-BT              |
| XTH250M-BT        | 250-275    | 0.009         | 118        | 275.00            | XTH250i-BT        | 10-11        | 0.00035         | 4.05         | 11.000              | XTPG04-BT              |
| XTH275M-BT        | 275-300    | 0.009         | 118        | 275.00            | XTH275i-BT        | 11-12        | 0.00035         | 4.05         | 11.000              | XTPG04-BT              |

 Go back to [Contents](#)

 BOWERS GROUP

Bowers Group | [sales@bowersgroup.co.uk](mailto:sales@bowersgroup.co.uk) | [www.bowersgroup.co.uk](http://www.bowersgroup.co.uk)

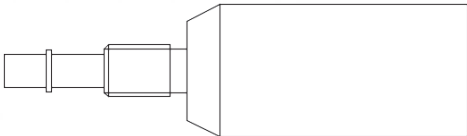
# Digital Pistol Grip Bore Gauge

Sets: Supplied with digital pistol grip, heads, rings and UKAS

| Code No (with BT) | Range (mm) | Measuring Heads | Setting Rings | Code No (with BT) | Range (inch) |
|-------------------|------------|-----------------|---------------|-------------------|--------------|
| SXTH1M-BT         | 2-6        | 5               | 3             | SXTH1i-BT         | 0.080-0.250  |
| SXTH3M-BT         | 6-10       | 2               | 1             | SXTH3i-BT         | 1/4-3/8      |
| SXTH4M-BT         | 10-20      | 3               | 2             | SXTH4i-BT         | 3/8-3/4      |
| SXTH5M-BT         | 20-50      | 3               | 2             | SXTH5i-BT         | 3/4-2        |
| SXTH6M-BT         | 50-100     | 3               | 2             | SXTH6i-BT         | 2-4          |
| SXTH7M-BT         | 100-150    | 2               | 1             | SXTH7i-BT         | 4-6          |
| SXTH8M-BT         | 150-200    | 2               | 1             | SXTH8i-BT         | 6-8          |

Large Sets: Supplied with digital pistol grip, heads, rings and UKAS

| Code No (with BT) | Range (mm) | Measuring Heads | Setting Rings | Code No (with BT) | Range (inch) |
|-------------------|------------|-----------------|---------------|-------------------|--------------|
| SXTH10M-BT        | 6-20       | 5               | 3             | SXTH10i-BT        | 1/4-3/4      |
| SXTH11M-BT        | 20-100     | 6               | 4             | SXTH11i-BT        | 3/4-4        |
| SXTH9M-BT         | 100-200    | 4               | 2             | SXTH9i-BT         | 4-8          |



XTHADAPTOR 6-10mm Head Adapter required for the use of XTPG02-BT with 6-8 and 8-10mm heads if display unit purchased separately.



# Digital Pistol Grip Bore Gauge

Extensions

| Code No | Length (mm) | Length (inch) | To Fit Heads (mm) | To Fit Heads (inch) |
|---------|-------------|---------------|-------------------|---------------------|
| EGX0200 | 63          | 2.5           | 6-10              | 1/4-3/8             |
| EGX0400 | 76          | 3.0           | 10-12.5           | 3/8-1/2             |
| EGX0500 | 100         | 4.0           | 12.5-20           | 1/2-3/4             |
| EGX0001 | 150         | 6.0           | 20-50             | 3/4-2               |
| EGX0004 | 150         | 6.0           | 50-300            | 2-12                |

Data Transmission

| Code No     | Description                            |
|-------------|--|
| 30-926-6721 | Sylvac Proximity USB Cable             |
| 30-981-7100 | USB Dongle BT Smart for PC/D300S/D400S |



The Sylvac Sylcom and Sylvac Anywhere apps allows communication with Bowers Bluetooth gauges.  
Android 8.0 IOS 10 Bluetooth 4.0 required



# MicroGauge 2-Point Bore Gauge

## At a Glance

 Range: 1-10mm

## Features

- Slimline digital display
- Switchable resolution 0.01/0.001/0.0005mm
- Simple 2-button operation
- Clear LCD display
- Data output: RS232 / USB proximity sensor
- Linearity: Diameter 1.0-1.5 max 2% of measuring travel, min 0.001mm.  
Diameter 1.5-10 max 1% of measuring travel, min 0.001mm
- Repeatability: 0.001mm
- Available as individual instruments or sets
- UKAS-certificates as standard with all setting rings
- Hard-chromed ball-contacts
- Depth-stops available

The **MicroGauge 2-point bore gauging** system has been designed specifically for the measurement of small bores between 1.0-10.0mm. Featuring a digital readout and extremely compact overall dimensions, the MicroGauge is truly a pocket-sized instrument. The digital readout and measuring head together are about the same size and format as a ballpoint pen which represents a big advantage for those needing to measure small precision parts and who need to have their gauge with them all the time. The clear LCD display is easily set using only two buttons and results are shown with switchable 0.01/0.001/0.0005mm resolution. Data transfer is via Proximity-RS232 or Proximity-USB output. The measuring heads are equipped with spherical hard-chromed contact points and are set in appropriate setting rings. Like all Bowers bore gauging products the MicroGauge system is available as individual instruments or as full sets. All setting rings are supplied as standard with UKAS certification.



# MicroGauge 2-Point Bore Gauge

## Technical Specification: Individual measuring heads, readouts and setting rings

| Individual Set Code | Range (mm) | Range (inch) | Measuring Depth (mm) | Digital Readout | Head Code No | Cone | Setting Ring | Setting Ring (mm) |
|---------------------|------------|--------------|----------------------|-----------------|--------------|------|--------------|-------------------|
| MGS11               | 0.95-1.15  | 0.037-0.045  | 0.6-11               | MGU1            | MG011W       | MGC1 | MGR100       | 1.00              |
| MGS12               | 1.07-1.25  | 0.042-0.049  | 0.6-11               | MGU1            | MG012W       | MGC1 | MGR110       | 1.10              |
| MGS13               | 1.17-1.35  | 0.046-0.053  | 0.6-11               | MGU1            | MG013W       | MGC1 | MGR120       | 1.20              |
| MGS14               | 1.27-1.45  | 0.050-0.057  | 0.6-11               | MGU1            | MG014W       | MGC1 | MGR130       | 1.30              |
| MGS15               | 1.37-1.55  | 0.054-0.061  | 0.6-11               | MGU1            | MG015W       | MGC1 | MGR140       | 1.40              |
| MGS16               | 1.50-1.90  | 0.059-0.075  | 0.9-17               | MGU2            | MG016W       | MGC2 | MGR175       | 1.75              |
| MGS17               | 1.80-2.20  | 0.071-0.087  | 0.9-17               | MGU2            | MG017W       | MGC2 | MGR200       | 2.00              |
| MGS18               | 2.05-2.45  | 0.081-0.096  | 0.9-17               | MGU2            | MG018W       | MGC2 | MGR225       | 2.25              |
| MGS19               | 2.25-2.75  | 0.089-0.108  | 1.2-22               | MGU2            | MG019W       | MGC3 | MGR250       | 2.50              |
| MGS20               | 2.50-3.00  | 0.098-0.118  | 1.2-22               | MGU2            | MG020W       | MGC3 | MGR275       | 2.75              |
| MGS21               | 2.75-3.25  | 0.108-0.128  | 1.2-22               | MGU2            | MG021W       | MGC3 | MGR300       | 3.00              |
| MGS22               | 3.00-3.50  | 0.118-0.138  | 1.2-22               | MGU2            | MG022W       | MGC3 | MGR325       | 3.25              |
| MGS23               | 3.25-3.75  | 0.128-0.148  | 1.2-22               | MGU2            | MG023W       | MGC3 | MGR350       | 3.50              |
| MGS24               | 3.50-4.00  | 0.138-0.157  | 1.2-22               | MGU2            | MG024W       | MGC3 | MGR375       | 3.75              |
| MGS25               | 3.75-4.25  | 0.148-0.167  | 1.2-22               | MGU2            | MG025W       | MGC3 | MGR400       | 4.00              |
| MGS26               | 3.65-4.35  | 0.144-0.171  | 2.0-40               | MGU2            | MG026W       | MGC4 | MGR400       | 4.00              |
| MGS27               | 4.15-4.85  | 0.163-0.191  | 2.0-40               | MGU2            | MG027W       | MGC4 | MGR450       | 4.50              |
| MGS28               | 4.65-5.35  | 0.183-0.211  | 2.0-40               | MGU2            | MG028W       | MGC4 | MGR500       | 5.00              |
| MGS29               | 5.15-5.85  | 0.203-0.230  | 2.0-40               | MGU2            | MG029W       | MGC4 | MGR550       | 5.50              |
| MGS30               | 5.65-6.35  | 0.222-0.250  | 2.0-40               | MGU2            | MG030W       | MGC4 | MGR600       | 6.00              |
| MGS31               | 6.15-6.85  | 0.242-0.270  | 2.0-40               | MGU2            | MG031W       | MGC4 | MGR650       | 6.50              |
| MGS32               | 6.65-7.35  | 0.262-0.290  | 2.0-40               | MGU2            | MG032W       | MGC4 | MGR700       | 7.00              |
| MGS33               | 7.15-7.85  | 0.281-0.309  | 2.0-40               | MGU2            | MG033W       | MGC4 | MGR750       | 7.50              |
| MGS34               | 7.65-8.35  | 0.301-0.329  | 2.0-40               | MGU2            | MG034W       | MGC4 | MGR800       | 8.00              |
| MGS35               | 8.15-8.85  | 0.321-0.349  | 2.0-50               | MGU2            | MG035W       | MGC4 | MGR850       | 8.50              |
| MGS36               | 8.65-9.35  | 0.340-0.368  | 2.0-50               | MGU2            | MG036W       | MGC4 | MGR900       | 9.00              |
| MGS37               | 9.15-9.85  | 0.360-0.388  | 2.0-50               | MGU2            | MG037W       | MGC4 | MGR950       | 9.50              |
| MGS38               | 9.65-10.35 | 0.380-0.408  | 2.0-50               | MGU2            | MG038W       | MGC4 | MGR1000      | 10.00             |

# MicroGauge 2-Point Bore Gauge

SETS: including digital readout, measuring heads and setting rings with UKAS certificate

| Code No | Range (mm) |
|---------|------------|
| SMG001M | 0.95-1.55  |
| SMG002M | 1.50-2.45  |
| SMG003M | 2.25-4.25  |
| SMG004M | 3.65-6.35  |
| SMG005M | 6.15-10.35 |

Large SETS: including digital readout, measuring heads and setting rings with UKAS certificate

| Code No | Range (mm) |
|---------|------------|
| SMG010M | 0.95-2.45  |
| SMG011M | 1.50-4.25  |
| SMG012M | 2.25-6.35  |

## Standard Depth Stop

| Code No | Range (mm) |
|---------|------------|
| MGSTOP1 | 0.95-1.55  |
| MGSTOP2 | 1.50-2.45  |
| MGSTOP3 | 2.25-4.25  |
| MGSTOP4 | 3.65-6.35  |
| MGSTOP5 | 6.15-10.35 |

## Stands

| Code No | Description            |
|---------|------------------------|
| EST0001 | MicroGauge Bench Stand |
| FTS001  | Floating Table Stand   |
| MGSA    | MicroGauge Adapter     |

## Data Transmission

| Code No     | Description                           |
|-------------|---------------------------------------|
| 30-926-6721 | Sylvac Proximity USB Cable            |
| 25-604-064  | Wireless Proximity Module Transmitter |
| 25-604-001  | USB Receiver                          |



# Indicator/ Microgauge Floating Table Stand

The Bowers Floating Table Stand is designed to lift the product up to the measuring instrument for speed, accuracy and convenience.

This robust floating table ensures that the product is level with the measuring instrument, enabling fast, accurate measurement, as well as convenience.

## Features

- Floating table stand
- Optional microgauge adaptor




## Indicator / Microgauge Floating Table Stand


| Code No | Description          |
|---------|----------------------|
| FTS001  | Floating Table Stand |
| MGSA    | MicroGauge Adapter   |

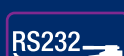




# Digital Lever Bore Gauge

## At a Glance

**Range:** 6-100mm

**Bluetooth** Non Bluetooth is available upon request



## Features

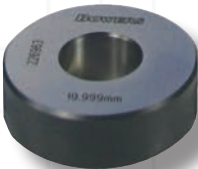
- Excellent for vertical bore measurement
- Large easy-to-read swivel display (20-100 sizes only)
- 2 preset memories
- RS-232C output
- Self-centering heads
- Constant measuring pressure
- Fast, accurate measurement
- Resolution 0.001mm (0.00005")
- Tungsten carbide measuring faces on all 3-point heads 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
- BT is standard below 20mm. BT option also available on larger sizes.

The robust **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 IP67 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 100mm.



XTL16M-BT



# Digital Lever Bore Gauge

## Individual instruments: Supplied with head, ring and UKAS certificates

| Code No   | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) | Code No   | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) |
|-----------|------------|---------------|------------|-------------------|-----------|--------------|-----------------|--------------|---------------------|
| XTL6M-BT  | 6-8        | 0.004         | 58         | 8.00              | XTL6i-BT  | 1/4-5/16     | 0.00015         | 2.28         | 0.312               |
| XTL8M-BT  | 8-10       | 0.004         | 58         | 8.00              | XTL8i-BT  | 5/16-3/8     | 0.00015         | 2.28         | 0.312               |
| XTL10M-BT | 10-12.5    | 0.004         | 58         | 12.50             | XTL10i-BT | 3/8-1/2      | 0.00015         | 2.28         | 0.500               |
| XTL12M-BT | 12.5-16    | 0.004         | 62         | 12.50             | XTL12i-BT | 1/2-5/8      | 0.00015         | 2.44         | 0.500               |
| XTL16M-BT | 16-20      | 0.004         | 62         | 20.00             | XTL16i-BT | 5/8-3/4      | 0.00015         | 2.44         | 0.750               |
| XTL20M    | 20-25      | 0.004         | 66         | 20.00             | XTL20i    | 3/4-1        | 0.00015         | 2.62         | 0.750               |
| XTL25M    | 25-35      | 0.004         | 66         | 35.00             | XTL25i    | 1-1 3/8      | 0.00015         | 2.62         | 1.375               |
| XTL35M    | 35-50      | 0.004         | 80         | 35.00             | XTL35i    | 1 3/8-2      | 0.00015         | 3.15         | 1.375               |
| XTL50M    | 50-65      | 0.005         | 80         | 65.00             | XTL50i    | 2-2 5/8      | 0.00020         | 3.15         | 2.625               |
| XTL65M    | 65-80      | 0.005         | 80         | 65.00             | XTL65i    | 2 5/8-3 1/4  | 0.00020         | 3.15         | 2.625               |
| XTL80M    | 80-100     | 0.005         | 85         | 80.00             | XTL80i    | 3 1/4-4      | 0.00020         | 3.35         | 3.250               |

## Sets: Supplied with heads, rings and UKAS certificates

| Code No   | Range (mm) | Description        | Range (inch) | Code No   |
|-----------|------------|--------------------|--------------|-----------|
| SXTL3M-BT | 6-10       | Mini Indicator     | 1/4-3/8      | SXTL3i-BT |
| SXTL4M-BT | 10-20      | Mini Indicator     | 3/8-3/4      | SXTL4i-BT |
| SXTL5M    | 20-50      | Standard Indicator | 3/4-2        | SXTL5i    |
| SXTL6M    | 50-100     | Standard Indicator | 2-4          | SXTL6i    |

## 20-100mm Lever Gauge Data Transmission

| Code No     | Description                           |
|-------------|---------------------------------------|
| 30-926-6721 | Sylvac Proximity USB Cable            |
| 25-604-064  | Wireless Proximity Module Transmitter |
| 25-604-001  | USB Receiver                          |



SXTL4M-BT

# XTHSY Pistol Grip Bore Gauge with Indicator

## At a Glance

 Range: From 6-100mm

 Non Bluetooth is available upon request

 WiFi Option

 RS232

## Features

- Standard: DIN 863 - Part 4
- Ergonomically designed pistol grip body
- Functions include 2 pre-set memories, tolerance indicator lights and mm/inch conversion
- Proximity RS-232 and Powered Opto Output facility
- Self centring measuring heads with tungsten carbide contact points above 12.5mm
- Setting rings provided with each instrument complete with traceable certification
- Blind bore measurement on all instruments above 12.5mm

Blind bore measurement on all instruments above 12.5mm

The XTHSY Pistol Grip bore gauge is a useful option for those requiring pistol ergonomics with a large digital indicator.

The LCD digital indicator fits into a standard 8mm clamping shaft at the rear of the pistol-grip. Pistols of this type are available for all measuring heads in the XT range.



| Boxed Sets |                   |            |            |               |
|------------|-------------------|------------|------------|---------------|
| Code No    | Code No (with BT) | Range (mm) | Depth (mm) | Accuracy (mm) |
| SXTHSY3M   | SXTHSY3M-BT       | 6-10       | 58         | 0.004         |
| SXTHSY4M   | SXTHSY4M-BT       | 10-20      | 62         | 0.004         |
| SXTHSY5M   | SXTHSY5M-BT       | 20-50      | 66         | 0.004         |
| SXTHSY6M   | SXTHSY6M-BT       | 50-100     | 82         | 0.005         |
| SXTHSY10M  | SXTHSY10M-BT      | 6-20       | 58-62      | 0.004         |
| SXTHSY11M  | SXTHSY11M-BT      | 20-100     | 66-82      | 0.005         |

| Data Transmission |                            |
|-------------------|----------------------------|
| Code No           | Description                |
| 30-926-6821       | Powered Opto / USB         |
| 30-926-6721       | Sylvac Proximity USB Cable |

Note: BT denotes Bluetooth

## CASE STUDY

## BORE GAUGING

# Mollart Streamlines Manufacture of Hydraulic Manifolds with the Bowers XTL Digital Lever Bore Gauge

The Mollart Engineering group of companies is a precision mechanical engineering business with an international reputation...

With headquarters in Surrey and a production facility in South Wales, the group also has a high level of expertise as a subcontract machinist and fabricator. They carry out multi-axis machining on complex, often high value components, along with part fabrication and component assembly. Mollart works across a wide sector of industries including aerospace and defence, automotive, oil and gas, subsea, mould and die, nuclear, medical, semiconductor and telecommunications.



## High Precision Measurement for Hydraulic Manifolds

Mollart Engineering has recently purchased a **Bowers XTL digital lever bore gauge** in order to measure Inconel 718 hydraulic manifolds used at extremely high pressures of 20,000psi in the oil and gas industry. The piston bores of the Inconel manifolds have a strict size tolerance and 16 micro-inch surface finish requiring high precision measurement to adhere to strict industry tolerances. Because the manifolds are working under extreme conditions, the surface finish and exact size of the piston bores are critical for the function and service life of the components manufactured.

Before Mollart purchased the Bowers XTL digital lever bore gauge, they were using a bore comparator to measure the size of the bores. Unfortunately the device was leaving scratches in the bore that contravened the surface requirement finish. This meant that a subsequent manufacturing operation was required after inspection to achieve the desired surface finish.

## Robust Lever Range for Vertical Bore Measurement

Bowers Group supplied Mollart Engineering with a Bowers XTL digital lever bore gauge with a 3-point spherical head. The robust lever range is perfect for the vertical bore measurement required. Paul Rowland, Project Manager at Mollart Engineering Ltd said:

“The Bowers XTL digital lever bore gauge has enabled us to streamline our process of manufacturing Inconel hydraulic manifolds. Previous problems with the old bore comparator leaving scratches on the component has now been solved, allowing us to remove the additional job of eliminating the scratches from our process. We are now able to produce accurate bore size measurements to meet strict tolerances with regard to size and surface finish.”


## XTL Digital Lever Bore Gauge from Bowers Group


The XTL Digital Lever Bore Gauge 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 also be provided with IP65 rated digital indicators, which render the device resistant to coolant, water and airborne particles. A 'wireless' gauge module is also available, which enables cable free communication with remote data collectors. With a measuring range of 6 – 100mm and simple 2-button operation, the XTL Digital Lever Bore Gauge is excellent for vertical bore measurement and provides fast, accurate measurement.




# Electronic Bore Gauge - Ultima

## At a Glance

 Range: 2-310mm  
0.080"-12.000"

 WiFi  
Option

 RS232

## Features

- UKAS certificates standard for all measuring heads and setting rings
- 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 2 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
- Alternative displays available on request
- Available without digital readout unit (if not required)
- Interchangeable probe option, to allow use of other manufacturers probes and displays

Bowers Ultima Bore Gauge offers a choice of resolutions up to 0.0001mm. Featuring the 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.



# Electronic Bore Gauge Ultima

## BORE GAUGING

### Ultima Specification

| Code No | Range (mm) | Range (inch) | Accuracy (mm) | Accuracy (inch) | Repeatability (mm) | Repeatability (inch) | Measuring Depth (mm) | Measuring Depth (inch) | Code No | Setting Ring (mm) | Setting Ring (inch) | Holder Type |
|---------|------------|--------------|---------------|-----------------|--------------------|----------------------|----------------------|------------------------|---------|-------------------|---------------------|-------------|
| ULH6    | 2.0-2.5    | 0.078-0.098  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 9                    | 0.35                   | ULR2    | 2.5               | 0.098               | PH2D        |
| ULH7    | 2.5-3.0    | 0.098-0.118  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 9                    | 0.35                   | ULR2    | 2.5               | 0.098               | PH2D        |
| ULH8    | 3.0-4.0    | 0.118-0.157  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 12                   | 0.47                   | ULR4    | 4                 | 0.157               | PH2D        |
| ULH9    | 4.0-5.0    | 0.157-0.197  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 18                   | 0.71                   | ULR5    | 5                 | 0.197               | PH2D        |
| ULH10   | 5.0-6.0    | 0.197-0.236  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 18                   | 0.71                   | ULR5    | 5                 | 0.197               | PH2D        |
| ULH11   | 6-8        | 0.236-0.315  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 60                   | 2.36                   | ULR8    | 8                 | 0.315               | PH3D        |
| ULH12   | 8-10       | 0.315-0.393  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 60                   | 2.36                   | ULR8    | 8                 | 0.315               | PH3D        |
| ULH13   | 10-12      | 0.393-0.472  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR12   | 12                | 0.472               | PH3D        |
| ULH14   | 12-14      | 0.472-0.550  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR12   | 12                | 0.472               | PH3D        |
| ULH15   | 14-17      | 0.550-0.670  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR17   | 17                | 0.670               | PH3D        |
| ULH16   | 17-20      | 0.670-0.787  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR17   | 17                | 0.670               | PH3D        |
| ULH17   | 20-24      | 0.787-0.945  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 69                   | 2.72                   | ULR24   | 24                | 0.945               | PH4D        |
| ULH18   | 24-28      | 0.945-1.100  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 69                   | 2.72                   | ULR24   | 24                | 0.945               | PH4D        |
| ULH19   | 28-32      | 1.100-1.260  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 69                   | 2.72                   | ULR32   | 32                | 1.260               | PH4D        |
| ULH20   | 32-38      | 1.260-1.500  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 72                   | 2.83                   | ULR32   | 32                | 1.260               | PH4D        |
| ULH21   | 38-44      | 1.500-1.730  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 72                   | 2.83                   | ULR44   | 44                | 1.730               | PH4D        |
| ULH22   | 44-50      | 1.730-1.970  | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 72                   | 2.83                   | ULR44   | 44                | 1.730               | PH4D        |
| ULH23   | 50-60      | 1.970-2.360  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR60   | 60                | 2.360               | PH4D        |
| ULH24   | 60-70      | 2.360-2.756  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR60   | 60                | 2.360               | PH4D        |
| ULH25   | 70-80      | 2.756-3.150  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR80   | 80                | 3.150               | PH4D        |
| ULH26   | 80-90      | 3.150-3.543  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR80   | 80                | 3.150               | PH4D        |
| ULH27   | 90-100     | 3.543-3.940  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR100  | 100               | 3.940               | PH4D        |
| ULH28   | 100-110    | 3.940-4.330  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR100  | 100               | 3.940               | PH5D        |
| ULH29   | 110-120    | 4.330-4.725  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR120  | 120               | 4.725               | PH5D        |
| ULH30   | 120-130    | 4.725-5.120  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR120  | 120               | 4.725               | PH5D        |
| ULH31   | 130-140    | 5.120-5.510  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR140  | 140               | 5.510               | PH5D        |
| ULH32   | 140-150    | 5.510-5.900  | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR140  | 140               | 5.510               | PH5D        |

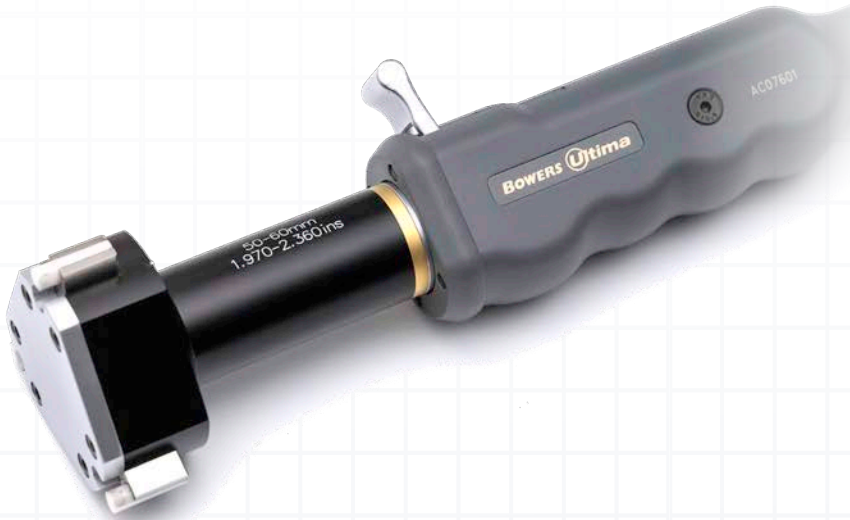
# Electronic Bore Gauge Ultima

## Ultima Specification ...continued

| Code No | Range (mm) | Range (inch)  | Accuracy (mm) | Accuracy (inch) | Repeatability (mm) | Repeatability (inch) | Measuring Depth (mm) | Measuring Depth (inch) | Code No | Setting Ring (mm) | Setting Ring (inch) | Holder Type |
|---------|------------|---------------|---------------|-----------------|--------------------|----------------------|----------------------|------------------------|---------|-------------------|---------------------|-------------|
| ULH33   | 150-160    | 5.900-6.300   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR160  | 160               | 6.300               | PH5D        |
| ULH34   | 160-170    | 6.300-6.690   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR160  | 160               | 6.300               | PH5D        |
| ULH35   | 170-180    | 6.690-7.090   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR180  | 180               | 7.090               | PH5D        |
| ULH36   | 180-190    | 7.090-7.480   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR180  | 180               | 7.090               | PH5D        |
| ULH37   | 190-200    | 7.480-7.875   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR200  | 200               | 7.875               | PH5D        |
| ULH38   | 200-210    | 7.875-8.270   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR200  | 200               | 7.875               | PH5D        |
| ULH39   | 210-220    | 8.270-8.661   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR220  | 220               | 8.661               | PH5D        |
| ULH40   | 220-230    | 8.661-9.055   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR220  | 220               | 8.661               | PH5D        |
| ULH41   | 230-240    | 9.055-9.449   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR240  | 240               | 9.449               | PH5D        |
| ULH42   | 240-250    | 9.449-9.842   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR240  | 240               | 9.449               | PH5D        |
| ULH43   | 250-260    | 9.842-10.236  | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR260  | 260               | 10.236              | PH5D        |
| ULH44   | 260-270    | 10.236-10.630 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR260  | 260               | 10.236              | PH5D        |
| ULH45   | 270-280    | 10.630-11.024 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR280  | 280               | 11.024              | PH5D        |
| ULH46   | 280-290    | 11.024-11.417 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR280  | 280               | 11.024              | PH5D        |
| ULH47   | 290-300    | 11.417-11.811 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR300  | 300               | 11.811              | PH5D        |
| ULH48   | 300-310    | 11.811-12.200 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR300  | 300               | 11.811              | PH5D        |

## Ultima Holders

| Code No | Range (mm) | Description   |
|---------|------------|---------------|
| PH2D    | 2-6        | With Probe    |
| PH3D    | 6-20       | With Probe    |
| PH4D    | 20-100     | With Probe    |
| PH5D    | 100-310    | With Probe    |
| PW2     | 2-6        | Without Probe |
| PW3     | 6-20       | Without Probe |
| PW4     | 20-100     | Without Probe |
| PW5     | 100-310    | Without Probe |



# Electronic Bore Gauge Ultima

## Ultima Sets

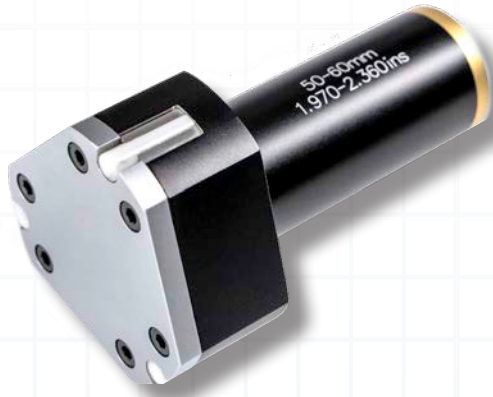
| Code No  | Range (mm) | Description                 |
|----------|------------|-----------------------------|
| USET2D   | 2-6        | With Sylvac D62S display    |
| USET3D   | 6-10       | With Sylvac D62S display    |
| USET4D   | 10-20      | With Sylvac D62S display    |
| USET7D   | 6-20       | With Sylvac D62S display    |
| USET8D   | 20-50      | With Sylvac D62S display    |
| USET9D   | 50-100     | With Sylvac D62S display    |
| USET10D  | 20-100     | With Sylvac D62S display    |
| USET2DW  | 2-6        | Without Sylvac D62S display |
| USET3DW  | 6-10       | Without Sylvac D62S display |
| USET4DW  | 10-20      | Without Sylvac D62S display |
| USET7DW  | 6-20       | Without Sylvac D62S display |
| USET8DW  | 20-50      | Without Sylvac D62S display |
| USET9DW  | 50-100     | Without Sylvac D62S display |
| USET10DW | 20-100     | Without Sylvac D62S display |

## Ultima Standard Extensions

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

## Ultima Short Extensions


| Code No | Length (mm) | To Fit Heads (mm) |
|---------|-------------|-------------------|
| UXSH4   | 50          | 20-50             |
| UXSH5   | 50          | 50+               |








# XT500 Large Diameter 3-point Bore Gauge

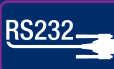
At a Glance

Range: 300-500mm

Bluetooth® Non Bluetooth is available upon request

IP67

WiFi® Option

RS232

## Features

- New constant-force digital readout
- Single 300mm setting ring covers full range
- Radiussed anvils of tool-steel for optimum centering
- Accuracy: 15µm
- Repeatability: 3µm
- IP67 electronics
- Proximity output with built-in Bluetooth
- Resolution 0.01/0.001mm. Metric/inch switchable
- Fast accurate measurement
- Extensions available for deeper bores
- UKAS certificate with setting ring
- Certificate of conformity with bore gauge
- Supplied in a fitted case

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 300-325mm 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 300mm setting ring is required to set the gauge for all diameters in the full 300-500mm range of the instrument.



# XT500 Large Diameter 3-point Bore Gauge

## BORE GAUGING

**Individual instruments:** Supplied with digital display unit, measuring head with exchangeable anvils and setting ring with UKAS certificate

| Code No    | Range (mm)       | Accuracy (µm) | Depth (mm) | Setting Ring (mm) |
|------------|------------------|---------------|------------|-------------------|
| XT5001M-BT | 300-325          | 15            | 120        | 300               |
| XT5002M-BT | 300-325, 325-350 | 15            | 120        | 300               |
| XT5003M-BT | 300-325, 350-375 | 15            | 120        | 300               |
| XT5004M-BT | 300-325, 375-400 | 15            | 120        | 300               |
| XT5005M-BT | 300-325, 400-425 | 15            | 120        | 300               |
| XT5006M-BT | 300-325, 425-450 | 15            | 120        | 300               |
| XT5007M-BT | 300-325, 450-475 | 15            | 120        | 300               |
| XT5008M-BT | 300-325, 475-500 | 15            | 120        | 300               |

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

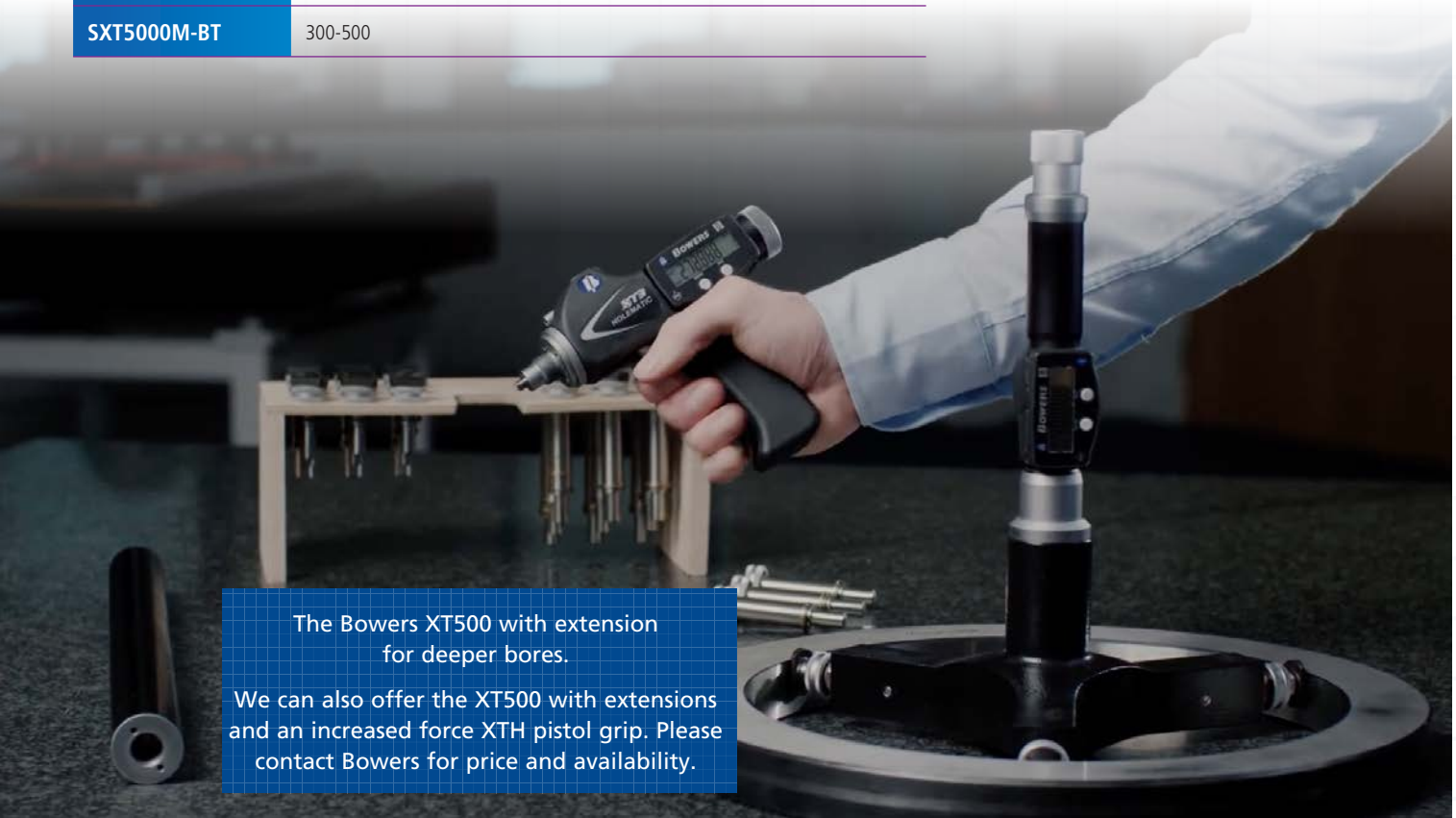
| Code No     | Range (mm)       |
|-------------|------------------|
| SXT3000M-BT | 300-400          |
| SXT4000M-BT | 300-325, 400-500 |
| SXT5000M-BT | 300-500          |

### Data Transmission

| Code No     | Description                           |
|-------------|---------------------------------------|
| 30-926-6721 | Sylvac Proximity USB Cable            |
| 25-604-064  | Wireless Proximity Module Transmitter |
| 25-604-001  | USB Receiver                          |

### Extensions to the XT500


| Code No   | Range (mm) |
|-----------|------------|
| DHEXT500  | 500        |
| DHEXT1000 | 1000       |




The Bowers XT500 with extension for deeper bores.  
We can also offer the XT500 with extensions and an increased force XTH pistol grip. Please contact Bowers for price and availability.

At a Glance

**Range:** 6-280mm

**Bluetooth** Non Bluetooth is available upon request

**WiFi** Option

**RS232**

Features

- Plug body coatings: Hard-chrome (standard), wear resistant coatings available on request
- Measuring contacts: Tungsten carbide, (standard), hard-chrome, ruby, ceramic
- Tough, robust construction
- Easy-to-use
- Long life
- Cost-effective
- High visibility displays
- Repeatability  $\leq 1\text{ }\mu\text{m}$
- Flexible, modular hand-held measurement
- Quick and reliable measurement
- High accuracy dedicated plug-gauges
- High durability, long-life plugs and contacts
- Can be incorporated into automated measuring systems (in-series)
- Suitable for through bores or blind bores
- 2-point measurement as standard
- Depth-stops available
- Extensions available for deeper bores
- Pilot chamfer for easy entry into bore
- Protective indicator shroud available (with some indicators)
- All setting rings supplied as standard with UKAS calibration certificates



Have you seen our video?  
**SmartPlug Introduction**

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.



SmartPlugs Indicators

- Waterproof Mini Indicator with Shroud
- Preset value maximum 130mm



- Mechanical Dial Gauge



Type C

- Standard Digital Indicator also available with shroud



P12D

- Transducer probe



MGU2

- MicroGauge Display



 [Go back to Contents](#)




# SmartPlugs Holders

## M6 Holders


**SMA001M**

- M6 Holder short 8mm stem




**SMA002M**

- M6 Holder long 8mm stem




**SMA003**

- M6 100mm extension




**SMA004**

- M6 Probe holder 8mm stem




**SMA028**

- M6-M10 Adapter (to use M10 holders with M6 plugs)



**SMPDS00-09**

- Depth Stop



## M10 Holders

**SMA005M**

- M10 Holder short 8mm stem




**SMA006M**

- M10 Holder long 8mm stem



**SMA007**

- M10 100mm extension




**SMA008**

- M10 Probe holder 10mm stem



**SMPDS00-09**

- Depth Stop



# SmartPlugs

## BORE GAUGING

## 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

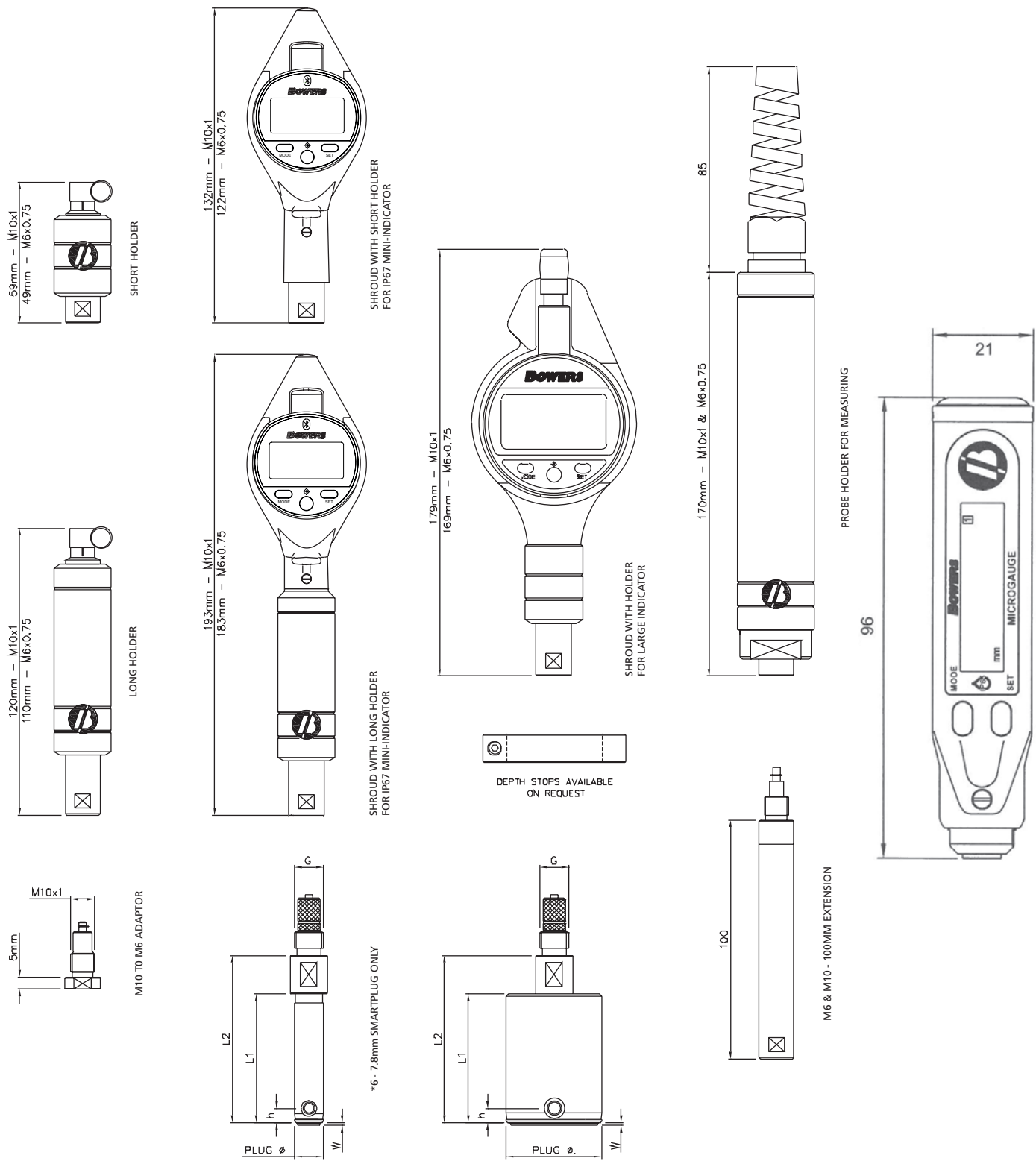
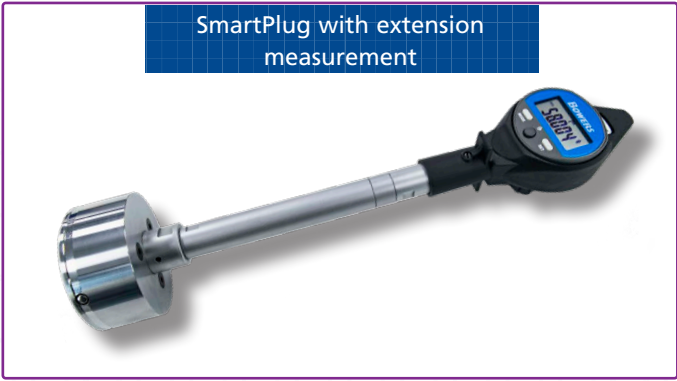
Tungsten Carbide (standard), Hard Chrome, Ruby, Ceramic

## Plug-Body Options

Hard Chrome Plated (standard), Titanium Nitride, Plain Steel

# SmartPlugs Applications & Options

# SmartPlugs Technical Detail



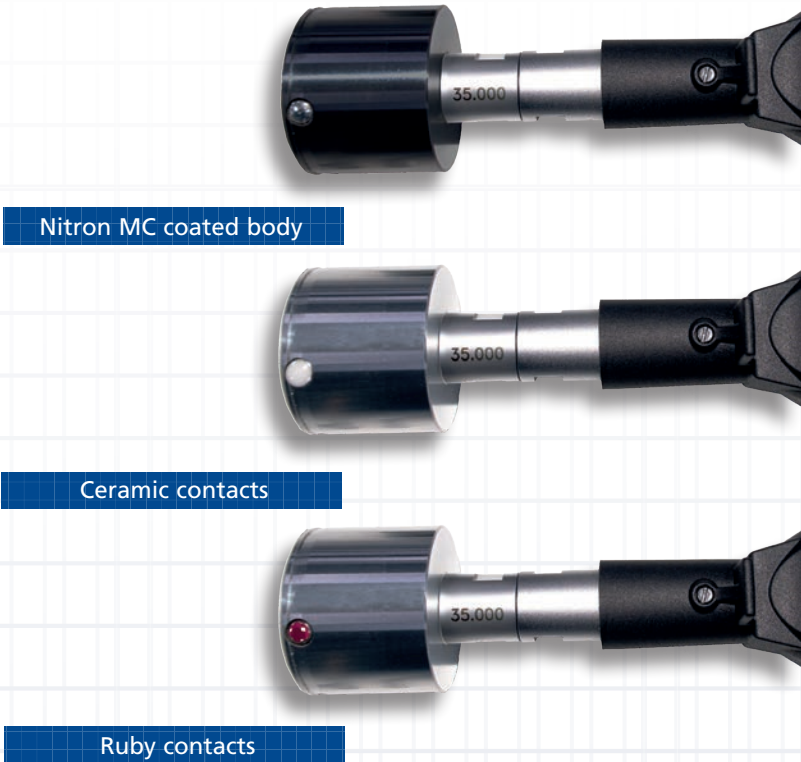
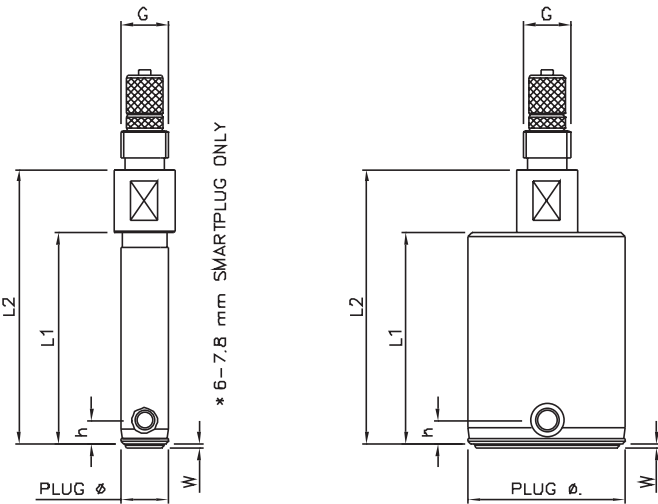


| Example SmartPlug Heads |                             |            |
|-------------------------|-----------------------------|------------|
| Code No                 | Description                 | Note       |
| 1SP6                    | 6-8mm / 0.235"-0.315"       | M6 thread  |
| 5SP45                   | 45-49mm / 1.772"-1.929"     | M10 thread |
| 5SP130                  | 130-140mm / 5.118"-5.512"   | M10 thread |
| 5SP270                  | 270-280mm / 10.630"-11.024" | M10 thread |

Sizes from 2.98mm - 6mm available on request, also available as Blind Bore heads (BB)

| Smartplugs |       |     |       |    |      |     |         |
|------------|-------|-----|-------|----|------|-----|---------|
| Size (mm)  | Range | h   | h(BB) | L1 | L2   | W   | G       |
| 6-7.8*     | 0.15  | 3   | 1.5   | 27 | 35   | 0.5 | M6x0.75 |
| 7.9-20     | 0.15  | 3   | 1.75  | 27 | 35   | 0.5 | M6x0.75 |
| 15-45      | 0.2   | 3.5 | 2.5   | 28 | 43.5 | 1   | M10x1   |
| 45.1-70    | 0.2   | 4   | 2.5   | 28 | 44   | 1.5 | M10x1   |
| 70-140     | 0.2   | 4   | 2.5   | 35 | 44   | 1.5 | M10x1   |
| 140-280    | 0.2   | 4   | 2.5   | 35 | 44   | 1.5 | M10x1   |

\*max measuring depth 27mm between 6 and 7.8mm  
Sizes from 2.98mm - 6mm available on request



| SmartPlug Accessories |   |
|-----------------------|---|
| Code No               | Description   |
| SMA001M               | M6 Holder short 8mm stem  |
| SMA028                | M6-M10 Adapter (to use M10 holders with M6 plugs)                       |
| SMA013                | Type C Indicator with shroud & M6 holder 8mm stem                       |
| SMA002M               | M6 Holder long 8mm stem   |
| SMA013-BT             | Type C Bluetooth Indicator with shroud & M6 holder 8mm stem             |
| SMA021                | *Type 'A' digital Mini indicator. Res. 0.001mm                          |
| SMA009M               | *Type A Mini indicator with shroud & M6 short holder 8mm stem           |
| SMA003                | M6 100mm extension  |
| SMA022                | Type 'B' mechanical dial-gauge. 0.001mm graduation                      |
| SMA011M               | *Type A Mini indicator with shroud & M6 long holder 8mm stem            |
| SMA004                | M6 Probe holder 8mm stem  |
| SMPDS00-09            | Depth Stop  |
| SMA005M               | M10 Holder short 8mm  |
| SMA006M               | M10 Holder long 8mm stem  |
| SMA007                | M10 100mm extension   |
| SMA008                | M10 Probe holder 8mm stem   |
| SMA015M-BT            | Type A Mini Bluetooth indicator with shroud & M10 short holder 8mm stem |
| SMA019                | Type C Indicator with shroud & M10 holder 8mm stem                      |
| SMA019-BT             | Type C Bluetooth Indicator with shroud & M10 holder 8mm stem            |
| SMA019-NANO           | Type C Nano Indicator with shroud & M10 holder 8mm stem (0.0001mm res)  |

| SmartPlug Indicating Units |   |
|----------------------------|---|
| Code No                    | Description   |
| SMA021-BT                  | *Type A Bluetooth Digital Mini Indicator. Res. 0.001mm                          |
| SMA022                     | Type B Mechanical Dial-gauge. 0.001mm graduation                                |
| SMA023                     | Type C digital indicator. Res. 0.001mm  |
| SMA023-BT                  | Type C Bluetooth digital indicator. Res. 0.001mm                                |
| P12D-M8                    | P12D Absolute Digital Probe with M8 connector for use with D62S digital readout |

Note: BT denotes Bluetooth

# SmartPlug Setting Rings

Complete with UKAS Calibration Certificates

We can custom make setting rings for your specific application in Grades N, X and XX.



# SmartPlug Setting Rings

Complete with UKAS Calibration Certificates

BORE GAUGING

| Setting Ring (mm)<br>Grade Nominal |                   | Setting Ring (mm)<br>Grade "X" |                   | Setting Ring (mm)<br>Grade "XX" |                   | Depth Stops |            |
|------------------------------------|-------------------|--------------------------------|-------------------|---------------------------------|-------------------|-------------|------------|
| Code No                            | Setting Ring (mm) | Code No                        | Setting Ring (mm) | Code No                         | Setting Ring (mm) | Code No     | Range (mm) |
| SPR1N                              | 1.50 - 3.00       | SPR1X                          | 1.50 - 3.00       | SPR1XX                          | 1.50 - 3.00       | SMPDS00     | below 6    |
| SPR3N                              | 3.00 - 6.10       | SPR3X                          | 3.00 - 6.10       | SPR3XX                          | 3.00 - 6.10       | SMPDS01     | 6-8.5      |
| SPR6N                              | 6.10 - 9.27       | SPR6X                          | 6.10 - 9.27       | SPR6XX                          | 6.10 - 9.27       | SMPDS02     | 8.5-13     |
| SPR9N                              | 9.27 - 12.95      | SPR9X                          | 9.27 - 12.95      | SPR9XX                          | 9.27 - 12.95      | SMPDS03     | 13-17.5    |
| SPR12N                             | 12.95 - 20.96     | SPR12X                         | 12.95 - 20.96     | SPR12XX                         | 12.95 - 20.96     | SMPDS04     | 17.5-25    |
| SPR20N                             | 20.96 - 28.83     | SPR20X                         | 20.96 - 28.83     | SPR20XX                         | 20.96 - 28.83     | SMPDS05     | 25-32.5    |
| SPR28N                             | 28.83 - 38.35     | SPR28X                         | 28.83 - 38.35     | SPR28XX                         | 28.83 - 38.35     | SMPDS06     | 32.5-40    |
| SPR38N                             | 38.35 - 51.05     | SPR38X                         | 38.35 - 51.05     | SPR38XX                         | 38.55 - 51.05     | SMPDS07     | 40-47.5    |
| SPR51N                             | 51.05 - 63.75     | SPR51X                         | 51.05 - 68.75     | SPR51XX                         | 51.05 - 63.75     | SMPDS08     | 47.5-55    |
| SPR63N                             | 63.75 - 76.45     | SPR63X                         | 68.75 - 76.45     | SPR63XX                         | 63.75 - 76.45     | SMPDS09     | 55-62.5    |
| SPR76N                             | 76.45 - 89.15     | SPR76X                         | 76.45 - 89.15     | SPR76XX                         | 76.45 - 89.15     | SMPDS10     | 62.5-70    |
| SPR89N                             | 89.15 - 101.85    | SPR89X                         | 89.15 - 101.85    | SPR89XX                         | 89.15 - 101.85    | SMPDS11     | 70-77.5    |
| SPR101N                            | 101.85 - 120.90   | SPR101X                        | 101.85 - 120.90   | SPR101XX                        | 101.85 - 120.90   | SMPDS12     | 77.5-85    |
| SPR120N                            | 120.90 - 139.95   | SPR120X                        | 120.90 - 139.95   | SPR120XX                        | 120.90 - 139.95   | SMPDS13     | 85-92.5    |
| SPR139N                            | 139.95 - 159.00   | SPR139X                        | 139.95 - 159.00   | SPR139XX                        | 139.95 - 159.00   | SMPDS14     | 92.5-100   |
| SPR159N                            | 159.00 - 178.05   | SPR159X                        | 159.00 - 178.05   | SPR159XX                        | 159.00 - 178.05   |             |            |
| SPR178N                            | 178.05 - 197.10   | SPR178X                        | 178.05 - 197.10   | SPR178XX                        | 178.05 - 197.10   |             |            |
| SPR197N                            | 197.10 - 203.20   | SPR197X                        | 197.10 - 203.20   | SPR197XX                        | 197.10 - 203.20   |             |            |

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

Larger setting rings are available upon request



Depth Stop





# Contents

| Contents   | Page No. |
|--|----------|
| <b>Bowers Application Gauging</b>                                  |          |
| Thread Gauging   | 51       |
| Groove Gauging & Sets  | 55       |
| Spline Gauging   | 59       |
| Spherical Bore Gauging   | 61       |
| Custom Bore Measurement Deep Hole Pneumatic                        | 63       |
| Custom Bore Measurement Miscellaneous                              | 65       |
| Irregular Spacing  | 65       |
| 49 Right Angled Adaptor  | 65       |
| Gun Barrel Head  | 66       |
| Slot Width   | 66       |
| Internal Measurement of Dovetail Slots & Turbine Blade Grooves     | 67       |
| Internal Measurement of Surface/ Subsea Valve Cavity- Seat Pockets | 69       |
| Digital Countersink Gauge  | 71       |
| Rivet Height Gauge   | 73       |
| INTEX Comparator Beam Gauge  | 75       |
| Carbon Fibre Comparator Beam Gauge                                 | 77       |
| Bench Mounted Systems  | 79       |

# Application Gauging



# Thread Gauging

## At a Glance

**Bluetooth**

Non Bluetooth is available upon request



## Individual Thread Gauging Heads

- M4 – M300 (metric)
- No8 – 12” (imperial)
- Metric, UN, Buttress, Acme, Trapezoidal, Ball screw and non-standard forms available
- Left and right handed available
- 2 Point or 3 Point available
- Very rapid measurement of threads
- Reduce machining time by giving the operator an actual measurement when forming the thread
- Negates the need for many different hard gauges, incl. pre/post plate, pre/post H/T, different classes, etc. Therefore annual re-calibration costs reduced massively
- Effective (Functional), Pitch & Major measurement
- Calibrate from thread rings (Plain ring for Major Diameter)
- Rings marked with actual PD
- Each of these application heads can be fitted directly to our Bluetooth XT range of internal micrometers in seconds for fast, efficient use with incredibly accurate results that can be digitally recorded.

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. Find out more about how our custom gauging solutions can easily solve measurement problems.

“The gauge is ‘future proof’, as the need arises to measure different thread-forms and sizes, we will be able to purchase further measuring heads and fit them to our existing Bowers gauge.

Simon Cavill - Metrology Engineer - Nuclear ARMC

# Thread Gauging

## APPLICATION GAUGING

### XT Threads - The Best Way to Measure Internal Thread Diameters

Each of these application heads can be fitted directly to our Bluetooth XT range of internal micrometers in seconds for fast, efficient use with incredibly accurate results that can be digitally recorded.

### Custom Thread Gauges

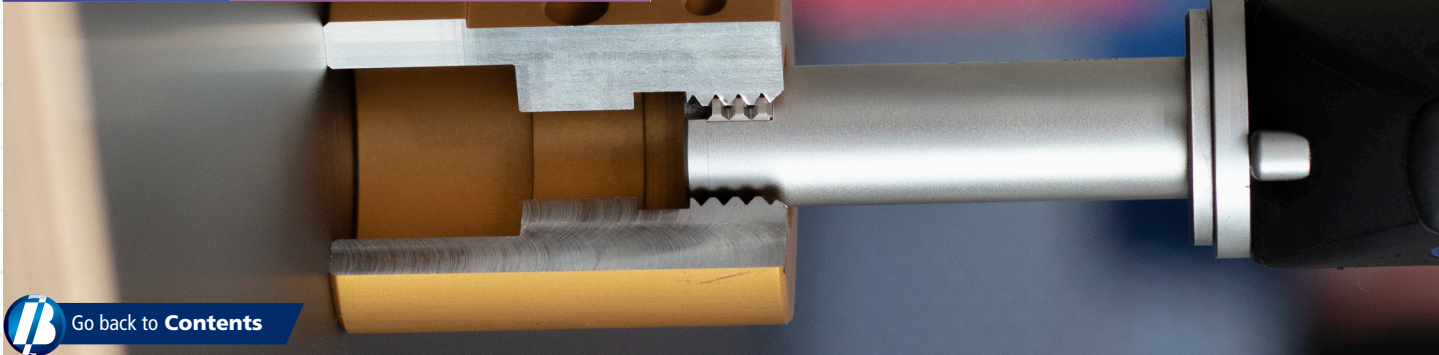
If our generic thread anvil profile is not suitable for your application, please contact us with your requirements and our team will design a bespoke head, perfectly tailored to fit your specific application. Our custom application heads can be fitted directly onto our XT range of internal micrometers to create a flexible, modular measuring system.

Contact our sales team for more information on how we can help.



# Thread Gauging

| XT Thread Heads - Metric |             |               |
|--------------------------|-------------|---------------|
| Code No                  | Thread Type | No. Of Anvils |
| THRH-M10X1               | M10 x 1     | 3-point       |
| THRH-M10x1.25            | M10 x 1.25  | 3-point       |
| THRH-M10x1.5             | M10 x 1.5   | 3-point       |
| THRH-M12x1               | M12 x 1     | 3-point       |
| THRH-M12x1.25            | M12 x 1.25  | 3-point       |
| THRH-M12x1.5             | M12 x 1.5   | 3-point       |
| THRH-M12x1.75            | M12 x 1.75  | 3-point       |
| THRH-M14x1.5             | M14 x 1.5   | 3-point       |
| THRH-M16x1               | M16 x 1     | 3-point       |
| THRH-M16x1.5             | M16 x 1.5   | 3-point       |
| THRH-M16x2               | M16 x 2     | 3-point       |
| THRH-M18x1.25            | M18 x 1.25  | 3-point       |
| THRH-M18x1.5             | M18 x 1.5   | 3-point       |
| THRH-M20x1               | M20 x 1     | 3-point       |
| THRH-M20x1.5             | M20 x 1.5   | 3-point       |
| THRH-M20x2.5             | M20 x 2.5   | 3-point       |
| THRH-M22x1.5             | M22 x 1     | 3-point       |
| THRR-M22x1.5             | M22 x 1.5   | 3-point       |
| THRH-M4x0.7              | M4 x 0.7    | 2-point       |
| THRR-M4x0.7              | M4 x 0.7    | 2-point       |
| THRH-M5x0.8              | M5 x 0.8    | 2-point       |
| THRH-M6x1                | M6 x 1      | 2-point       |
| THRH-M8x1.25             | M8 x 1.25   | 2-point       |



| XT Thread Heads - Imperial |             |               |
|----------------------------|-------------|---------------|
| Code No                    | Thread Type | No. Of Anvils |
| THRH-1-12                  | 1-12"       | 3-point       |
| THRH-3/4-16                | 3/4-16"     | 3-point       |
| THRH-5/8-11                | 5/8-11"     | 3-point       |
| THRH-5/8-18                | 5/8-18"     | 3-point       |
| THRH-7/16-20               | 7/16-20"    | 3-point       |
| THRH-9/16-18               | 9/16-18"    | 3-point       |
| THRH-5/16-24               | 5/16-24"    | 2-point       |
| THRH-1/4-20                | 1/4-20"     | 2-point       |

Standard inch / metric thread heads and setting rings are ex-stock

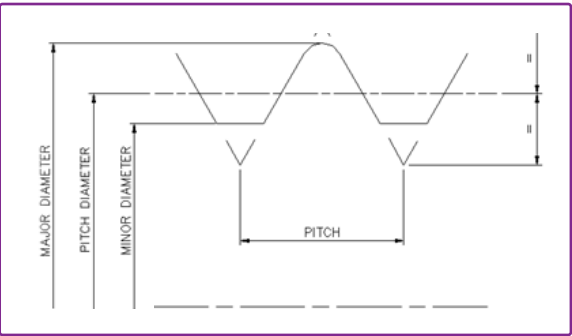
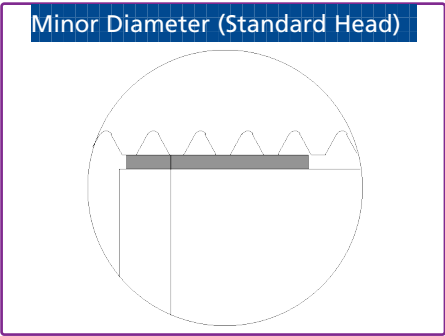
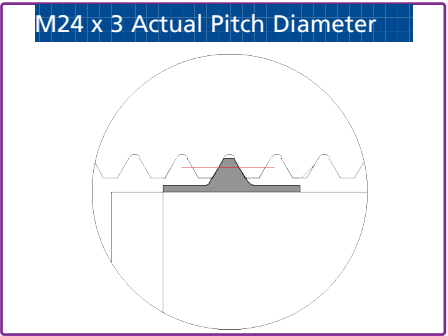
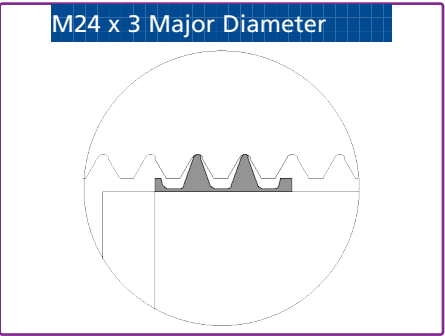
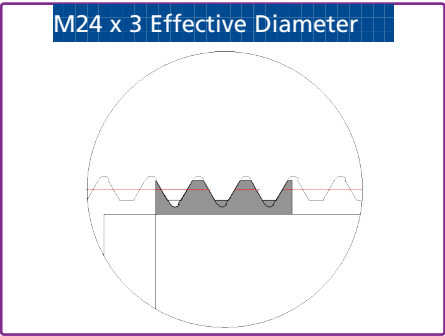


2 Point

3 Point

# Thread Gauging

## Threads Explained



## Ball Screws Threads


- Internal measurement of ball-screws for the defence, aerospace, automotive and machine tool industry
- 2 and 3 Point head solution based on the popular Bowers XT system
- Single start or multi start solution
- Optimised anvil form featuring customised contacts for high accuracy
- Automated systems tooling can be supplied






# Groove Gauging

## At a Glance

 Bluetooth

Non Bluetooth is available upon request

 IP67

## Features

- Available from 6-300mm diameter
- 300mm + available on request
- 2 Point or 3 Point available
- Interchangeable with standard heads
- XTD, XTH, Ultima
- Special forms, Radius, Ball contacts, Brake Calipers
- Depth stops available for quick location
- Depth stops enable a plain diameter to be easily measured
- Annular grooves possible
- Can be used with standard or custom extensions

## Custom Groove Gauging

If our generic groove anvil profile is not suitable for your application, please complete the Custom Groove Gauge Enquiry Form below and our team will design a bespoke head, perfectly tailored to fit your specific application.

Our custom application heads can be fitted directly onto our XT range of internal micrometers to create a flexible, modular measuring system.

## XT Grooves - The Best Way to Measure Internal Groove Diameters

As the world's leading bore gauge manufacturer, we offer a range of both standard and bespoke solutions for precision groove diameter measurement.







Groove Head with Depth Stop

# Groove Gauging

- To accurately quote for a custom groove head. Please send us an enquiry with the following dimensions included
- Entry diameter - minimum
  - Groove diameter - size and tolerance
  - Groove width - minimum
  - Groove corner radius - maximum
  - Bore diameter after groove



# Groove Gauging Sets

## At a Glance

Standard sets available to cover diameters 6 – 100mm (1/4" – 4")



With free data collection App



## Standard XT Groove Set Features

- Generic sets available, 6-20mm, 20-50mm & 50-100mm (imperial equivalent available)
- Generic anvil profile suits common groove sizes – see table
- 3 point, self-centring, interchangeable heads for repeatability
- 0.001mm 0.00005" resolution
- Depth stops included
- Extensions available
- Setting rings with UKAS certificates included



**NEW XT GROOVE SETS**

Have you seen our video?  
**The New XT Groove Sets**

**Bowers XT digital** internal micrometers offer a new ergonomic design - including a larger and clearer LCD display - along with IP67 electronics protection, proximity output with built-in Bluetooth; both allow bi-directional communication giving greater flexibility for data acquisition and storage.

**The XT Groove sets** are based on the standard self-aligning 3-point XT head design but with a stepped anvil to allow entry into grooves for fast and repeatable groove diameter measurement. The gauge is set using the calibrated setting rings provided and each ring size is stored in the gauge memory enabling quick and easy setting with each head change.

The trigger action pistol-grip controller enables the operator to retract the anvils instantly and pass the gauge through the entry diameter, then extend the anvils to engage with the groove diameter for an immediate absolute measurement.

Other versions of the standard XT head are also available for internal threads, splines, slots, deep hole and many more applications.



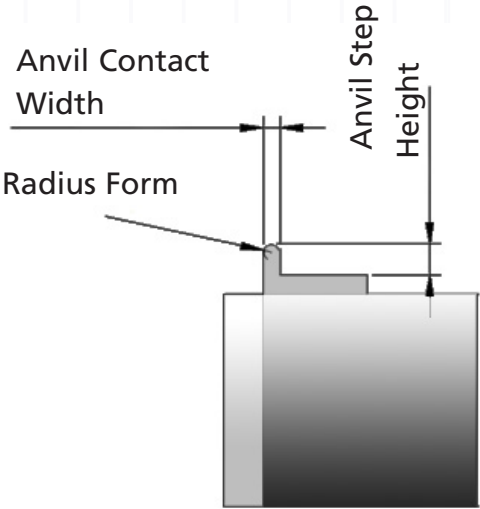
# Groove Gauging Sets

## APPLICATION GAUGING

| XT Holematic Groove Sets |             |                 |                   |                     |               |                    |
|--------------------------|-------------|-----------------|-------------------|---------------------|---------------|--------------------|
| Code No                  | Set Range   | Included Heads  | Anvil Step Height | Anvil Contact Width | Depth Stop OD | Setting Ring Sizes |
| SP-SXTH10M-BT-GRO        | 6-20mm      | 6-8mm           | 1.25mm            | 1.5mm               | 18mm          | 8mm                |
|                          |             | 8-10mm          | 1.25mm            | 1.5mm               | 20mm          |                    |
|                          |             | 10-12.5mm       | 1.5mm             | 1.5mm               | 22mm          | 12.5mm             |
|                          |             | 12.5-16mm       | 2.0mm             | 1.5mm               | 26mm          |                    |
| SP-SXTH10I-BT-GRO        | 1/4" - 3/4" | 16-20mm         | 2.5mm             | 1.5mm               | 33mm          | 20mm               |
|                          |             | 1/4" - 5/16"    | 0.049"            | 0.059"              | 0.709"        | 5/16"              |
|                          |             | 5/16" - 3/8"    | 0.049"            | 0.059"              | 0.787"        |                    |
|                          |             | 3/8" - 1/2"     | 0.059"            | 0.059"              | 0.866"        | 1/2"               |
| SP-SXTH5M-BT-GRO         | 20-50mm     | 1/2" - 5/8"     | 0.079"            | 0.059"              | 1.024"        |                    |
|                          |             | 5/8" - 3/4"     | 0.098"            | 0.059"              | 1.299"        | 3/4"               |
|                          |             | 20-25mm         | 3.175mm           | 2mm                 | 39mm          | 20mm               |
|                          |             | 25-35mm         | 5.5mm             | 2mm                 | 45mm          | 35mm               |
| SP-SXTH5I-BT-GRO         | 3/4" - 2"   | 35-50mm         | 4mm               | 2mm                 | 60mm          |                    |
|                          |             | 3/4" - 1"       | 0.108"            | 0.079"              | 1.535"        | 3/4"               |
|                          |             | 1" - 1 3/8"     | 0.217"            | 0.079"              | 1.772"        | 1 3/8"             |
| SP-SXTH6M-BT-GRO         | 50-100mm    | 1 3/8" - 2"     | 0.157"            | 0.079"              | 2.362"        |                    |
|                          |             | 50-65mm         | 8mm               | 3mm                 | 80mm          | 65mm               |
|                          |             | 65-80mm         | 8mm               | 3mm                 | 95mm          | 80mm               |
| SP-SXTH6I-BT-GRO         | 2" - 4"     | 80-100mm        | 10.5mm            | 3mm                 | 115mm         |                    |
|                          |             | 2" - 2 5/8"     | 0.315"            | 0.118"              | 3.150"        | 2 5/8"             |
|                          |             | 2 5/8" - 3 1/4" | 0.315"            | 0.118"              | 3.740"        | 3 1/4"             |
|                          |             | 3 1/4" - 4"     | 0.413"            | 0.118"              | 4.528"        |                    |

| Individual Heads  |            |                   |               |
|-------------------|------------|-------------------|---------------|
| Code No (with BT) | Range (mm) | Code No (with BT) | Range (inch)  |
| XTHD6M-GRO        | 6-8        | XTHD6I-GRO        | 1/4 - 5/16    |
| XTHD8M-GRO        | 8-10       | XTHD8I-GRO        | 5/16 - 3/8    |
| XTHD10M-GRO       | 10-12.5    | XTHD10I-GRO       | 3/8 - 1/2     |
| XTHD12M-GRO       | 12.5-16    | XTHD12I-GRO       | 1/2 - 5/8     |
| XTHD16M-GRO       | 16-20      | XTHD16I-GRO       | 5/8 - 3/4     |
| XTHD20M-GRO       | 20-25      | XTHD20I-GRO       | 3/4 - 1       |
| XTHD25M-GRO       | 25-35      | XTHD25I-GRO       | 1 - 1 3/8     |
| XTHD35M-GRO       | 35-50      | XTHD35I-GRO       | 1 3/8 - 2     |
| XTHD50M-GRO       | 50-65      | XTHD50I-GRO       | 2 - 2 5/8     |
| XTHD65M-GRO       | 65-80      | XTHD65I-GRO       | 2 5/8 - 3 1/4 |
| XTHD80M-GRO       | 80-100     | XTHD80I-GRO       | 3 1/4 - 4     |

## Standard Groove Anvil Detail



# Spline Gauging

## Internal Spline Gauging Features

- XT or Ultima systems available
- 2 point between pin most popular. Also available with carbide ball contact
- 3 point also available with irregular spacing if necessary
- Heads for Major and Minor dia. available
- Popular sizes held in stock for quick delivery
- Calibrate from standard plain rings
- Interchangeable with standard heads
- Negates the need for many different hard gauges, incl. pre/post plate, pre/post H/T, different classes, etc. Massively reduces annual gauge calibration costs
- External spline frames available

## External Spline Gauging Features

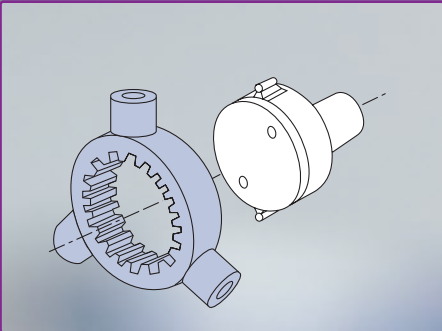
- 0-600mm External splines can be measured using a snap gauge with custom ball contacts & a rotating pin
- 0-100mm Bowers Digi-mic ball/ball contacts
- Custom checkmaster bench available for high volume measurement

As the world's leading bore gauge manufacturer, we offer a range of both standard and bespoke solutions for precision spline measurement.

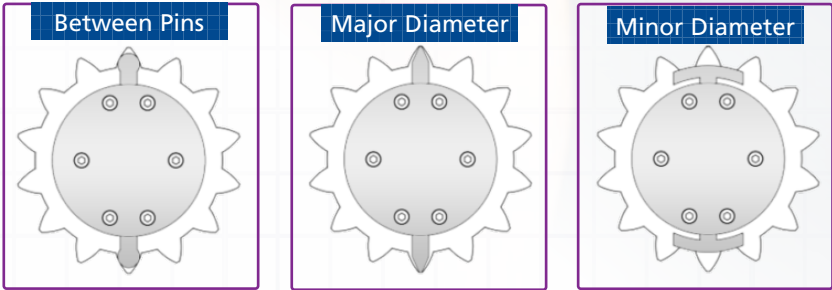
Each of these application heads can be fitted directly to our Bluetooth XT range of internal micrometers in seconds for fast, efficient use with incredibly accurate results that can be digitally recorded.

### Popular 2 Point Spline Heads Held in Stock Include:

|                           |
|---------------------------|
| 20–25mm over 2mm pins     |
| 20–25mm over 2.032mm pins |
| 24–29mm over 2mm pins     |
| 24–29mm over 2.032mm pins |
| 25–35mm over 2mm pins     |
| 25–35mm over 2.032mm pins |



## Internal Spline Measurement Options





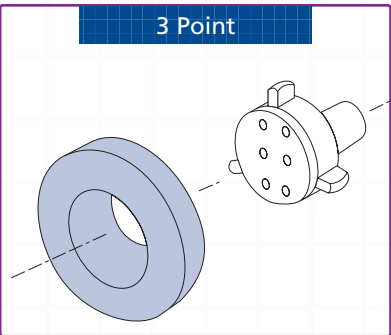
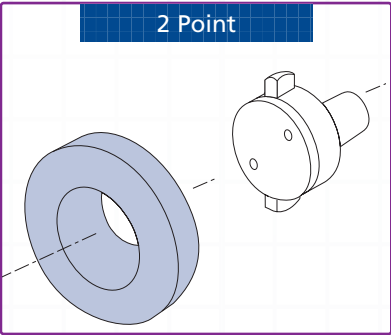
# Spherical Bore Gauging

## XT Spherical

The Best Way to Measure Deep-Bore/spherical Diameters. Each of these application heads can be fitted directly to our XT range of internal micrometers in seconds for fast, efficient use with incredibly accurate results.

- 2 point (ovality) available from 3mm, 3 point available from 6mm
- 6-300mm range, 300-500mm XT500 System
- Guide sleeves available, 2 point to maintain centralisation, 3 point to protect the head/ bore
- Allows for misalignment in bore
- XTH, Ultima, XT 500
- Depth stops available for quick location
- Ease of use for operator
- Interchangeable with standard heads
- Blind Bore option available

Up to 2.0 metres deep with custom extensions



| Custom Made Extensions |                           |                   |                |             |                   |
|------------------------|---------------------------|-------------------|----------------|-------------|-------------------|
| Code No                | Length (mm)               | To Fit Heads (mm) | Code No        | Length (mm) | To Fit Heads (mm) |
| SP-EGX0001-500C        | 500mm (Max. 2m)           | 19.05             | SP-EGX0001-75  | 75          | 20-35             |
| SP-EGX0001-500P        | 500 (Max. 2m)             | 20*               | SP-EGX0004-75  | 75          | 35+               |
| SP-EGX0005-500         | 500 (Max. 2m)             | 35                | SP-EGX0001-100 | 100         | 20-35             |
| SP-EGX0005-1000        | 1000 (Max 2m)             | 35                | SP-EGX0004-100 | 100         | 35+               |
| CF EXT                 | Custom Length (Max. 1m)   | 6-8               |                |             |                   |
| CF EXT                 | Custom Length (Max. 1m)   | 8-10              |                |             |                   |
| CF EXT                 | Custom Length (Max. 1.5m) | 10-12.5           |                |             |                   |
| CF EXT                 | Custom Length (Max. 1.5m) | 12.5-20           |                |             |                   |



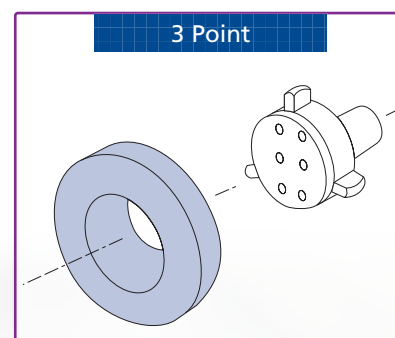
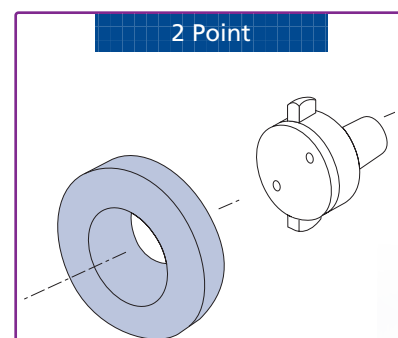
# Custom Bore Measurement Deep Hole Pneumatic

## Features

- Measures diameters from 50-500mm, up to 15m deep
- 6 Bar air pressure required either from compressor or factory air supply
- Spherical, Tungsten Carbide anvils
- 2 point and 3 point heads available
- Accuracy  $\pm 0.005\text{mm}$  (subject to bore condition)
- Quick set-up time
- Easy to use
- Not adversely effected by temperature fluctuation
- Robust design
- Various readouts available
- Portable compressor can be provided
- Guide sleeves recommend on heads and every other extentions

## Deep Hole Pneumatic Bore Gauging

Operated by a pneumatic actuator powered by a 3 bar compressed air supply - either from a compressor or a workshop air-line. The measurement data is collected by a capacitive probe fitted just behind, and in constant contact with the measuring head. This direct contact ensures high-quality transducer-type accuracy, even at great depths. Measurements are taken by pressing a footswitch connected to the airline and the data is then passed automatically via cable back down the bore to the digital readout at the operator end.



“A visit from a Company Sales Engineer gave Bowers an in-depth appreciation of our complex mould measuring problems and resulted in Bowers designing and quoting a custom designed bore gauging system. Having recently taken delivery of the Bowers system, we are delighted with its performance.

Shaun Simmons - Celsa Manufacturing UK

# Custom Bore Measurement Deep Hole Pneumatic

## APPLICATION GAUGING



Measures diameters from 50-500mm, up to 15m deep



# Custom Bore Measurement Miscellaneous

## Custom Bore Solutions

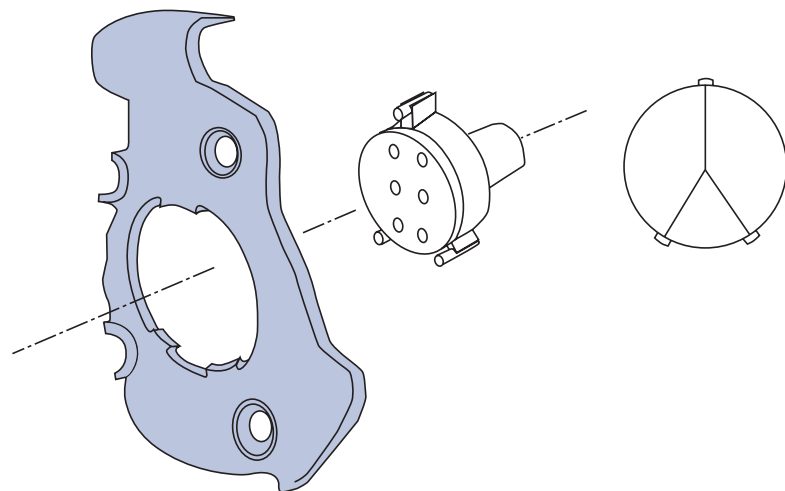
As the world's leading bore gauge manufacturer, Bowers Group has also earned a reputation for manufacturing custom heads for non-standard applications.

Examples of our custom gauging solutions are as follows:

- Irregular Spacing
- Right Angled Adaptor
- Gun Barrel Head
- Slot Width
- Dovetail Slots & Turbine Blade Grooves
- Seat Pockets

### Irregular Spacing

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



### Right Angled Adaptor

- Custom one piece RA Adaptor available
- Single RA Adaptor available



Right angled adaptor for hard-to-reach bores.

# Custom Bore Measurement Miscellaneous

## APPLICATION GAUGING

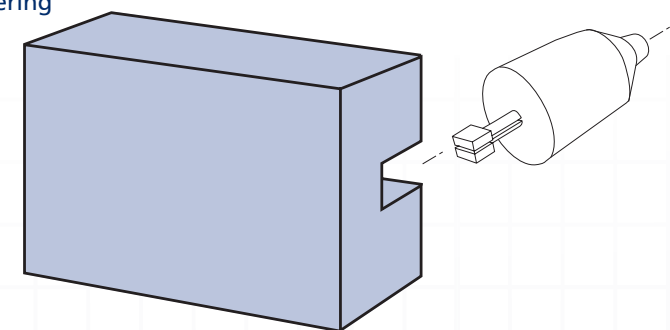
### Gun Barrel Head

- Systems available to suit most calibre sizes from 4mm (0.172") – 500mm (19.685")
- XT /Ultima system or pneumatic system available
- Rifled or smooth bore measurement available
- Major or minor dia. measurement available

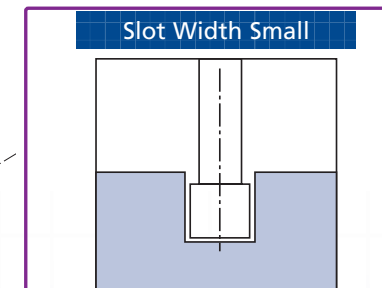


### Small Slot Width

- Available between 2-6mm
- Gap gauges supplied for mastering



Slot Width Small

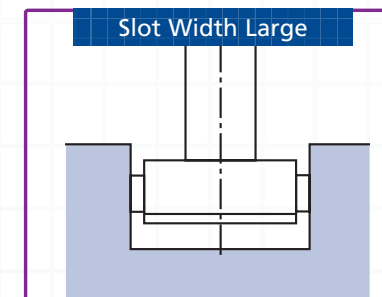


### Large Slot Width

- Available between 6-300mm
- Gap gauges supplied for mastering



Slot Width Large



# Custom Bore Measurement Internal Measurement of Dovetail Slots & Turbine Blade Grooves

## At a Glance



## Features

- Internal/external systems available.
- Custom systems designed to suit customers requirement.
- 1 stage & 2 stage production measurements available.
- Wide range of options from XT to lever gauge style gauges
- BT Capacity for easy data capture
- Setting masters available to enable quick & accurate setting and measurement

## The Challenge

Bowers was approached by a well-known industrial turbine manufacturer to develop a method of measuring dovetail slot width and position in a circular component. The datum for the measurements was taken from the shoulder of the slot replicating the final 'In Service' blade datums.

## The Solution

Bowers' Special Applications Team developed a special 2 Point head solution based on the popular Bowers XT system. The system incorporates tungsten carbide ball contacts for high accuracy. The Bowers XT digital readout offers the capability to send data for SPC and part traceability.

## Advantages over Competitor Solutions

The Bowers dovetail variable gauge is able to output the actual size and position as opposed to competitors' attribute (Go / No Go) gauging. The gauge has a long working life and doesn't wear like attribute gauging.

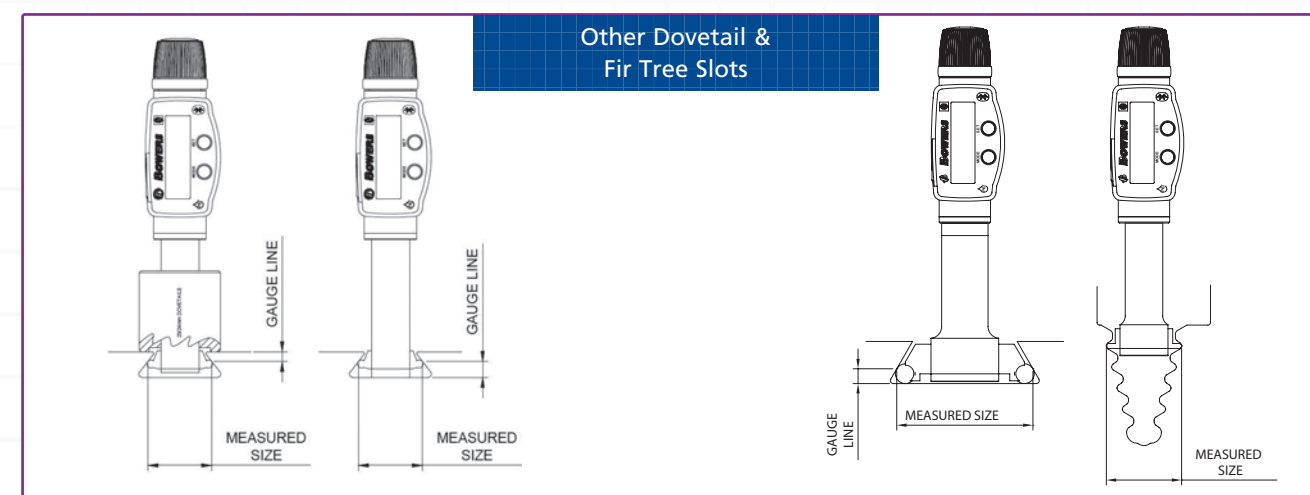
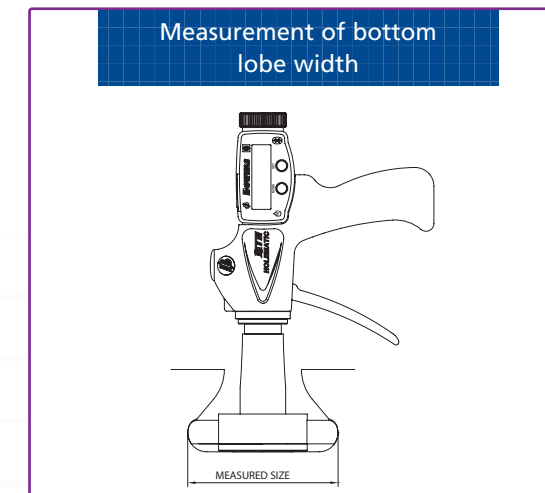
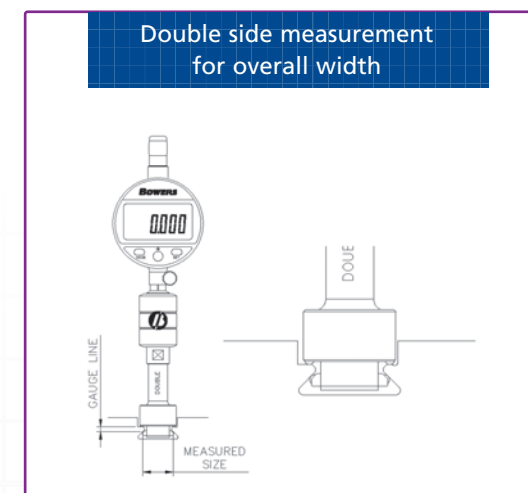
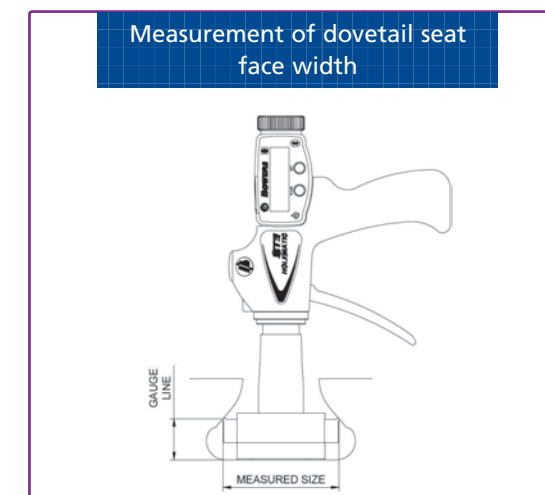
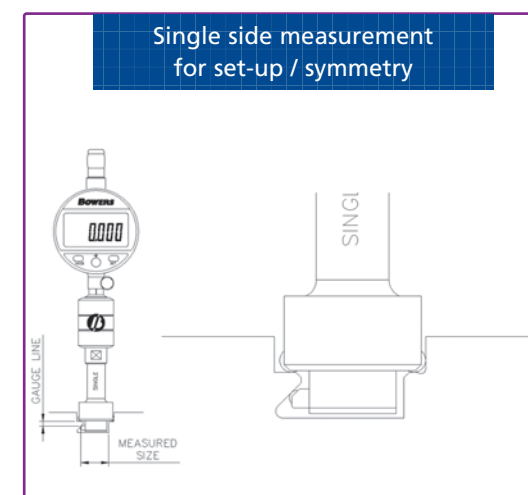
## Potential Industries

- Aerospace
- Nuclear
- Turbines
- Power Generation



# Custom Bore Measurement Internal Measurement of Dovetail Slots & Turbine Blade Grooves

## APPLICATION GAUGING





# Custom Bore Measurement Internal Measurement of Surface/Subsea Valve Cavity-Seat Pockets

## The Challenge

Bowers was approached by a well-known solutions provider to the global oil & gas industry to develop a method of measuring the internal cavity in valve bodies.

## Features to Measure Include

- Internal diameters inside seat pocket
- Internal spot face distance between flats
- Internal spot face to diameter measurement

## The Solution

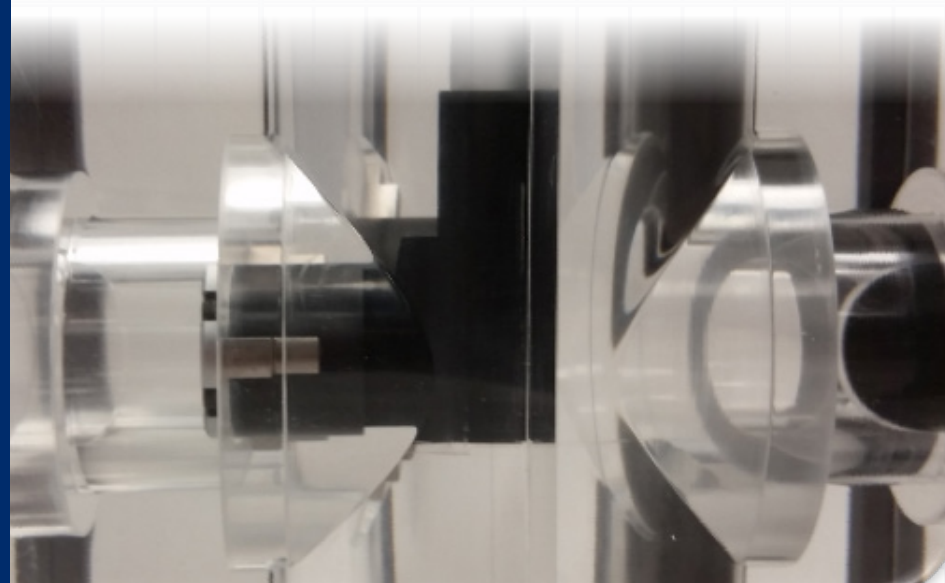
Bowers' Special Applications Team developed a solution utilising a one-piece right angle adapter to allow entry down a perpendicular bore. This allows measurement to take place at 90 degrees to entry of the bore. An optimised anvil form and guide pieces aid entry and position the measuring head correctly for higher accuracy measurements and ease of use for operator.

## Features

- Higher accuracy
- Improved ease of use
- Faster inspection

## Potential Industries

- Oil & Gas
- Hydraulics
- Industrial Pipework



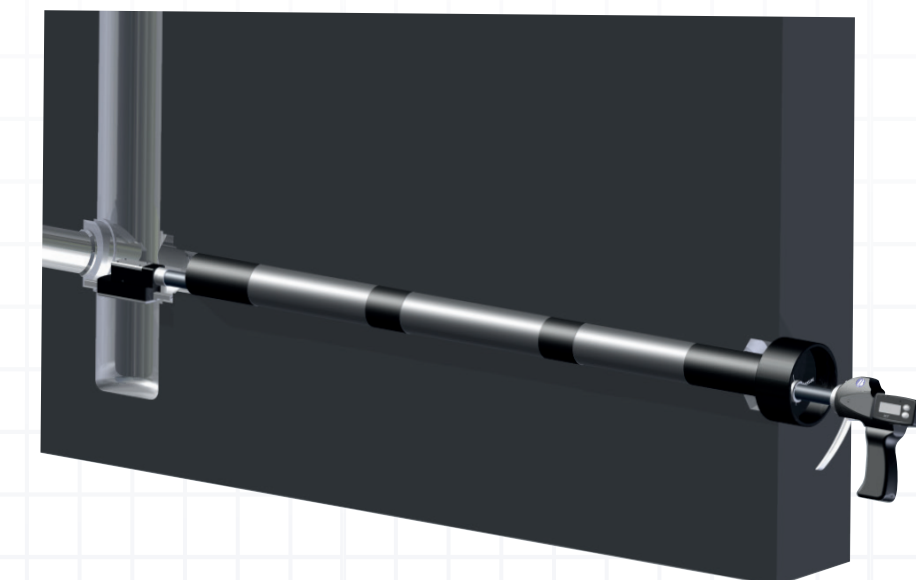
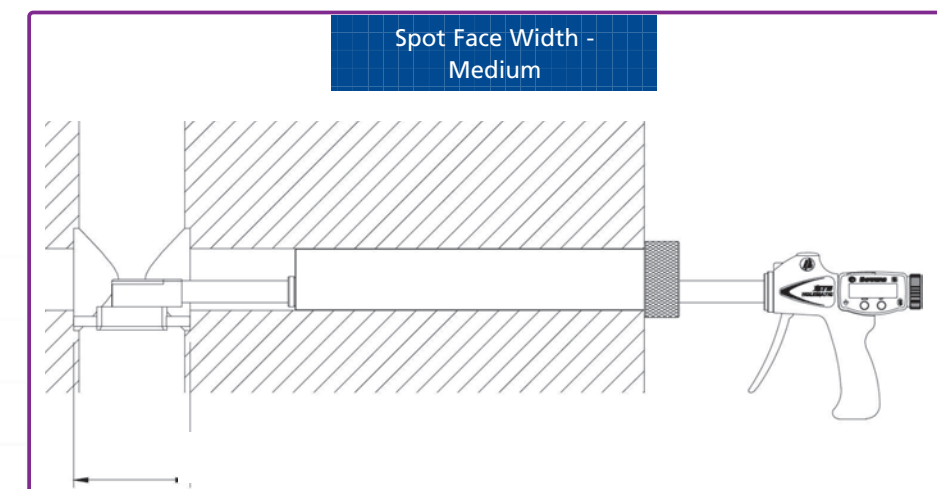
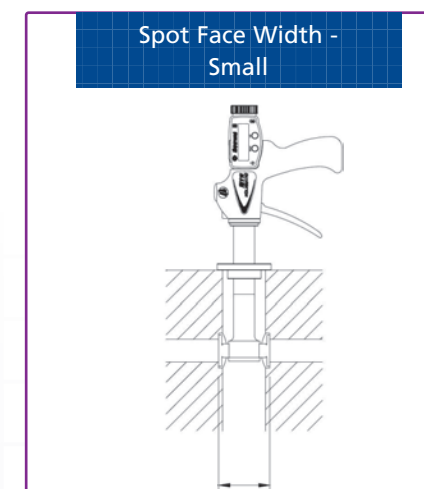
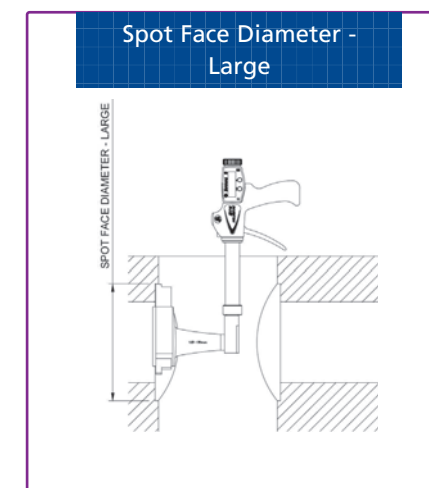
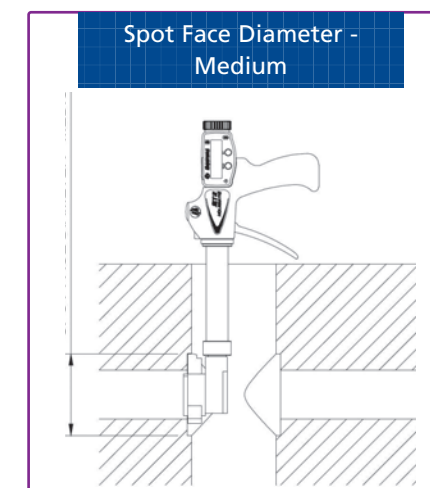
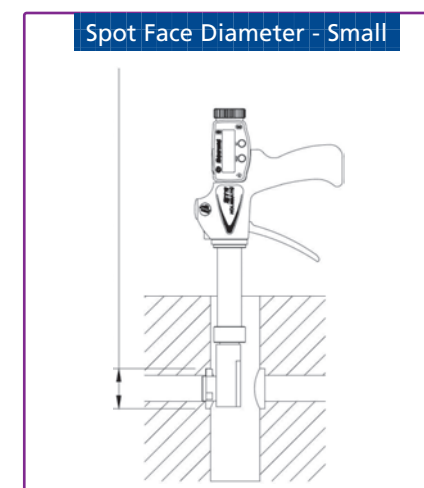
## At a Glance



## Features

- Internal measurement of surface/subsea valve cavity-seat pockets mainly for the oil and gas industry
- Seat pocket diameter
- Across flats/ Parallelism
- Symmetry
- Optimised anvil form and eccentric guide pieces to aid entry and position the measuring head correctly for higher accuracy measurements and ease of use for operator.

# Custom Bore Measurement Internal Measurement of Surface/Subsea Valve Cavity-Seat Pockets



# Digital Countersink Gauge

## At a Glance

-  Alternative size ranges can be manufactured to order.
-  Non Bluetooth is available upon request
-  RS232

## Features

- Switchable resolution - inch/metric true conversion
- Preset facility
- Tolerance mode
- RS-232 data output
- Robust construction, hardened plunger, induction hardened body
- Standard plungers available to cover 100° and 130°
- Other sizes and angles available on request
- Setting master supplied as standard
- Bluetooth option available



Have you seen our video?  
**The Bowers Countersink Gauge**

The Bowers Countersink Gauge can be used to check the major diameters of countersinks in the aircraft outer skin, prior to the application of rivets.

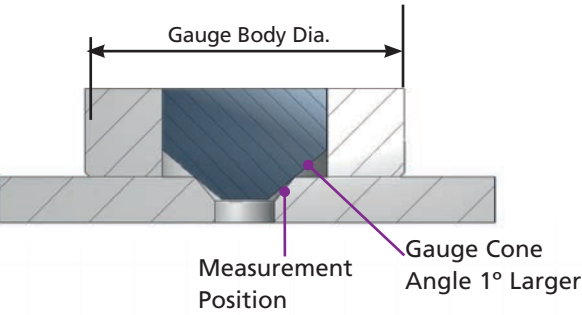
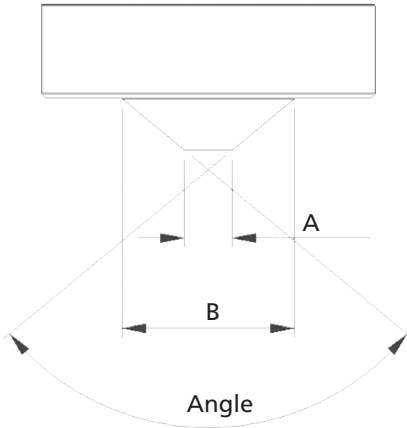
The gauge can also be used for countersink measurement in general applications within the aerospace, automotive and other related industries.



Alternative size ranges and angles can be manufactured to order

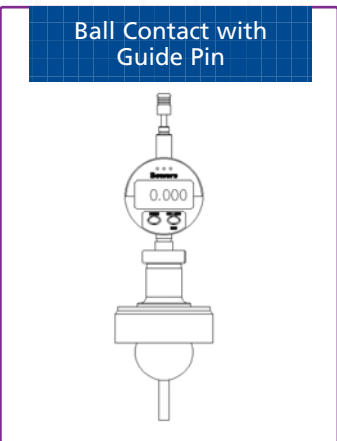
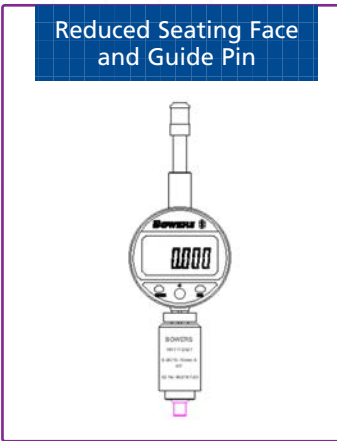
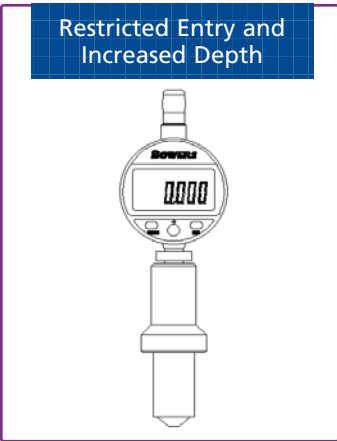
# Digital Countersink Gauge

| Digital Countersink Gauge |              |              |                   |              |              |                            |
|---------------------------|--------------|--------------|-------------------|--------------|--------------|----------------------------|
| Code No                   | Range (mm)   | Range (inch) | Setting Ring (mm) | Dim - A (mm) | Dim - B (mm) | Standard Angle Plunger (°) |
| BCSG-001M                 | 4.76-12.7    | 3/16-1/2     | 8 Ø Conical       | 3            | 14           | 100                        |
| BCSG-002M                 | 12.7-19.05   | 1/2-3/4      | 16 Ø Conical      | 10           | 21           | 100°                       |
| BCSG-003M                 | 19.05-28.57  | 3/4-1 1/8    | 23 Ø Conical      | 17           | 30           | 100°                       |
| BCSG-004M                 | 28.57-38.01  | 1 1/8-1 1/2  | 32 Ø Conical      | 26           | 40           | 100°                       |
| BCSG-005M                 | 38.01-47.625 | 1 1/2-1 7/8  | 42 Ø Conical      | 36           | 50           | 100°                       |
| BCSG-006M                 | 47.625-57.15 | 1 7/8-2 1/4  | 52 Ø Conical      | 46           | 60           | 100°                       |
| BCSG-007M                 | 57.15-66.675 | 2 1/4-2 5/8  | 62 Ø Conical      | 54           | 70           | 100°                       |



Also available with MicroGauge\* readout for small sizes. 2-6mm BT Not currently available

## Custom Digital Countersink Gauges





# Rivet Height Gauge


## At a Glance



Rivet diameters: 3/16", 1/4", 5/16", 3/8" available as standard  
Resolution: 0.0005" / 0.001mm



Non Bluetooth is available upon request



RS232

## Features

- Rivet diameters : 3/16", 1/4", 5/16", 3/8" available as standard
- Other rivet diameters available on request
- Digital display with mm / inch conversion and preset function
- Resolution : 0.0005" / 0.001mm
- Repeatability +/- 0.003µm
- RS-232 data output
- Scalloped base to facilitate visual location over the rivet
- Very easy to use
- Small portable format
- Robust construction
- Bluetooth option available

The Bowers Rivet Height Gauge has been specially designed to measure the height of rivets used on aircraft outer skin. If the top of the rivet is too high above or too low below the level of the rivet-hole, the streamlining of the aircraft will be affected.

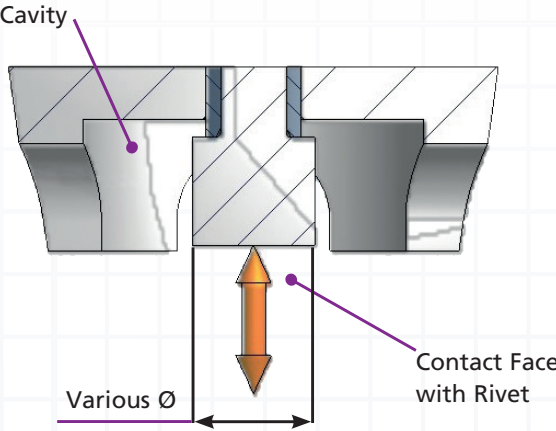
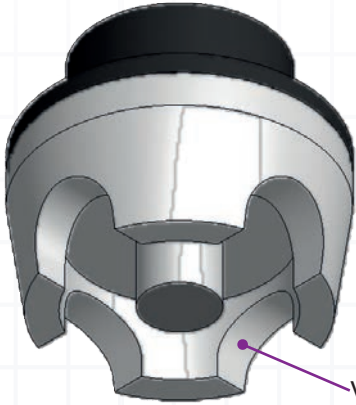
This wind-resistance will be magnified many times depending on the number of rivets present in the outer hull of the aircraft. The rivet-height gauge measures the height of the top of the rivet in relation to the level of the surrounding aircraft skin, enabling tolerances to be maintained and providing a valuable reference measurement to help determine the streamlining of the aircraft and the consequent effects on its aerodynamics and fuel efficiency.

We have 3/16", 1/4", 5/16", 3/8" as standard diameters, different diameter and contact point options are available on request.





# Rivet Height Gauge

## APPLICATION GAUGING



# INTEX Comparator Beam Gauge

## At a Glance

-  Custom ranges available upon request
-  Non Bluetooth is available upon request

## 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
- Instrument supplied without tooling
- Custom contacts available upon request

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.

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.



# INTEX Comparator Beam Gauge

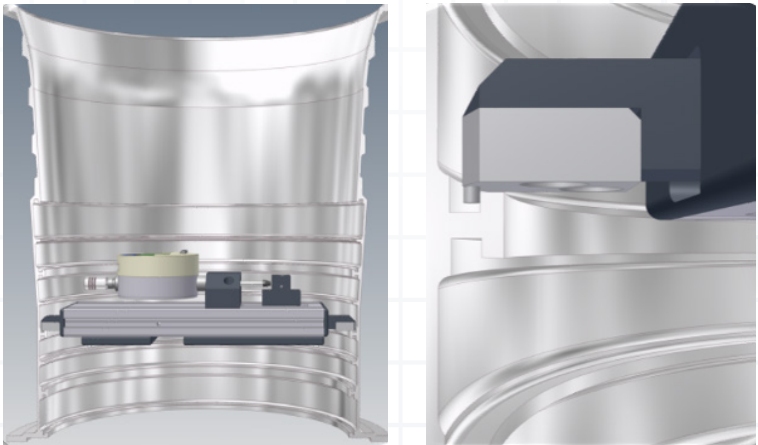
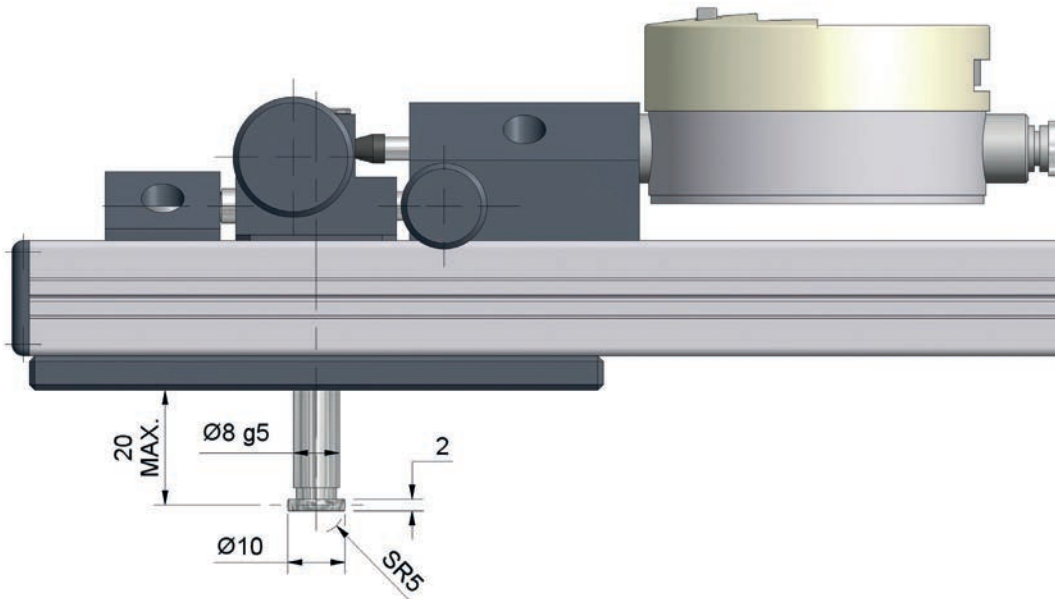
## APPLICATION GAUGING

| Intex Beam Gauge - Without Indicator |            |
|--------------------------------------|------------|
| Code No                              | Range (mm) |
| INTEX01                              | 200-400    |
| INTEX02                              | 400-600    |
| INTEX03                              | 600-800    |
| INTEX04                              | 800-1000   |

| Intex Beam Gauge - With Indicator (Bluetooth) |            |
|---|------------|
| Code No                                       | Range (mm) |
| INTEX01IND-BT                                 | 200-400    |
| INTEX02IND-BT                                 | 400-600    |
| INTEX03IND-BT                                 | 600-800    |
| INTEX04IND-BT                                 | 800-1000   |

Note: BT denotes Bluetooth

| Code No  | Description                            |
|----------|--|
| INTEXA01 | Standard contacts - 10 diameter (pair) |





Custom contacts and gauging available



# Carbon Fibre Comparator Beam Gauge

## At a Glance

- 

Measuring capacity of standard set: External: 0 > 1930mm  
Internal: 150 > 2150mm
- 

Non Bluetooth is available upon request

## Features

- Extremely lightweight even at 4m span
- Extremely low co-efficient of thermal expansion
- Modular design of beam allows infinite level of adjustment within the above ranges
- Additional 1000mm extensions add quickly and cost effectively to the gauge capacity
- Internal and external measurement: 0 > 105 (150)mm measurement depth from component face
- 12mm anvil travel
- Digital or mechanical readout
- Tooling included for presetting gauge on Trimos horizontal machines and Bowers Universal Setting Master
- Bluetooth option available
- Customized system available upon request

## Sets include

- Pair gauge legs
- Fixed leg tube
- Moving leg tube
- 250mm Carbon Fibre Extension Tube
- 500mm Carbon Fibre Extension Tube
- 1000mm Carbon Fibre Extension Tube
- Tooling to suit Trimos setting machine and storage/travel case

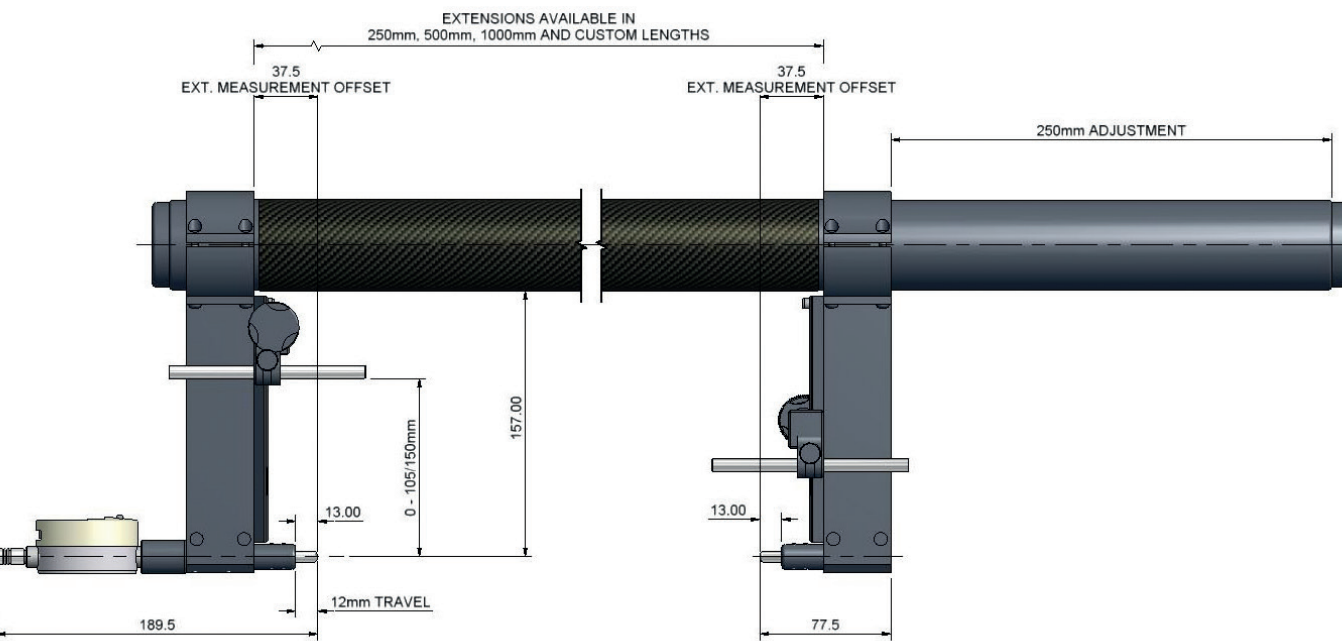
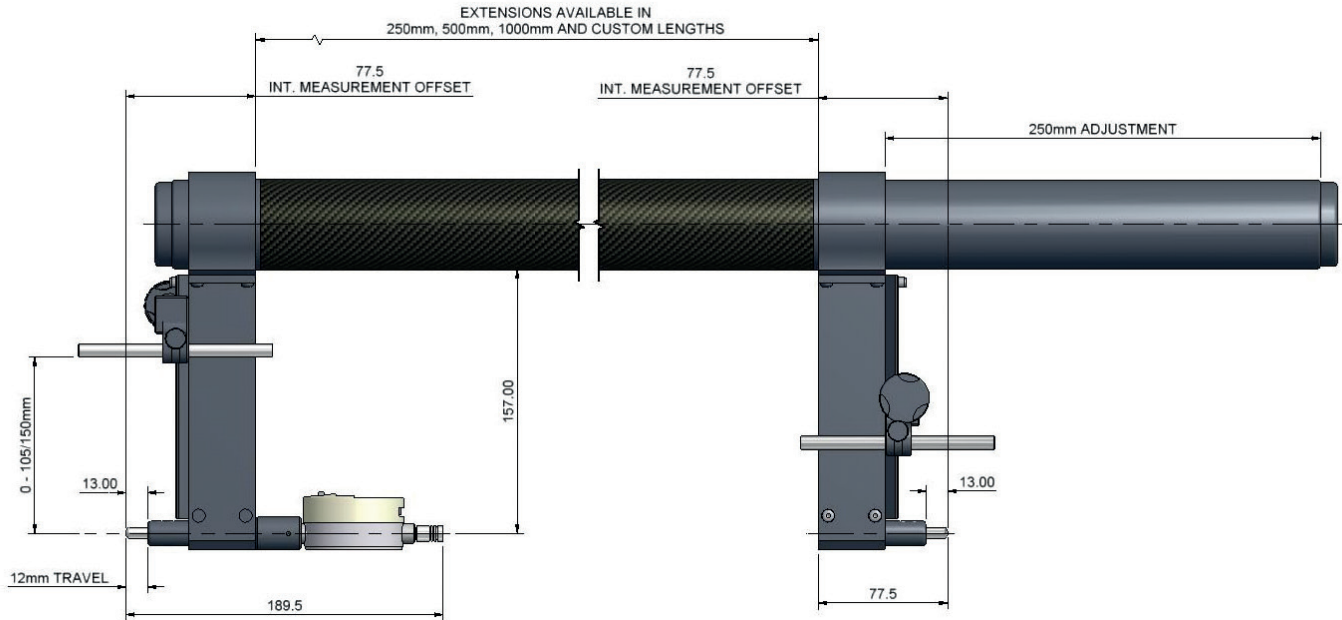
Designed to measure both internal and external diameters and lengths, the high modulus carbon fibre beam is stiff, lightweight and has an extremely low co-efficient of thermal expansion (CTE). Suitable for measuring high accuracy diameters and lengths up to 4000mm+.



CFBG01 - Carbon Fibre Beam Gauge Set

# Carbon Fibre Comparator Beam Gauge

## APPLICATION GAUGING





# Boosting Efficiency in Compliance: Bowers Group Custom Measurement Solution Accelerates Inspection Speed by 92% at Virtue Aerospace

Bowers Group has successfully assisted Virtue Aerospace with its compliance procedures using a bespoke measurement solution.



Bowers Group has successfully supported precision engineering company Virtue Aerospace with its compliance procedures using a bespoke measurement solution, supplied to them by Bowers Group's popular distribution partner in the South East, Mech Metrology, that has been designed to speed up the inspection process of aviation fuel pump impellers.

Based in Hampshire, Virtue Aerospace manufactures and oversees the balancing of pump impellers and inducers for the aerospace industry. Precision measurement forms a prerequisite to fulfilling stringent contract requirements for the business, therefore the need for accurate measurements is driven by the demands and expectations of its customers and the strict compliance requirements of the industries it serves.

To ensure the highest quality output, Virtue Aerospace entrusted Bowers Group to provide them with a bespoke measurement solution to assist in the delivery of parts that meet the tightest tolerances and the highest levels of accuracy and consistency.

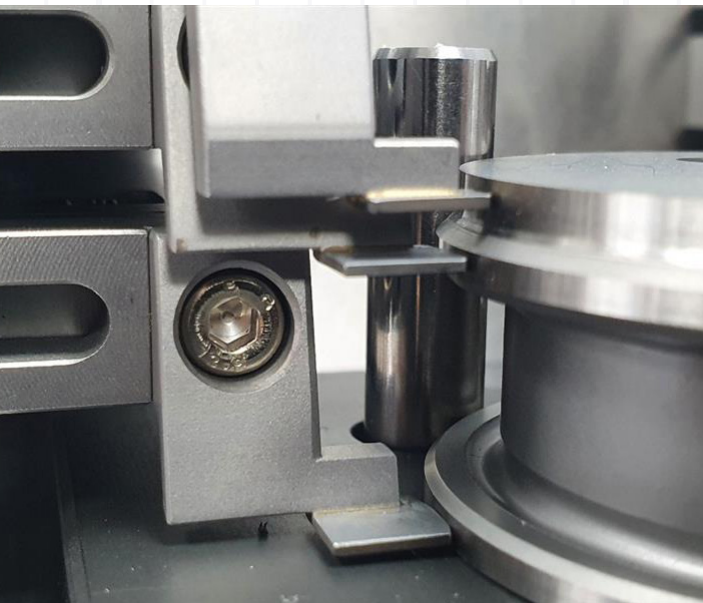
Ian Smith, Quality & Environmental Manager at Virtue Aerospace, said:

“The introduction of the measurement system from Bowers Group has reduced inspection time on a specific volume produced part, reducing the process time by a significant margin. The system is easy to set up, user-friendly and reliable, and we’re extremely impressed with the benefits it has brought to our workflow.”

As part of their engineering qualifications, the students at Virtue Aerospace manufacture complex precision components for many industries including aerospace & defence. Its reputation for delivering high-quality products has established the company as a respected partner for challenging projects, and its drive to explore new ideas has ensured that the Virtue is a well-respected name in the aerospace industry.

The geometry of the fuel pump impellers is absolutely critical for fuel system as it impacts efficiency, flow, durability, and performance. A well-designed impeller enhances fuel delivery and reduces energy losses, as well as improving engine performance and reliability. It also affects noise, vibration, and maintenance costs. Finding the right balance between performance and manufacturability is essential.

Virtue Aerospace’s specific product had a 0.016mm total



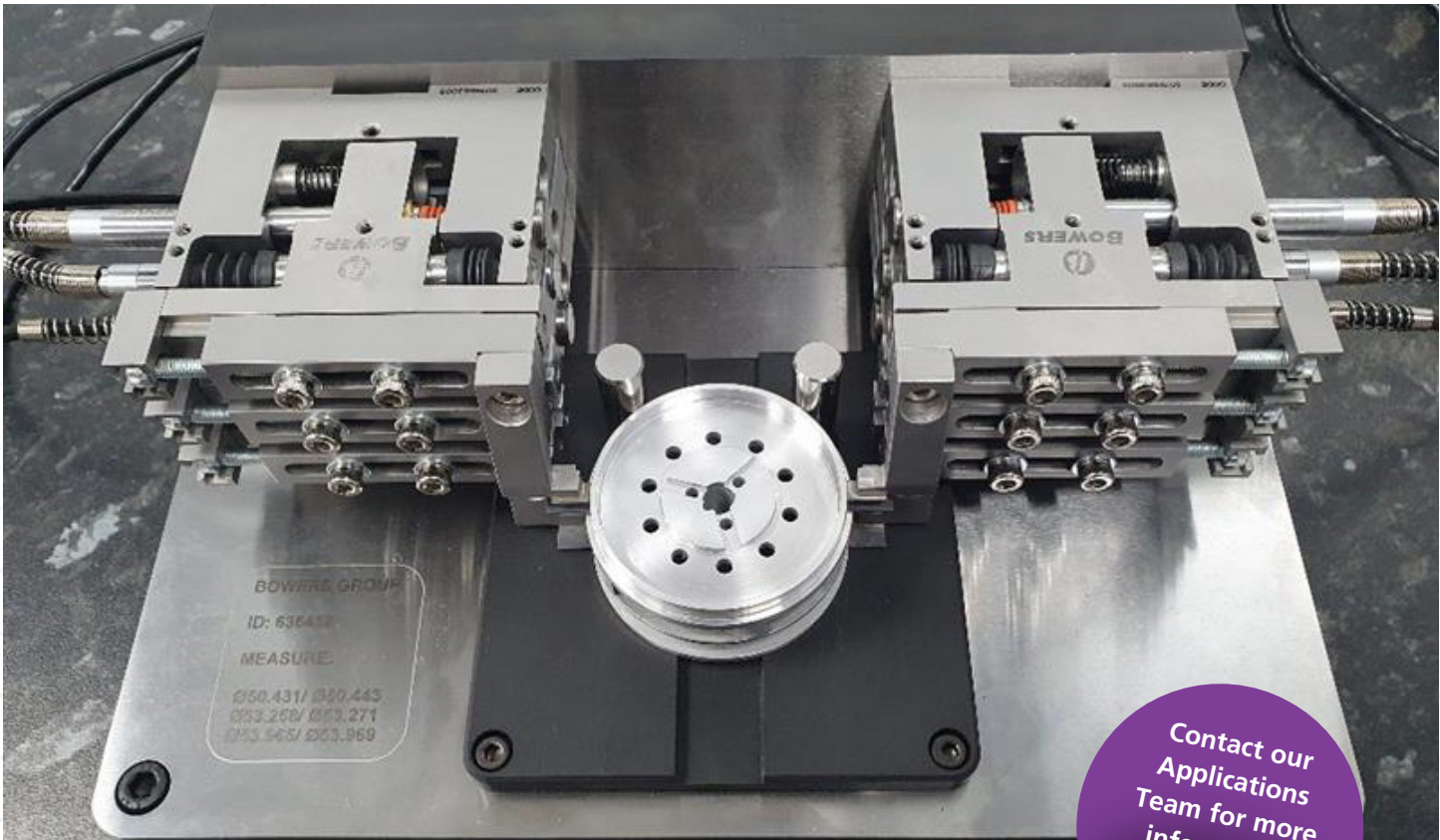
tolerance that requires 100% inspection to confirm compliance. The previous method of measurement was undertaken by a CMM machine and whilst the measurements were accurate, they were both time-consuming and costly.

The solution that Bowers Group provided has transformed measurements by enabling the simultaneous assessment of three tight tolerance diameters, providing multiple benefits that enhance efficiency and productivity.

Since installing the system, inspection time for the part has significantly improved, falling from 180 seconds (3 minutes) carrying out the measurements on the CMM, to just 15 seconds with the newly implemented measurement system, resulting in an impressive 91.6% reduction in inspection time.

A key advantage is the straightforward setup of the system, featuring a user-friendly interface that reduces preparation time and maximises efficiency. Simultaneous measurements have helped reduce inspection time, and the system has been engineered for reliability, ensuring consistent and accurate results.

The Applications Team at Bowers Group are dedicated to creating custom measurement systems for niche applications. Their combined knowledge of various industries allows them to work closely with clients, understanding their unique requirements and creating solutions that precisely meet their needs.



Contact our Applications Team for more information



# Contents



**BOWERS**

| Contents  | Page No. |
|---|----------|
| <b>Bowers Universal Gauging</b>                 |          |
| Universal Gauge Sets                            | 83       |
| Universal Gauge & Accessories                   | 85       |
| Universal Setting Gauge                         | 89       |
| Universal Gauge Applications                    | 91       |
| Checkmaster Comparator                          | 93       |
| Checkmaster Tooling Applications and Dimensions | 95       |
| Universal UNICAL 2 Digital Caliper              | 97       |

81

”

Bowers Universal was supplied with a wide range of extensions and accessories, meaning that we are able to construct the gauge to suit a wide range of diameters and uses on features such as plain diameters and undercuts. Since being issued to the shop floor, the new Bowers gauge has slashed our large diameter measuring times and also improved our already high accuracy standards.

**Andrew Morris - Engineering Manager - Silcoms Ltd**




Go back to **Contents**


# Universal Gauging

# Universal Gauge Sets

## At a Glance



30-255mm Internal / 0-220mm  
External with 20mm Anvil Travel



Non Bluetooth is available  
upon request

## Features

- Internal and external measurement
- Large measuring range possible 0-3000mm 0-118"
- Extensions available 150mm (Steel) 500mm and 1000mm (Carbon Fibre)
- Constant measuring force
- Supplied with digital readout
- Large range of accessories for standard measurement of threads, grooves, splines, diameters, lengths, shallow spigots and recess diameters etc
- Custom anvil designs available
- Custom arm designs available
- Custom length arms 150mm, 200mm and 250mm stocked
- Additional sizes available upon request



**UNIVERSAL GAUGE OVERVIEW**

Have you seen our video?  
**Universal Gauge An Overview**

The Bowers universal gauges are perfect for measuring internal and external dimensions such as grooves, shoulders, recesses, threads, tapers, gears, splines, hole centres.

Available with a wide range of measuring contacts to enable measurement of a variety of features, Bowers universal gauges are perfect for measuring internal and external dimensions such as grooves, shoulders, recesses, threads, tapers, gears, splines, hole centres.



# Universal Gauge Sets

### Set Contents - TGUSET1

| Code No    | Description  |
|------------|--|
| TGU1000-XT | Universal with Box but without Indicator or Accessories      |
| TGUA001-AN | Digital / Analogue Indicator 25mm / 0.001mm c/w COWL         |
| TGUA006    | Measuring arms 50mm (Pair)                                   |
| TGUA007    | Measuring Arms 75mm (Pair)                                   |
| TGUA008    | Measuring Arms 100mm (Pair)                                  |
| TGUA013    | 20mm Disc Anvils for measuring grooves (Pair)                |
| TGUA014    | 12mm Disc Anvils Int/Ext for measuring grooves (Pair)        |
| TGUA011    | Shoulder anvils flat outside spigot diameter (Pair)          |
| TGUA012    | Semi-cylindrical anvils for inside register diameters (Pair) |
| TGUA010    | Depth-stops (Pair)   |
| TGUA003    | Clamping inserts   |
| TGUA004    | Flat Measuring Anvil   |
| TGUA005    | Spherical contacts   |
| TGUA009    | Mounting Attachment (Pair)                                   |

### Set Contents - TGUSET2

| Code No    | Description   |
|------------|---|
| TGU1000-XT | Universal with Box but without Indicator or Accessories |
| TGUA001-AN | Digital / Analogue Indicator 25mm / 0.001mm c/w COWL    |
| TGUA003    | Clamping inserts (Pair)                                 |
| TGUA005    | Spherical contacts (Pair)                               |
| TGUA006    | Measuring arms 50mm (Pair)                              |
| TGUA010    | Depth-stops (Pair)                                      |

### Universal Gauge Sets

| Code No | Description        |
|---------|--------------------|
| TGUSET1 | Large Set with Box |
| TGUSET2 | Small Set with Box |

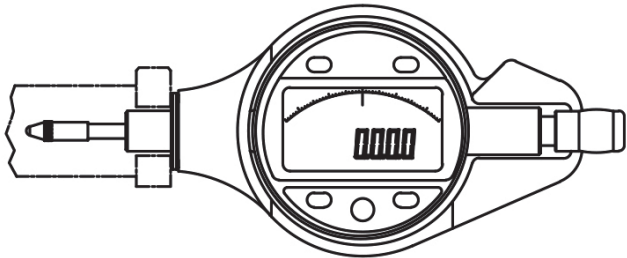


# Universal Gauge & Accessories

# Universal Gauge & Accessories

Digital Indicator and Protective Shroud


Code No TGUA001-AN



Note: AN denotes Analogue

Code No TGUA001

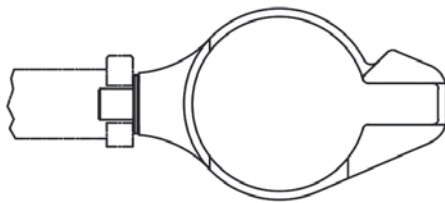
Code No TGUA001-BT



Note: BT denotes Bluetooth

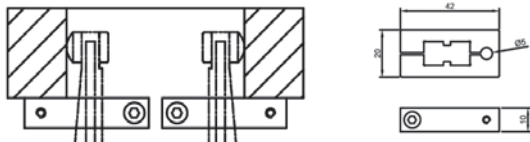
Protective Shroud for Dial/Digital Indicator

Code No TGUA002



Adjustable Depth Stops for Measuring Arms (Pair)

Code No TGUA010



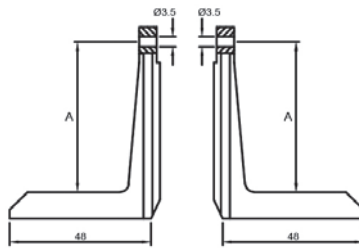
Measuring Arms (Pair)

Code No Dimn A (mm)

Code No TGUA006 50

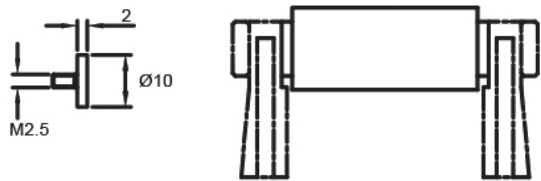
Code No TGUA007 75

Code No TGUA008 100



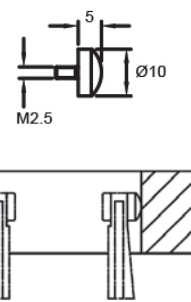
Flat Tips (Single)

Code No TGUA004



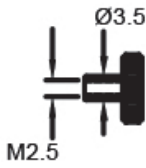
Spherical Tips (Single)

Code No TGUA005



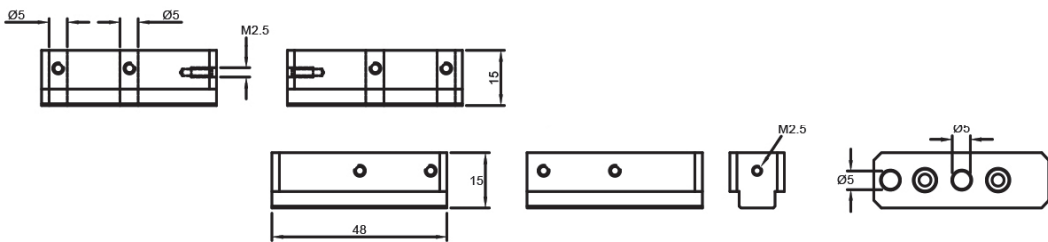
Clamping Insert (Single)

Code No TGUA003



Mounting Attachments for use with the following Anvils (Pair)

Code No TGUA009



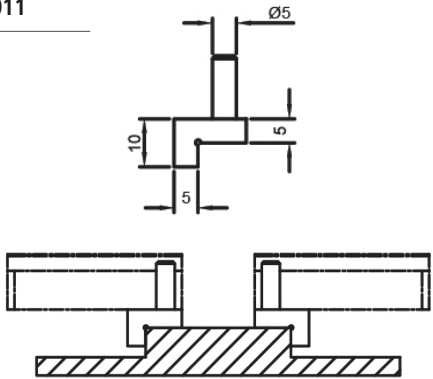


# Universal Gauge & Accessories

# Universal Gauge & Accessories

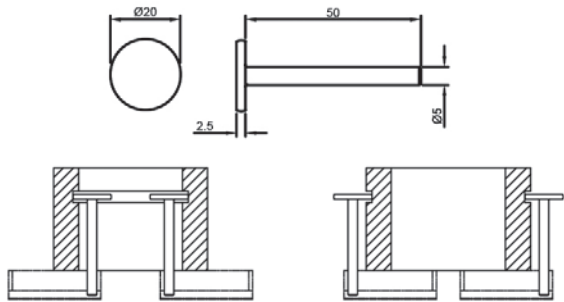
Shoulder Anvils Flat Outside Spigot Diameter (Pair)

Code No TGUA011



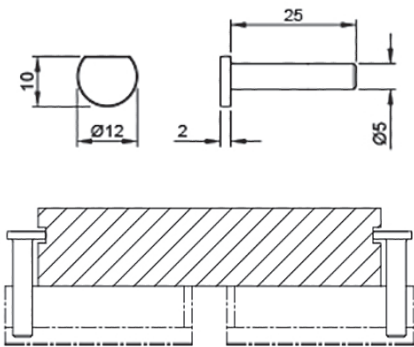
DISC Anvils for measuring Groove Diameter (Pair)

Code No TGUA013



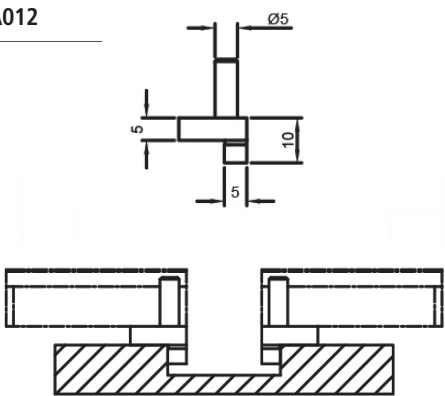
DISC Anvils for measuring Groove Diameter (Pair)

Code No TGUA014



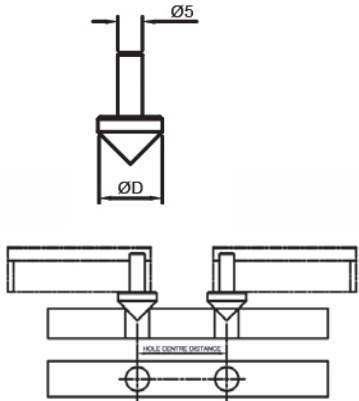
Semi-Cylindrical Anvils for Inside Register Diameters (Pair)

Code No TGUA012



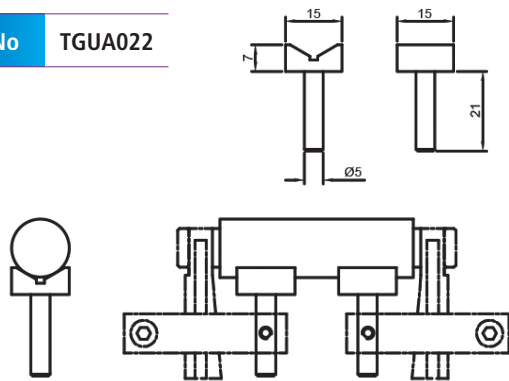
Cone Anvils for Measuring Hole Centre Distance (Pair)

Code No Dimn D (mm)  
TGUA019 13  
TGUA020 25  
TGUA021 50



Vee Support for Length Measurement (Single)

Code No TGUA022



## Universal Gauging Extensions

| Code No | Description            | Length (mm) |
|---------|------------------------|-------------|
| TGUA035 | Extension Steel        | 150         |
| TGUA036 | Extension Carbon Fibre | 500         |
| TGUA037 | Extension Carbon Fibre | 1000        |





# Universal Setting Gauge

## At a Glance

- Available in 3 different lengths:
- Up to 550mm Internal - 650mm External
  - Up to 1050mm Internal - 1150mm External
  - Up to 1550mm Internal - 1650mm External

## Features

- Setting gauge has flat face contact anvils
- Ideal for use in the workshop area
- Easily adjustable gauge mounting supports
- Requires Length Setting Rods for setting (Spherical ends advised)
- Length adjustment can also be achieved by fitting an optional digital indicator
- Can be orientated vertically up to 1050mm internal / 1150 external when a base and vertical guide, (USGS) are fitted



# Universal Setting Gauge

To improve the quality of your large diameter machined parts, the portable **Universal Setting Gauge** from Bowers has been developed as an easy to use comparator tool which can be set up next to the gauge being utilised.

This Universal Setting Gauge has been designed to improve the ongoing accuracy levels; when setting the master, the spring loaded setting anvil ensures a constant force is maintained thereby giving repeatable setting readings. The Universal Setting Gauge guide bars offer two adjustable supports for the pillars which are used at the airy points of the setting rod, all designed to reduce the amount of deflection.

Due to its rugged construction the Universal Setting Gauge is ideally suited to the shop floor environment. It has been designed to work primarily in conjunction with the Bowers Universal Gauge and the INTEX Comparator Beam Gauge, although will allow other instruments to be set. The portability of the Universal Setting Gauge ensures that it can be utilised next to the gauge in use, so any deviations in measurements can be reset with the minimum amount of time and error.

### Universal Setting Gauge

| Code No | Description                            | Range (mm)                       |
|---------|--|----------------------------------|
| USG550  | Universal Setting Gauge                | 550mm internal to 650mm external |
| USG1050 | Universal Setting Gauge                | 1050mm internal 1150mm external  |
| USG1550 | Universal Setting Gauge                | 1550mm internal 1650mm external  |
| USGS    | Universal Setting Gauge Vertical Stand |                                  |

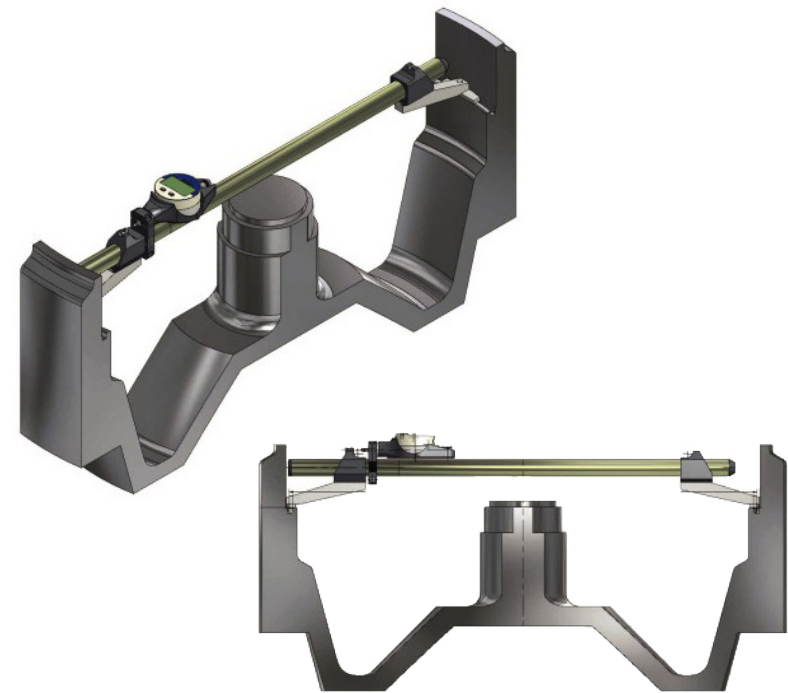
Digital Indicators available on request



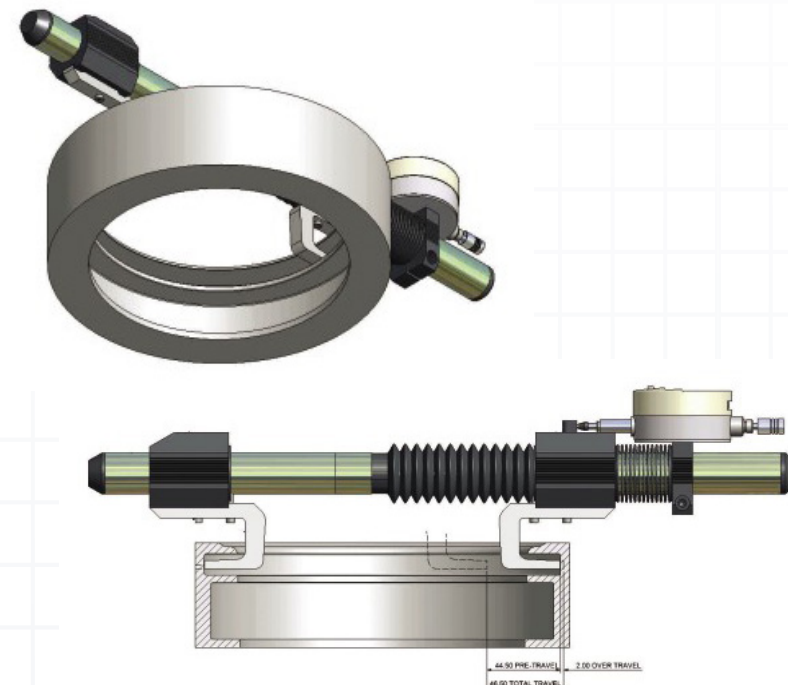
# Universal Gauge Applications

At a Glance  
Customized universal gauges available

Universal Gauge Incorporating On-Board Indicator and Extra Reach Contact Points.



Extended Travel Application Universal Gauge.



# Universal Gauge Applications

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



Taper Measurement Gauge



Int/Ext Slot Measurement



# Checkmaster Comparator

## At a Glance

- Unique 3 gauge station and readout capability
- Accepts most dial indicators, digital indicators (12.7mm travel) and Gauging Probes

## Features

- Remarkable versatility and repeatability
- Excellent gauge repeatability and reproducibility (G.R. & R.) capability
- Exceptionally tough for shopfloor on-line inspection
- Measuring force, with adjustable setting
- Multi functional
- Ideal for SPC and 100% inspection
- Left or right hand operation
- Custom configurations available upon request

Checkmaster is the flexible gauging solution for short production runs. Simply setup your Universal Tooling set to suit your application (see opposite), fit your preferred indicator and zero against a master for fast accurate and incredibly repeatable results. Gauging force can be adjusted for softer materials and biased for either internal or external dimensions by a simple lever selection. This enables multi-dimension setups to be easily catered for.

## Need Absolute Results?

Using Bowers' standard digital indicator, the master size can be pre-set. Now the results are displayed as Absolute dimensions. Tolerances can be entered and an out of tolerance symbol will flash for even quicker reference.

## Tooling

The Universal Tooling Set includes 2 x universal tooling blocks, combination blade / radius anvil, Mushroom anvils and mounting bars to allow a variety of internal and external features to be measured.

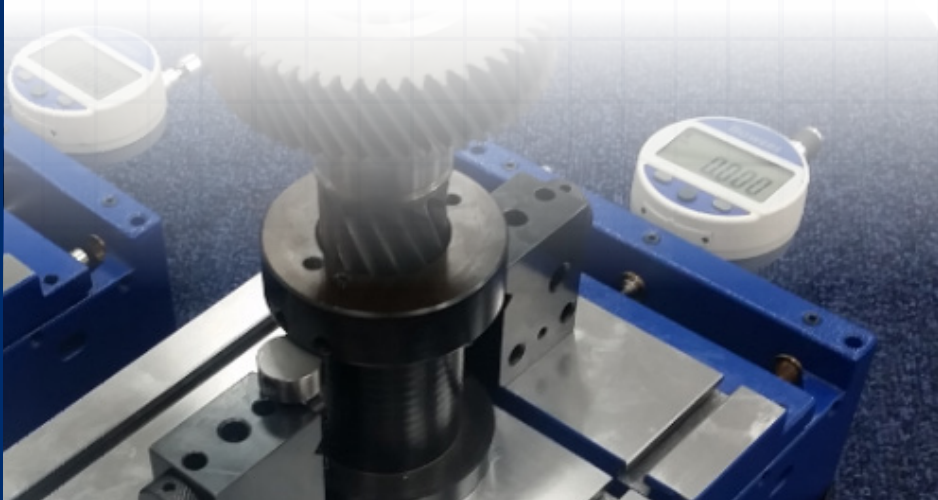
Checkmasters can be supplied with or without indicators. If ordered 'Less Indicator' the Checkmaster will be supplied with a set of split bushes to suit any 8mm or 3/8" stem mount gauge with a suitable reach.

## Need SPC, Printed Reports Data Storage?

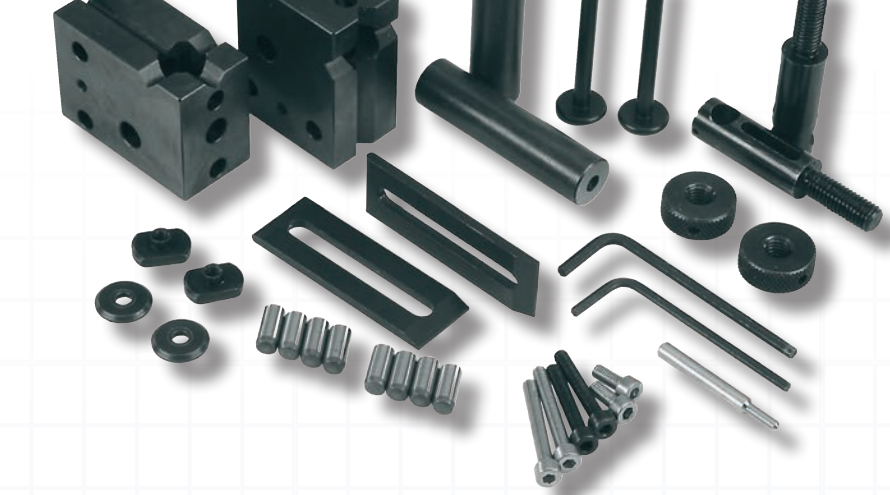
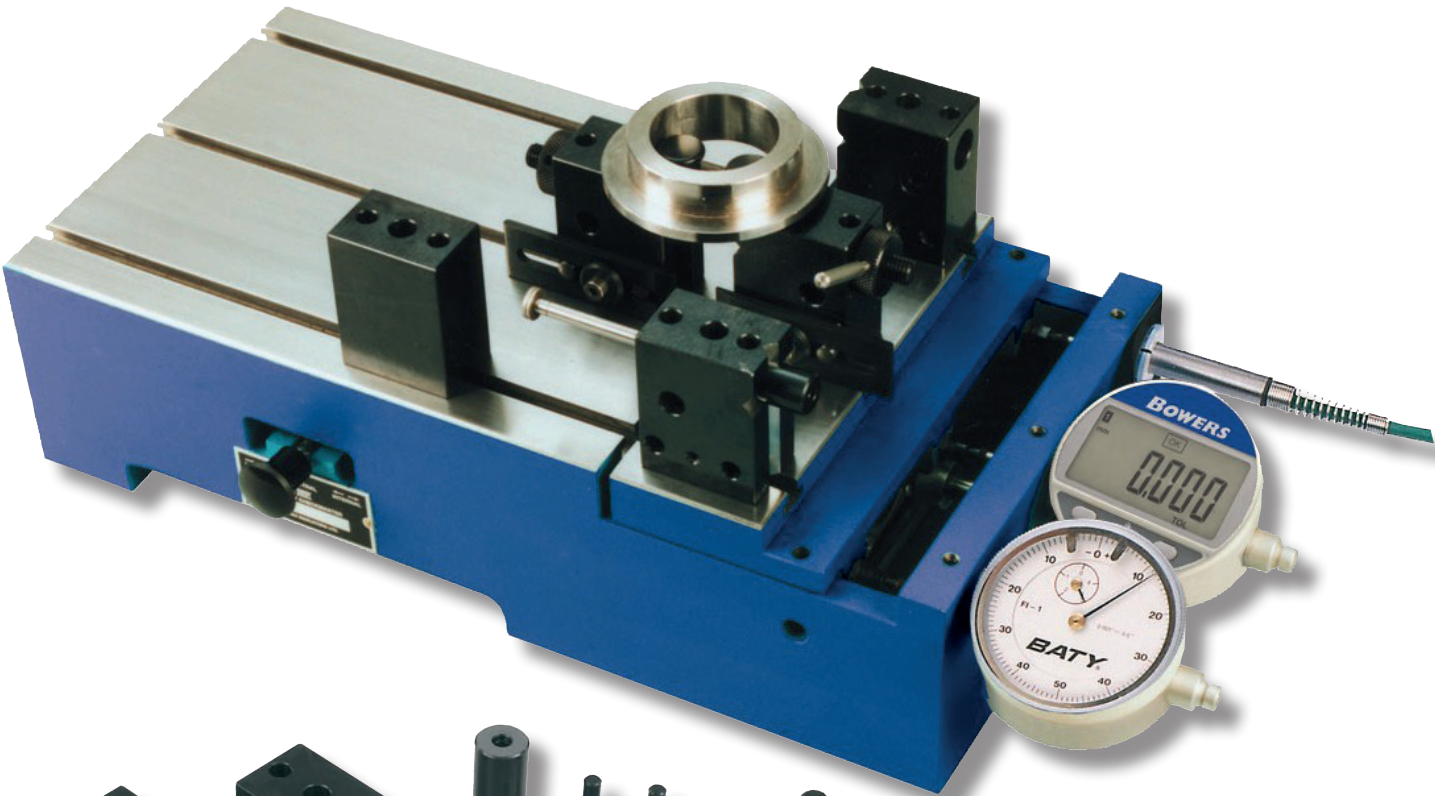
Replacing the conventional indicator with a transducer linked to our Sylvac D300S digital readout will allow you to setup and store multiple parts each with pre-toleranced dimensions. Just setup the correct tooling situation, select the part / job number required from the D300S memory and you are ready to go.

SPC Data from previous measurements of the same part type can be viewed on the large colour screen and even printed direct from the D300S or transferred to a PC.

Full maths functionality included: take dynamic measurements such as roundness / concentricity or solve more complex applications by using multiple transducers.



# Checkmaster Comparator

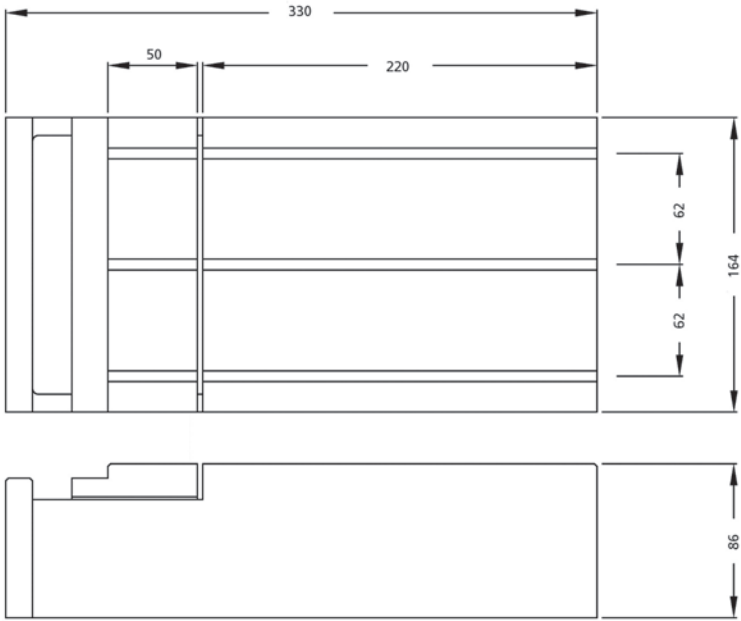


| Universal Setting Gauge |  |
|-------------------------|--|
| Code No                 | Description                              |
| 1050                    | Checkmaster Comparator without indicator |

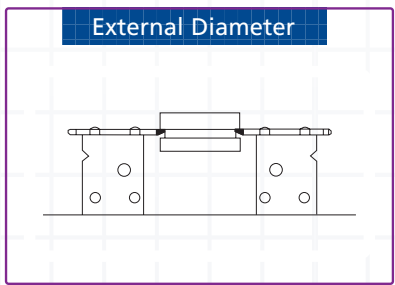
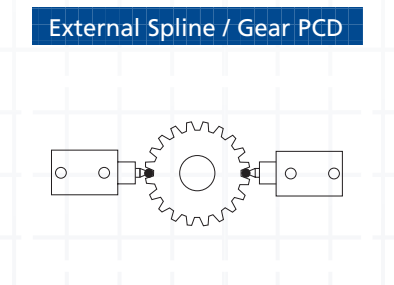
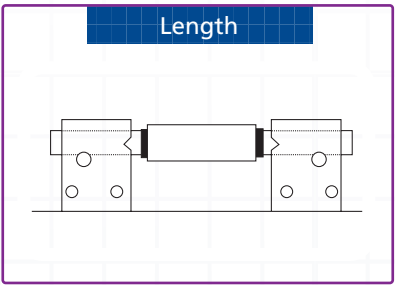
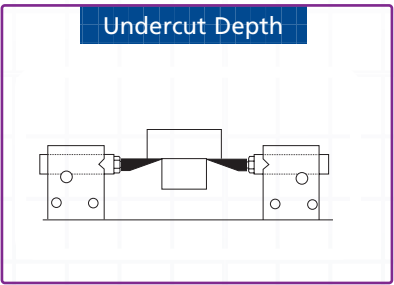
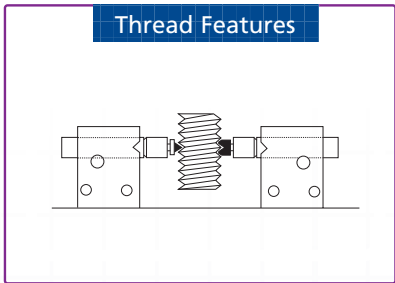
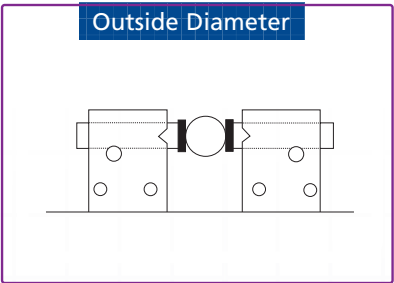
# Checkmaster Tooling Applications and Dimensions

## Features

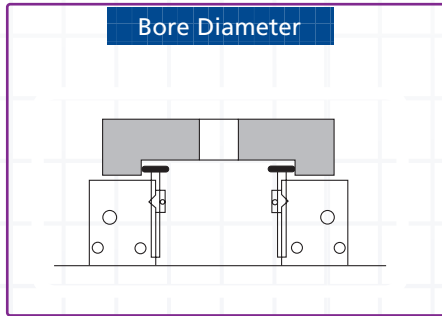
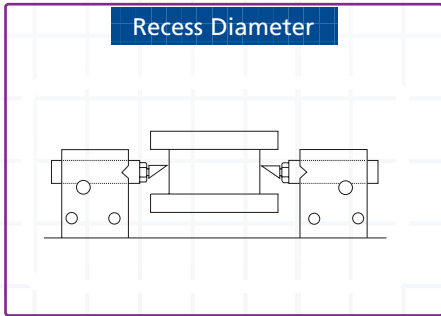
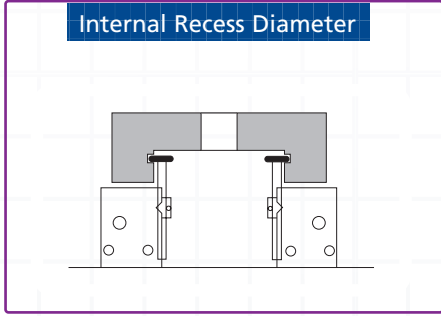
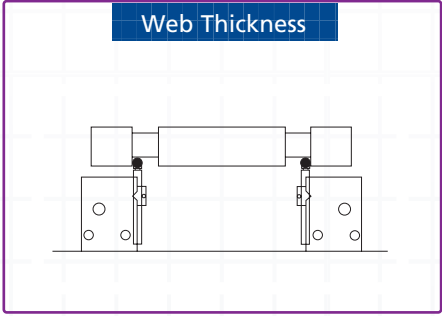
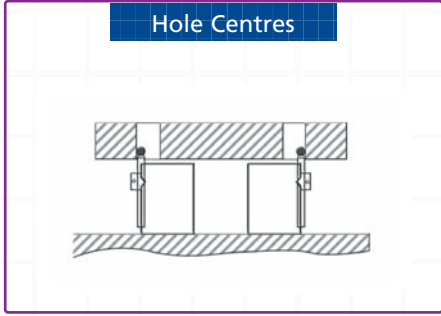
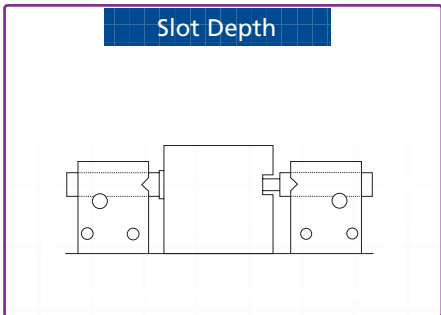
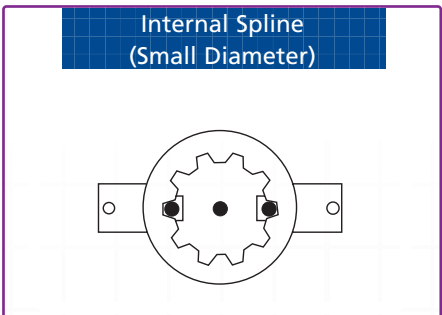
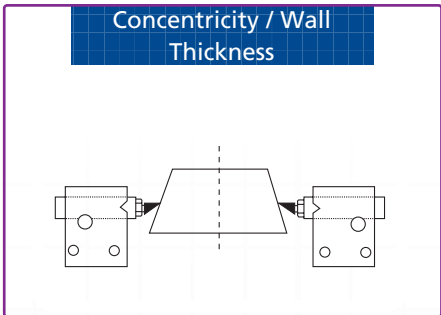
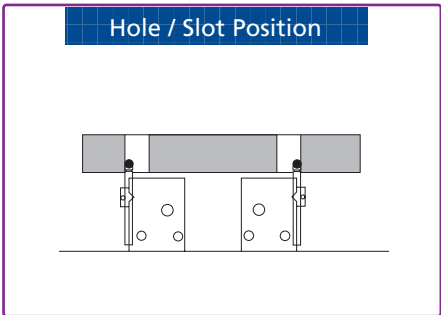
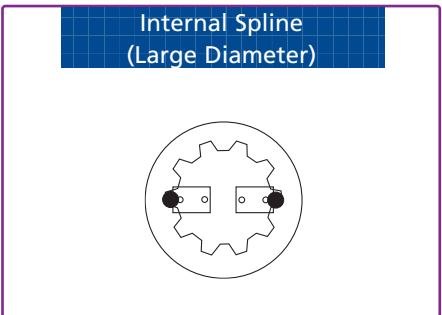
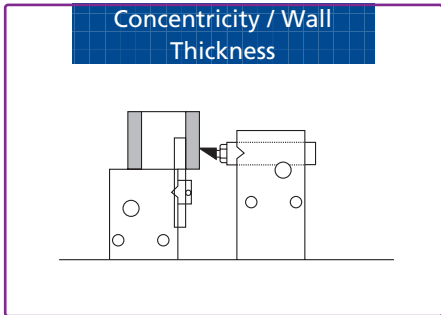
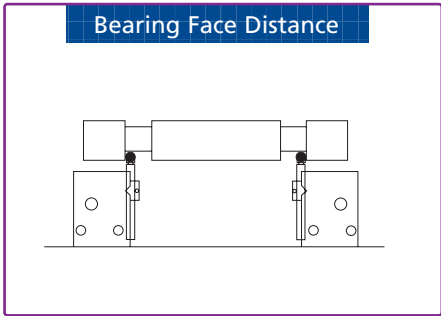
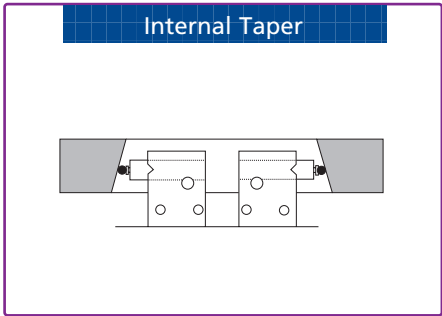
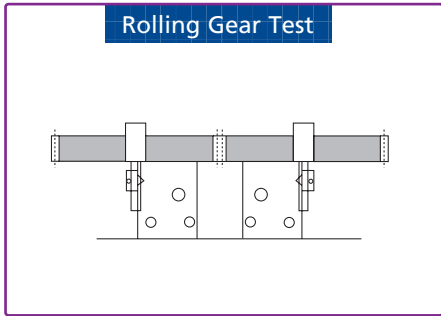
- Diameters, internal and external
- Undercuts, O ring grooves, ball tracks internal and external
- Gear and spline pitch diameter internal and external
- Rolling gear test, gear to gear or gear to master
- Gear pitch diameter to shaft bore run out
- Holes centre to centre
- Concentricity bore to O.D.
- Step height, lengths, depths



Checkmaster 1060  
Code No: 1060



# Checkmaster Tooling Applications and Dimensions




Custom tooling available on request




# Universal UNICAL 2 Digital Caliper

### At a Glance



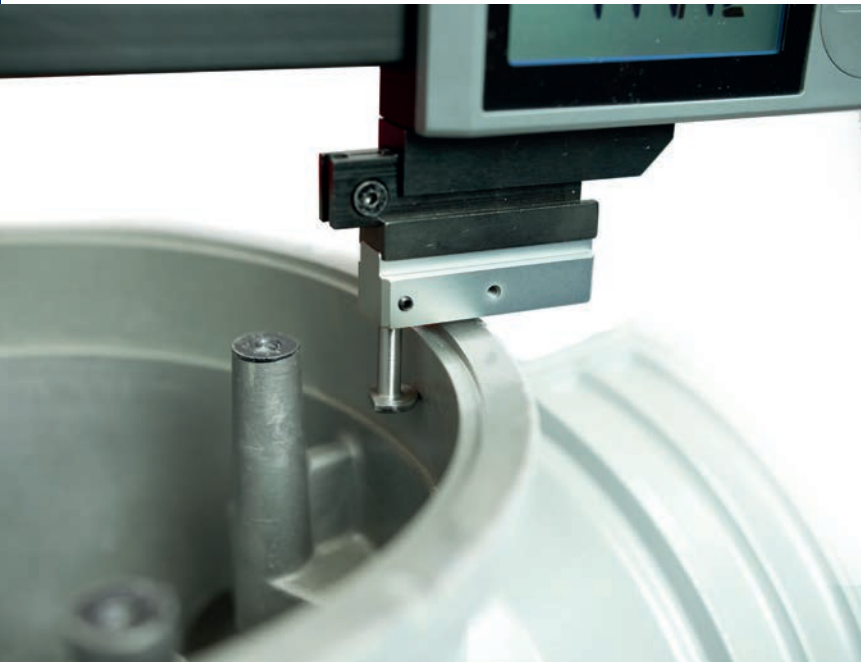
Non Bluetooth is available upon request



## Features

- Integrated Bluetooth Smart Low Energy data transmission
- Maximum speed of displacement: 2 m/sec
- Internal and external measurement
- System ensures smooth carriage movement and protects the beam against shocks
- Displays upper and lower tolerances
- Extremely light instrument
- IP67 protection
- 2 references
- Min/Max function
- Tolerance limit indicators
- Supplied complete with adapters for Bowers Universal accessories

Available in four standard sizes covering most large caliper applications, these revolutionary **NEW digital gauges** have lightweight reinforced main beams, giving them both incredible strength and lightness, aiding both accuracy and ease of use. All gauges have integrated Bluetooth transmission and IP67 protection. A range of flexible accessories further improves the usability of these advanced gauges.



# Universal UNICAL 2 Digital Caliper

UNIVERSAL GAUGING

| UNICAL 2 Universal Digital Caliper |            |                    |                    |           |                         |             |
|------------------------------------|------------|--------------------|--------------------|-----------|-------------------------|-------------|
| Code No                            | Range (mm) | Maximum Error (µm) | Repeatability (µm) | Force (N) | Output                  | Weight (kg) |
| UNICAL2-400                        | 0-400      | 30                 | 20                 | 5-10      | Bluetooth / RS232 / USB | 1.5         |
| UNICAL2-600                        | 0-600      | 40                 | 20                 | 5-10      | Bluetooth / RS232 / USB | 1.6         |
| UNICAL2-1000                       | 0-1000     | 50                 | 20                 | 5-10      | Bluetooth / RS232 / USB | 1.9         |
| UNICAL2-1500                       | 0-1500     | 90                 | 20                 | 5-10      | Bluetooth / RS232 / USB | 2.3         |



UNICAL2-400



UNICAL2-400 with accessories



Custom tooling available on request

# Contents



| Contents  | Page No. |
|---|----------|
| Bowers Air Gauging                                      |          |
| Air1/2  | 101      |
| Air3 Multifunctional/ Multichannel                      | 103      |
| Sylcom Data   | 104      |
| Standard Air Gauge Tooling                              | 105      |
| Air3 Multifunctional/ Multichannel Display Applications | 107      |
| Air Gauge Tooling Applications                          | 109      |
| Bypass Air Preparation Kit                              | 111      |

99

”

The **Bowers Air Gauging** system ensures that every component can be checked with guaranteed high precision results in a matter of seconds.  
**Addmore Engineering Ltd**

# Air Gauging



# Air Gauging A New Approach

## Bowers Air1/2 Features\*

- TFT colour touch screen display 4,3", resolution 480x272
- Static or dynamic measurements (Max, Min, Max-Min, Average, Median)
- Analogue or digital display
- 1 or 2 measurement configurations (2 characteristics)
- Possibility to automatically select the characteristic by using the air gauge or by touching the screen
- Relative or absolute display
- Display resolution (up to 0.1µm)
- Metric (mm or µm) or Imperial (Inches) measurement or DMS
- Classification/Grading: Up to 16 classes with colour representation
- RS232 port for communication with a PC
- USB port for communication and/or power supply
- USB Stick for data saving on a CSV file
- Optional connection of M-Bus modules
- Measurement transfer by pressing a key, footswitch input or retro- command on the RS232 port
- Operating temperature: +15°C to +30°C
- Power supply from 85 to 265 VAC by using the supplied main transformer (or by connecting it directly on your PC USB port, or through the 24 VDC screw terminal)
- Relative humidity : maximum 80%
- Dimensions : width 130 mm, height 111 mm, depth 105 mm
- Mass : 600 grams (700g with the power supply)
- Working parameters set by QR Code Scanner
- No additional hardware required other than QR scanner
- Footpedal to make measurements quicker and easier
- ECO Mode Compatible with energy saving, Air Bypass Filtration Kit

\* Based on firmware 1.2 or later

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 that demand sub-micron precision tolerancing. Air Gauging technology is flexible; enabling measurement of not only dimensions, but geometric and relational characteristics, such as squareness, parallelism, ovality, taper and straightness.

The working range of our standard air gauge tooling is 0.08mm. Working range can be extended by the addition of a third master. For optimum accuracy, Bowers produce the Setting Masters at the Upper and Lower product limits.

Please contact your local Bowers representative to discuss your application in greater detail or arrange a product demonstration.

Different organisations may prefer differing methods of air gauging, Bowers Group offers air gauging with a multi-function touchscreen Air Gauge Display, the Bowers Air1/2, As well as the multi function multi channel Air3. The Air3 is expandable, handling up to 99 connected devices.



## Bowers Air1 (Single Channel) Air2 (Twin Channel)

The user friendly modern design of the Bowers Air1/2 Gauge has a touch screen for ease of use and readability

For improved accuracy the Bowers Air1/2 benefits from two or three points of calibration, the minimum, the maximum and the mid: this offers greater linearity. Air gauging on the shop floor is a simple yet robust method of measurement that offers a myriad of measurement capability but with the smallest of footprint in a busy crowded factory floor. With no moving parts the toughened glass touch screen requires no special maintenance making this device suitable for harsh working environments. It does have a number of connectivity options, all designed to make the measuring process more user friendly.

- Simplicity with USB connectors for laptops and keyboards
- Data output from this device is exceptionally straightforward
- Fast reaction time of measurement, reduces the cycle times on machines
- QR Code Configuration (contact us for recommended QR reader model)
- Foot pedal for preset-clear-part characteristic-hold-data transfer

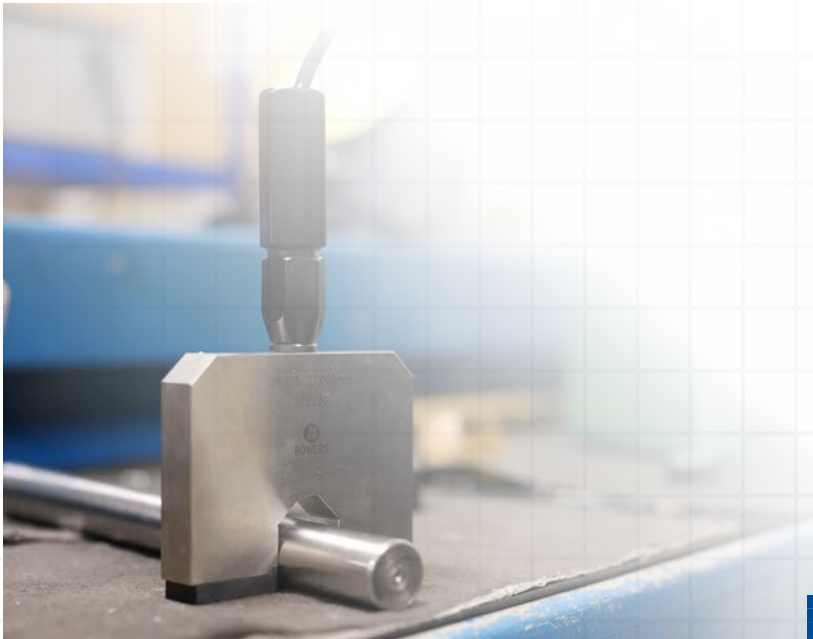
Configuration is always important. By using the Bowers Air1/2 you can set up the defined working parameters with speed, accuracy and ease by using nothing more complicated than a QR code, which is pre-loaded with the correct measurements and tolerances. The QR scanner plugs straight into the device and does not require any external hardware other than the QR code scanner.



Bowers Air1 Single Channel



Bowers Air2 Twin Channel



QR Code Scanner



Printer



# Bowers Air3 Multifunctional/ Multichannel

## Features

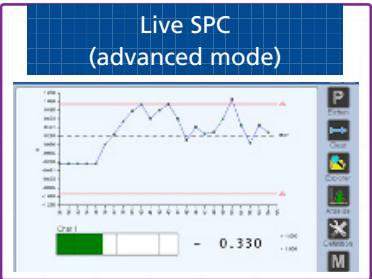
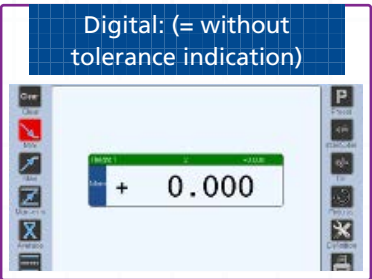
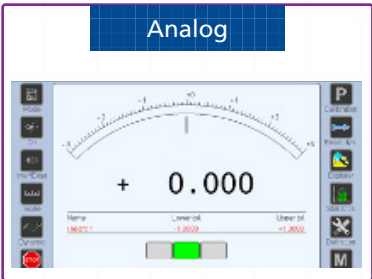
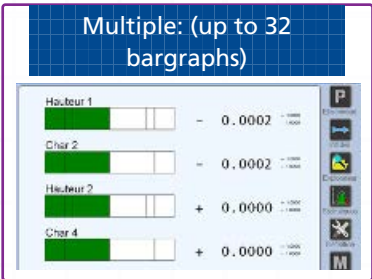
- 7" touchscreen display and customizable display interface
- Bench stand or panel mount
- Aluminium body
- 12VDC/30VDC Power supply
- RJ-45 Ethernet TCP4 for Network Interface
- USB host (for usb key) and USB device (virtual keyboard)
- Up to 99 device connection
- Footswitch
- M-BUS Module Connection
- RS232
- Static and dynamic (Mini, Maxi, Maxi-mini, Average, Median)
- Trigonometrical measurements
- Analogical and digital display
- Manage up to 32 fixtures with automatic fixture detection by probe motion
- Up to 32 characteristics by fixture
- Displays resolution up to 5 decimals
- SPC functions
- Upgradeable, Non Windows Firmware
- Measurement transfer by USB or RS232
- PLC programming
- QR Reader Compatible
- ECO Mode Compatible with energy saving, Air Bypass Filtration Kit
- On board measurement storage of up to 1,000 measurements

The Air3 allows users to display readings simultaneously from multigauging applications. All of which offers readings for each dimension, the MIN, MAX and DELTA etc.

The AIR 3 is a NEW addition to the Bowers Air Gauge range of displays



### Display types preview:



# Sylcom Data Processing Software

The Sylcom Software can be used with the MB-AG air gauge modules in conjunction with the MB-RS module. The MB-RS Module also allows the air gauge modules to be connected to a PLC or Network via USB or RS232.

- BlueTooth compatible, export data to Microsoft Excel
- Software compatible with Windows 7, 8.1 and 10
- Display values in different modes
- Upload parts drawing in the background
- Classify results from tolerances
- Multigauges and sequence mode
- Sylcom Advanced Package allowing to connect many probes and instruments through M-BUS modules, including Air Gauge modules
- Free Sylcom Lite version with 1 instrument connection, free 30 days trial for Sylcom Standard, not compatible with MB-AG modules

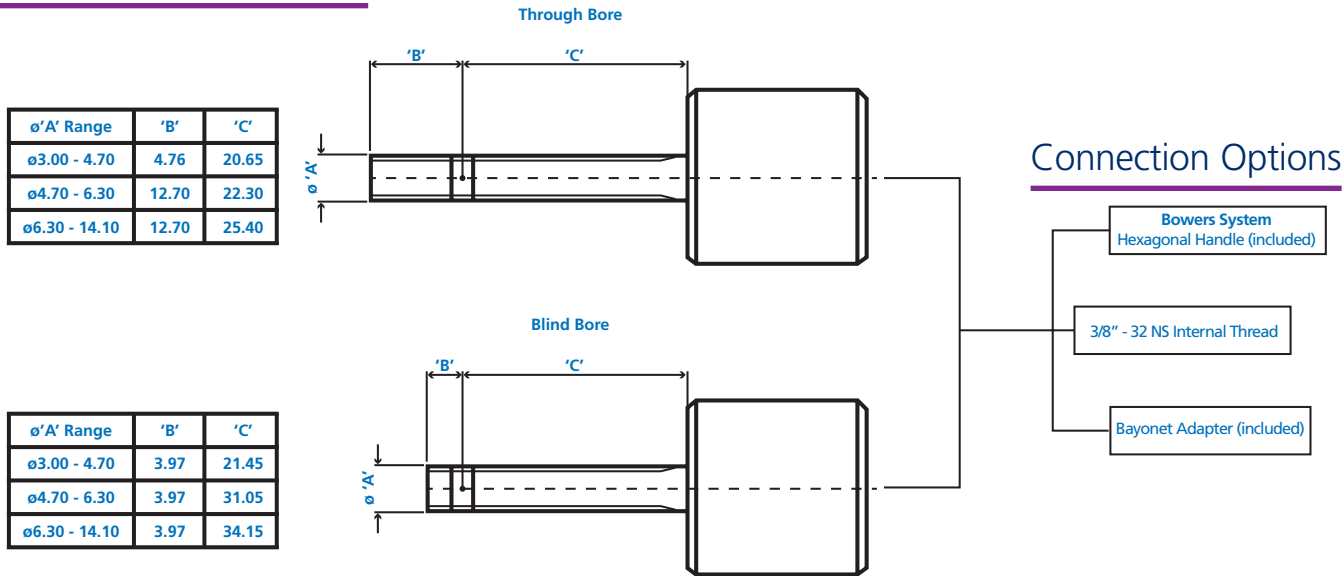


| Sylcom Software Specifications          |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
| Specification                           | Sylcom Standard                     | Sylcom Advanced                     |
| Max Number of Instruments               | 16 (max 8 Bluetooth)                | 254                                 |
| Software Requirements                   | Windows 7 / 8.1 / 10 (64-bit)       | Windows 7 / 8.1 / 10 (64-bit)       |
| Minimum Hardware Requirements           | Intel i5, 4GB RAM (8GB recommended) | Intel i5, 4GB RAM (8GB recommended) |
| Compatible M-BUS                        | No                                  | Yes                                 |
| Export to Microsoft Excel               | Yes                                 | Yes                                 |
| Data Export by Timer                    | Yes                                 | Yes                                 |
| Tolerances and Control Limits           | Yes                                 | Yes                                 |
| Selectable Display Modes                | Yes                                 | Yes                                 |
| Multigage Mode                          | Yes                                 | Yes                                 |
| Sequence Mode                           | Yes                                 | Yes                                 |
| User Management                         | Yes                                 | Yes                                 |
| Configuration of Digital Indicator Menu | Yes                                 | Yes                                 |

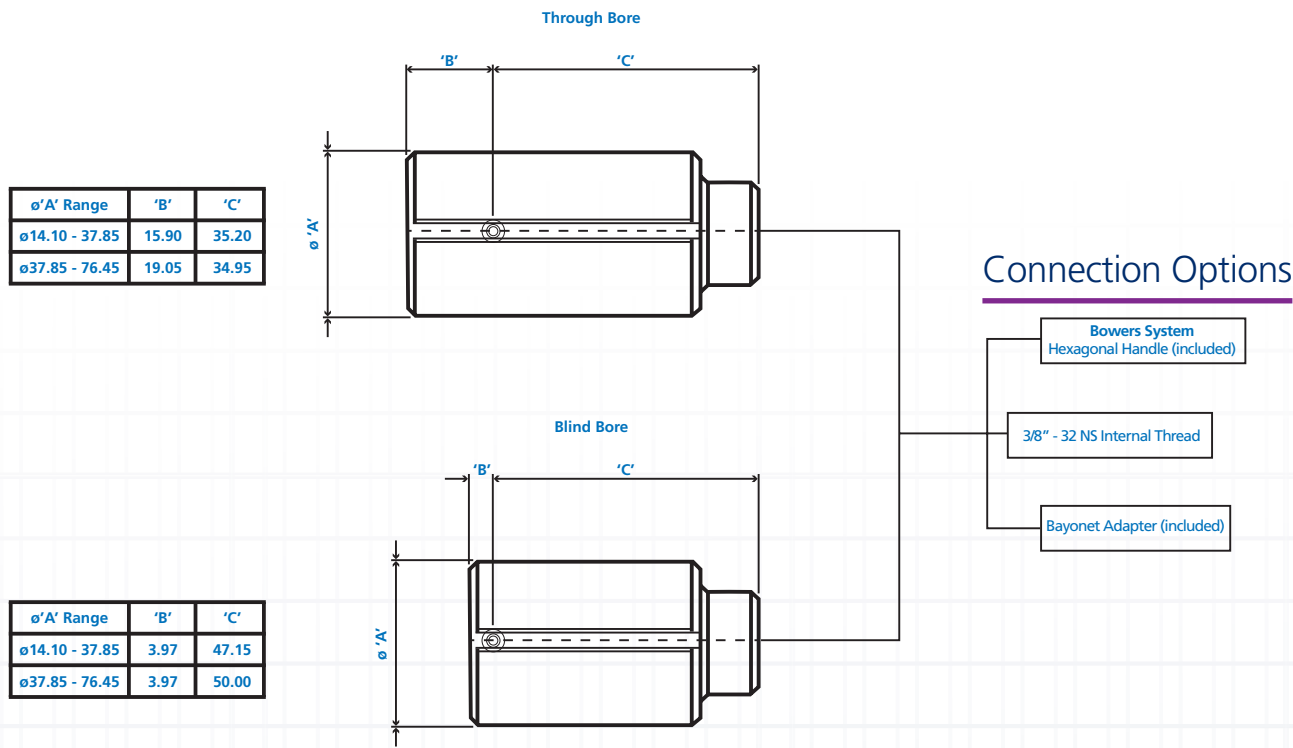


# Standard Air Gauge Tooling

Standard: 3.00 - 14.10mm



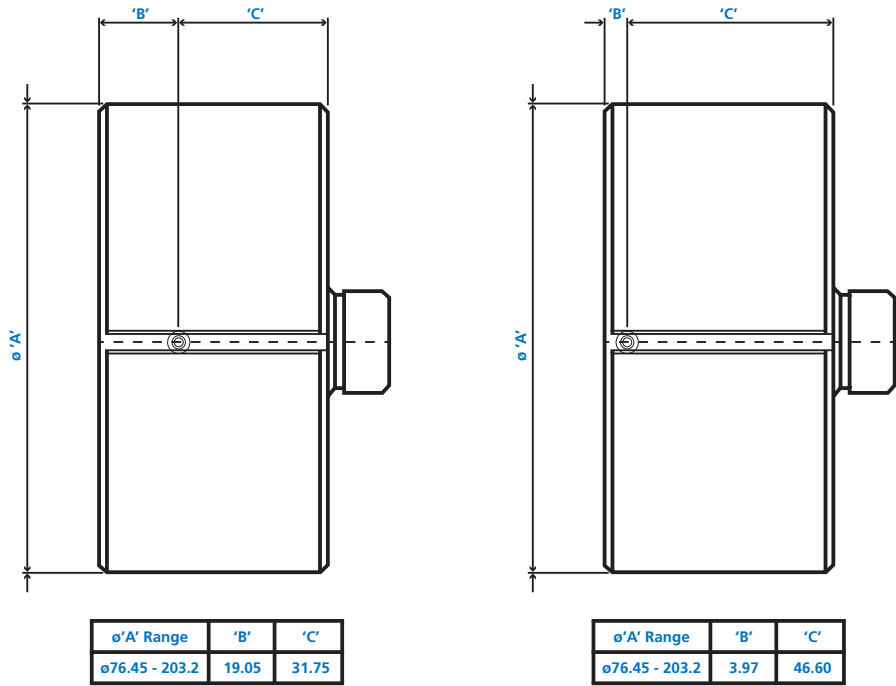
Standard: 14.10 - 76.45mm



**Note:** For more information about connections please contact our sales team.

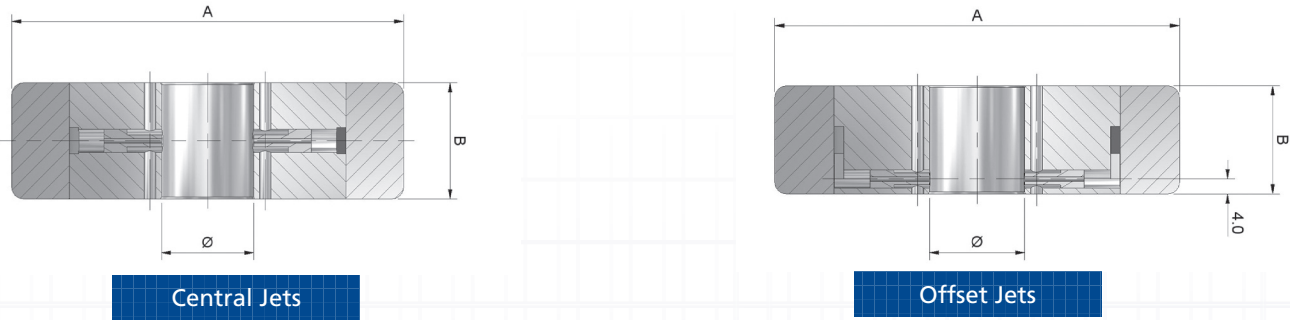
# Standard Air Gauge Tooling

Standard:  
76.45 - 203.20mm



## Standard Air Rings

Air Rings are supplied with jets in central position as standard, see diagram. Air rings are designed to be hand held, bench mounted versions are available on request.



| Air Rings Specifications |                   |            |              |            |              |
|--------------------------|-------------------|------------|--------------|------------|--------------|
| Size Range (mm)          | Size Range (inch) | Dim A (mm) | Dim A (inch) | Dim B (mm) | Dim B (inch) |
| 3.17-6.35                | 1/8 - 1/4         | 63.50      | 2.5          | 19.05      | 3/4          |
| 6.35-25.4                | 1/4 - 1           | 82.55      | 3 1/4        | 25.40      | 1            |
| 25.4-38.10               | 1 - 1.5           | 107.95     | 4 1/4        | 28.58      | 1 1/8        |
| 38.10-50.80              | 1.5 - 2           | 120.65     | 4 3/4        | 28.58      | 1 1/8        |
| 50.80-63.50              | 2 - 2.5           | 133.35     | 5 1/4        | 28.58      | 1 1/8        |

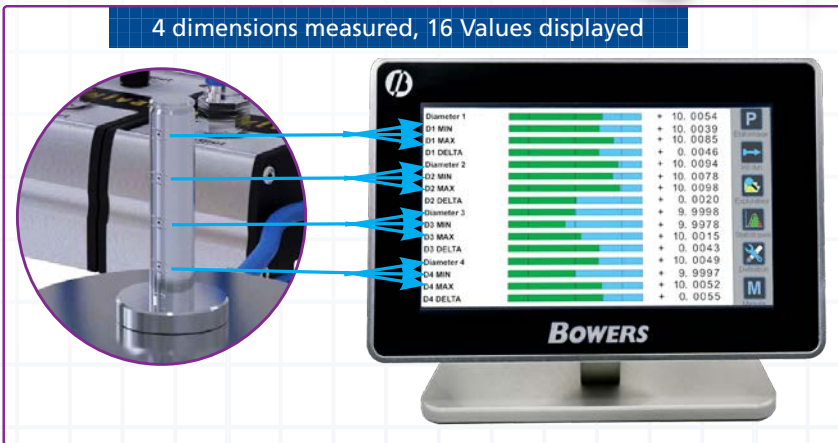
**Note:** All Bowers Air tooling is cutomisable to suit your application. Please contact our sales team for more information.

# Bowers Air3 Multifunctional/ Multichannel Display Applications

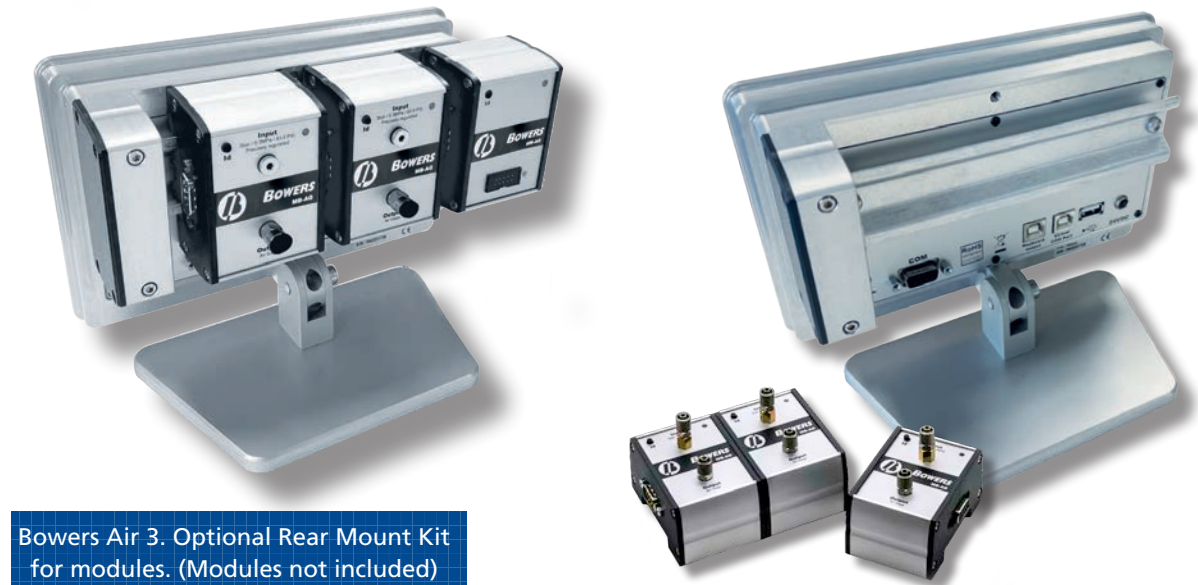
## Application example:

Display several characteristics for each dimension e.g. (MIN, MAX and DELTA).

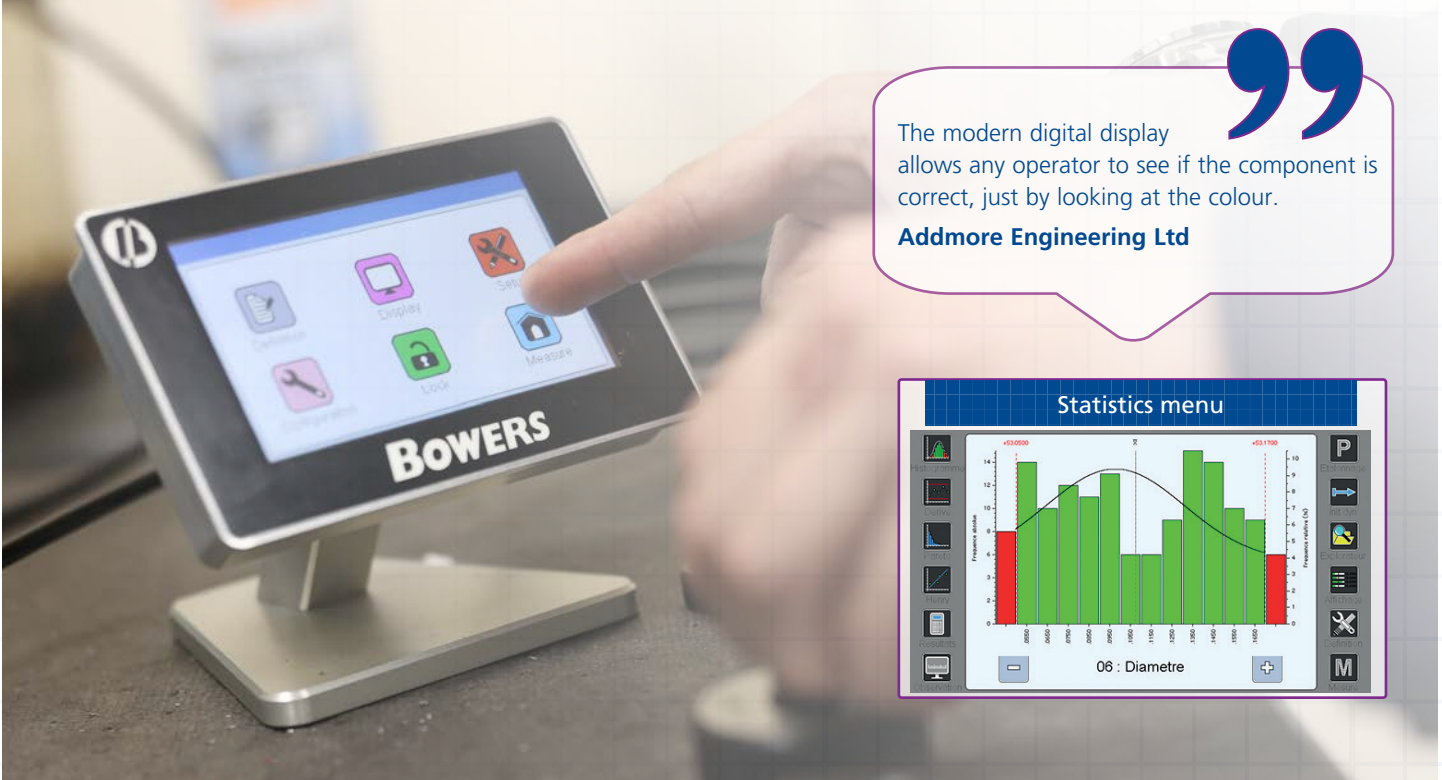
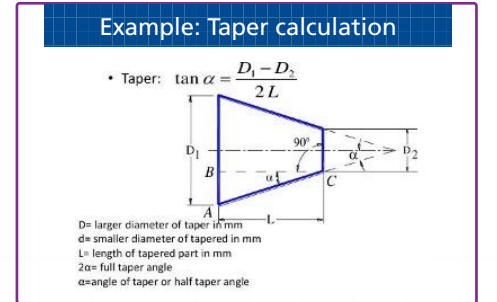
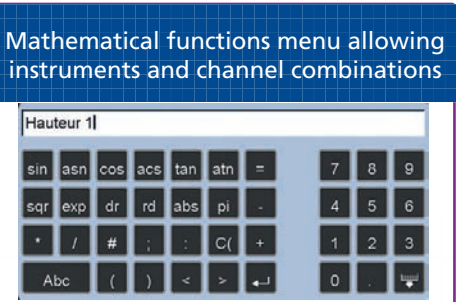
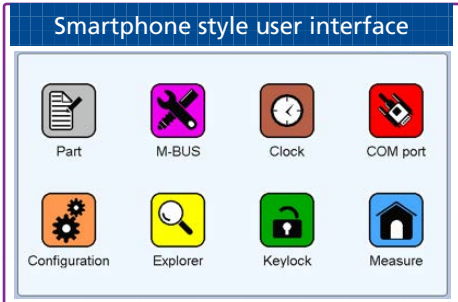
The **AIR 3** is an exciting new addition to the **Bowers Air Gauge** range of displays. With its versatile and easy to use touchscreen display, the AIR 3 can be used in conjunction with the M-BUS MB-AG modules as a simple display or as a fully networked, **integrated measuring station** capable of machine tool control. With on board measurement storage of up to 30,000 measurements, collected data can be used locally on the display or via network for SPC analysis.



# Bowers Air3 Multifunctional /Multichannel Display Applications



Bowers Air 3. Optional Rear Mount Kit for modules. (Modules not included)

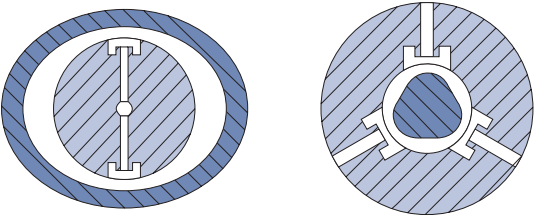




# Air Gauge Tooling Applications

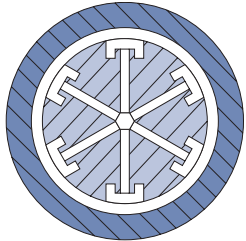
The following are some examples of how Air Gauge tooling can be configured.

Out-of-Roundness



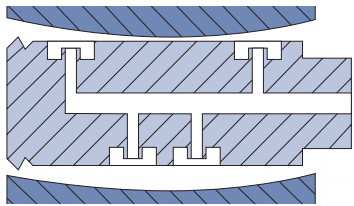
Air tools can gauge a part for roundness. For two-point out-of-round conditions, a standard two-nozzle air tool can be used. If lobing exists in the part, an odd number of nozzles must be used, depending on the number of lobes.

Averaging



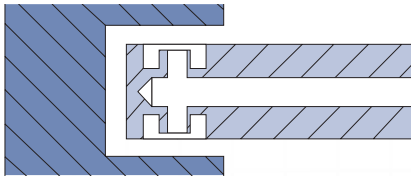
Multiple nozzles are equally located about the circumference of the air tool to allow for average size measurement. Commonly used for thin-walled or out-of-round parts — four, six, or more nozzles are utilised, depending on the tool size.

Bend



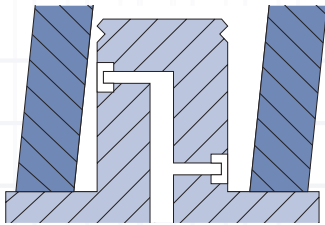
A common application of Air Gauging is to dynamically check the part for bend or 'bow'. In this case, a custom designed air plug gauge, enables the operator to check for bend easily and quickly, usually whilst the part is still on the machine. Bend probes cannot be used to check diameter or ovality.

Groove Width



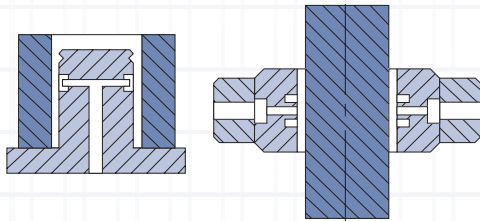
The measurement of grooves is conveniently achieved with flat, blade-type air tools. Air Gauging not only determines groove size, but with exploration around the workpiece, parallelism of the groove faces can also be determined.

Squareness



To determine squareness of a part, for example a bore to a face, air nozzles configured as a "z" are used with dynamic measurement to change the back-pressure from square to out of square conditions.

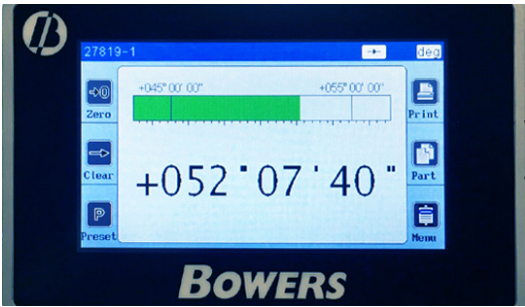
Inside & Outside Diameters

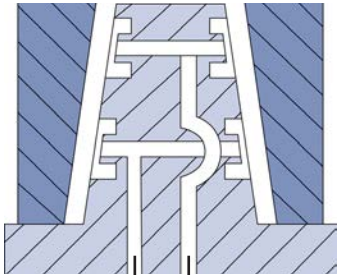


Air Gauges are most commonly used for measuring the size and form of inside diameters and outside diameters. Two-nozzle air plugs, with nozzles diametrically opposed, are used for internal measuring, and two-nozzle air rings are used for external dimensions.

# Air Gauge Tooling Applications


Taper

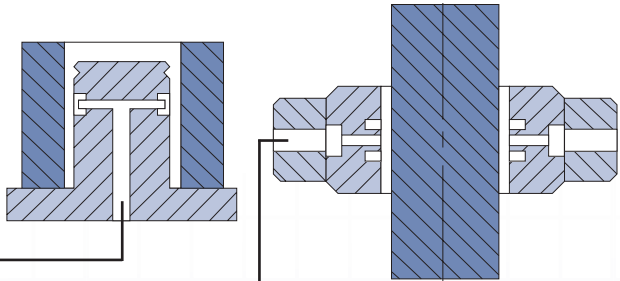




Angle variation of tapered surfaces is commonly checked with air gauging as the difference of two diameters. The Bowers Air2 (Firmware 1.2 or later) has DMS (Degree-Minute-Second) capability build in.

Matching





A specified clearance between two mating parts is often required to assure proper part operation. The Bowers Air2 allows for the individual display of the bore size, or shaft size and the clearance between the two parts. Operators need only observe the clearance display to determine if the two components have the required match dimension.

**The Bowers Air2**  
Allows for the individual display of the bore size, or shaft size and the clearance between the two parts.




# Bypass Air Preparation Kit

At a Glance

fff

Super Savings!



Eco Mode

“The **Bowers Air Gauging** system ensures that every component can be checked with guaranteed high precision results in a matter of seconds.

**Addmore Engineering Ltd**



With ever increasing energy costs, Bowers have introduced an Air Preparation Kit that incorporates a built in air bypass valve. This works in conjunction with the **Eco Mode** within the Air 1,2 and 3.

When the **Eco Mode** is active, the bypass valve reduces the air flowing through the tooling. This greatly reduces the consumption of air whilst maintaining a small flow of air. This ensures the tooling temperature is held constant ready for immediate use when required. **Please contact Bowers for more information.**



CASE STUDY

AIR GAUGING

## Addmore Engineering Streamlines Measurement of Safety & Performance Critical Components with Bowers Air Gauging System

The air gauging system from Bowers Group provides the perfect solution to ensure 100% customer satisfaction for Addmore Engineering.

Addmore Engineering has found the perfect way to measure safety and performance critical components with an air gauging system from Bowers Group. As a family run business which has supplied precision CNC turned and milled components for over 40 years, Addmore Engineering supplies precision components and sub-assemblies into the aerospace, automotive, hydraulic, autosport, fastener, instrumentation, oil & gas, and medical sectors.

As part of its inspection process, Addmore Engineering need to measure bolts, which are critical components on braking systems. It is, therefore, imperative that 100% of the parts produced are within tolerance. The air gauging system from Bowers Group ensures that the performance critical parts manufactured by Addmore Engineering satisfy customers requirement to 100% inspect safety critical characteristics and meet tight tolerances.

Ben Vasquez, Managing Director at Addmore Engineering Ltd said:

“The Bowers air gauging system is the perfect solution for us because it standardises the measurement process and eliminates the potential for human error. The system allows multiple operators to accurately check the diameter of the components in minimal time, and the modern control panel gives a quick yes/no output that allows each bolt to be checked with guaranteed high precision results in a matter of seconds.”

Addmore Engineering manufactures in excess of 10,000 of the bolts every month, therefore a fast, repeatable, and user-friendly solution was key. The business had previously experienced some difficulties whereby operators were achieving differing readings with micrometers; a significant problem when trying to measure 7-micron tolerances. The Bowers air gauging system allows many members of the team to check component diameters in a short space of time, and the touchscreen display with its customisable display interface is easy to read and interpret results. Using air flow volumes and pressures to measure parts, air gauging is a reliable, repeatable technology well suited for applications that demand sub-micron precision tolerancing.

Air gauging technology is very flexible, enabling measurement of not only dimensions, but geometric and relational characteristics, such as squareness, parallelism, ovality, taper and straightness. Bowers air gauging systems provide a simple yet robust method of measurement with a myriad of measurement capability, and its small footprint means it's perfect for the busy shop floor. The Bowers air gauging system at Addmore Engineering is used by inspectors and machine operators on a daily basis.

Ben continues:

“Personally, I have always been aware of the benefits of air gauging. During my apprenticeship I regularly used the older dial/clock-based systems. The advantage of the modern digital display is that anybody can see if the component is correct just by looking at the colour.

The sales and technical support from Bowers has been first class and we have already begun discussions about further projects.”

Addmore Engineering machines a wide range of components ranging from 0.5mm diameter to over 350mm in diameter which are supplied into a variety of markets. With a machine shop consisting of 25 CNC turning machines, 14 CNC milling machines and 3 centreless grinders, Addmore Engineering offers the highest quality components to meet any specification and delivery requirements. Operating out of 3 buildings, each with its own inspection departments, the philosophy of the business is that each department is fully autonomous and has all the equipment required to measure the specific components manufactured within that building. By investing heavily in automating processes with equipment such as a CMMs and optical measuring machines, Addmore Engineering has already made much progress in its inspection departments across the business.





# Contents

| Contents                            | Page No. |
|-------------------------------------|----------|
| Bowers Calipers                     |          |
| TGM Digital Major Caliper           | 115      |
| TGM Major Calipers Analogue         | 117      |
| Bowers Micrometers                  |          |
| DigiMic Digital External Micrometer | 119      |

113

”

As a quality engineer and inspector I find the DigiMic really useful for everyday component inspection work. It's easy to turn on, easy to calibrate, and it's ready to use. The thimble is smooth, and the accuracy is great.


The parts we produce are used in the manufacturing of motorsport and automotive transmissions and gearboxes where precision is key. I feel confident of the accuracy and know I'm getting trustworthy readings from the DigiMic.

**Adrian Jarych, QHSE Engineer at Hewland**



# TGM Digital Major Caliper

At a Glance

 Switchable Resolution: 0.01mm / 0.0005"

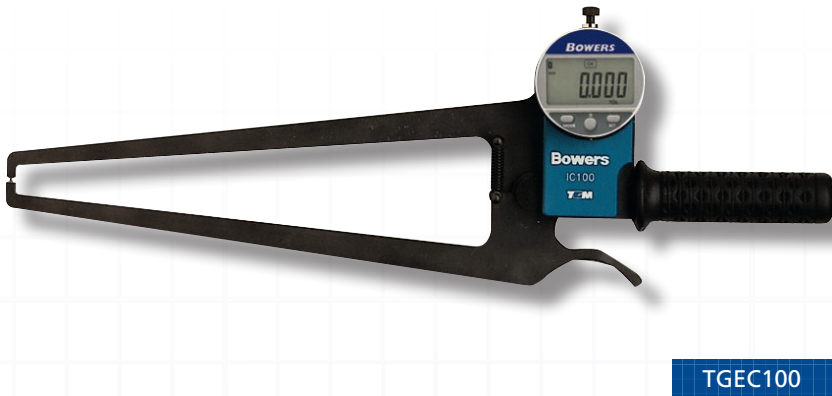
## Features

- High contrast digital display
- Switchable resolution
- Zero and preset facility for absolute and comparative readings
- Proximity USB output
- Carbide measuring faces as standard
- Hold function for ease of reading
- Min / max function

Digital Major Calipers have a direct Inch/Metric indicator with switchable resolution 0.01mm / 0.0005". They have zero and preset facility for both absolute and comparative measurement.

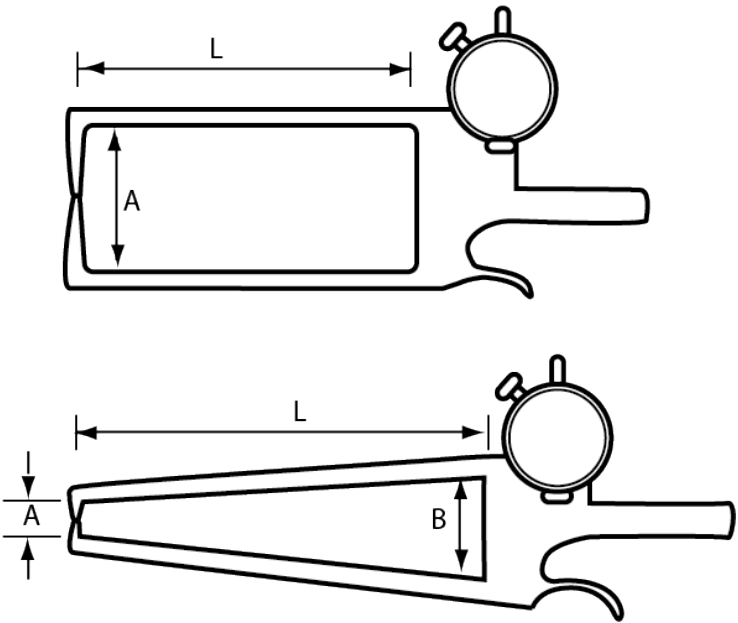


TGIC060



TGEC100

# TGM Digital Major Caliper



| TGM Digital Major Caliper |            |              |             |               |                 |                   |       |       |
|---------------------------|------------|--------------|-------------|---------------|-----------------|-------------------|-------|-------|
| Code No                   | Range (mm) | Range (inch) | Length (mm) | Length (inch) | Resolution (mm) | Resolution (inch) | Dim-A | Dim-B |
| TGIC060                   | 0-50       | 0-2          | 150         | 6             | 0.02            | 0.001             | 55    |       |
| TGEC060                   | 0-50       | 0-2          | 150         | 6             | 0.02            | 0.001             | 25    | 55    |
| TGIC100                   | 0-50       | 0-2          | 250         | 10            | 0.02            | 0.001             | 55    |       |
| TGEC100                   | 0-50       | 0-2          | 250         | 10            | 0.02            | 0.001             | 25    | 55    |
| TGIC200                   | 0-50       | 0-2          | 550         | 22            | 0.1             | 0.005             | 55    |       |
| TGEC200                   | 0-50       | 0-2          | 550         | 22            | 0.1             | 0.005             | 25    | 55    |

Accuracy: Linear accuracy +/- 3 Divisions over the full range.  
Repeatability: +/- 1 division across the full range



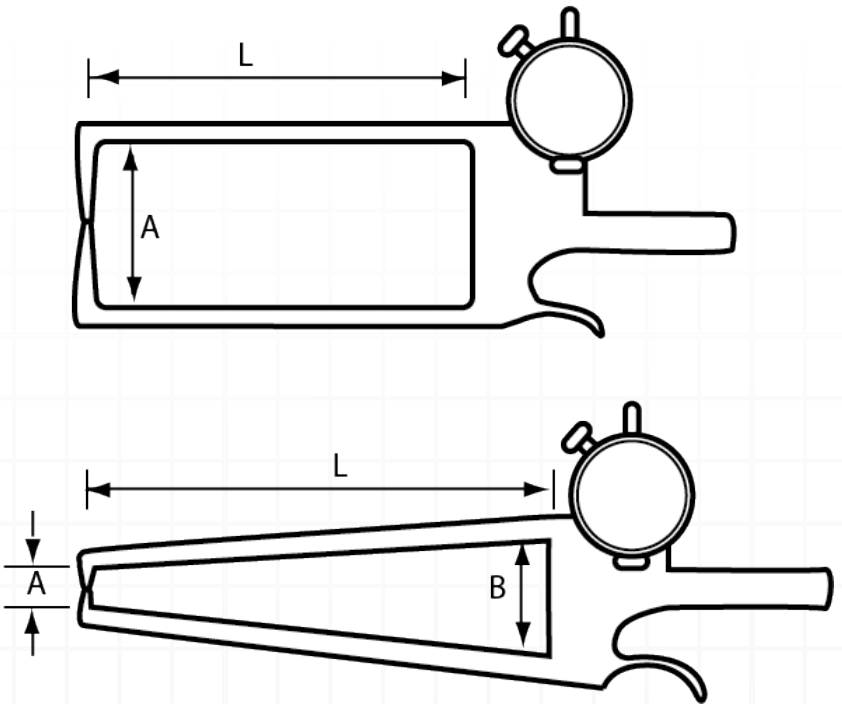
# TGM Major Calipers Analogue

The major versions of **Bowers TGM Calipers** include hard wearing carbide contact points as standard. These versions come with an imperial dial indicator.

As with other Bowers TGM products, non-standard applications can be quoted against a component drawing.



TGIC061



# TGM Major Calipers Analogue

TGM Major Calipers Analogue - Metric

| Code No | Range (mm) | Length (mm) | Resolution (mm) | Dimn-A | Dimn-B |
|---------|------------|-------------|-----------------|--------|--------|
| TGIC063 | 0-50       | 150         | 0.02            | 55     |        |
| TGIC064 | 0-50       | 150         | 0.1             | 55     |        |
| TGIC103 | 0-50       | 250         | 0.02            | 55     |        |
| TGIC104 | 0-50       | 250         | 0.1             | 55     |        |
| TGEC063 | 0-50       | 150         | 0.02            | 25     | 55     |
| TGEC064 | 0-50       | 150         | 0.1             | 25     | 55     |
| TGEC103 | 0-50       | 250         | 0.02            | 25     | 55     |
| TGEC104 | 0-50       | 250         | 0.1             | 25     | 55     |

**Accuracy:** Linear accuracy +/- 3 division over the full range.  
**Repeatability** = +/- 1 division




TGM Major Calipers Analogue - Imperial

| Code No | Range (inch) | Length (inch) | Resolution (inch) | Dimn-A | Dimn-B |
|---------|--------------|---------------|-------------------|--------|--------|
| TGIC061 | 0-2          | 6             | 0.001             | 55     |        |
| TGEC061 | 0-2          | 6             | 0.001             | 25     | 55     |
| TGEC062 | 0-2          | 6             | 0.01              | 55     |        |
| TGIC101 | 0-2          | 10            | 0.001             | 55     |        |
| TGEC101 | 0-2          | 10            | 0.001             | 25     | 55     |
| TGIC102 | 0-2          | 10            | 0.01              | 55     |        |
| TGEC102 | 0-2          | 10            | 0.01              | 25     | 55     |

**Accuracy:** Linear accuracy +/- 3 division over the full range.  
**Repeatability** = +/- 1 division

# DigiMic Digital External Micrometer

## At a Glance

-  Accuracy - Max permissible error = 2 µm, max error range = 2 µm
-  Non Bluetooth is available upon request
-  IP67

## Features

- Compatible with Sylcom software and free mobile app
- Resolution 0.001mm
- Large LCD display
- mm / inch conversion
- Solid Carbide contact faces
- Rotary Encoder & Spindle
- Spindle Ø 6.5 mm
- CR2032 lithium battery
- UKAS to BS 870 certification
- Exceeds DIN863/1 & ISO3611
- Custom variants available for eternal grooves, splines, threads



Have you seen our video?  
**DigiMic from Bowers Group**

## Making External Measurement Quick and Easy

Bowers Group's own manufactured digital micrometer **DigiMic** boasts an impressive accuracy of 2 µm max permissible error and 2 µm max error range. Ergonomically designed to fit comfortably in the hand, the DigiMic is an exceptionally robust micrometer, suitable for use in the harshest environments. DigiMic is manufactured with IP67 protection rating making it equally functional in a clean room or the factory floor. The extra-large digital display makes reading data straightforward; the user has an immediate visual confirmation of measurement in hand.



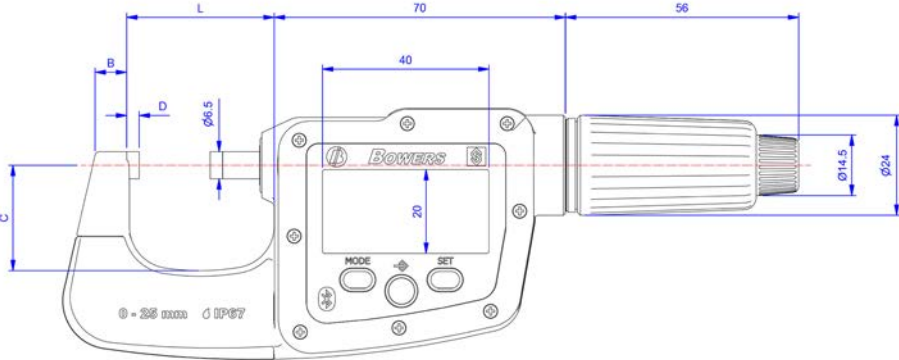
# DigiMic Digital External Micrometer

## Interconnected

The **DigiMic** belongs to Bowers Group's existing range of Bluetooth ready products, including Bowers bore gauges and Sylvac hand tools. This bi-directional communication capability enables users to link the DigiMic with a range of IOT ready products. Options include Sylvac's Sylcom software products which range from a free APP enabling data collection on a smart phone or tablet, to a comprehensive multi-gauge package making data capture for every dimension on the part easy, and reporting efficient.

## Size Ranges and Further Features

Using the micrometer has been made as simple as possible with minimal set up required. To reduce the battery consumption without losing the current reference position, a standby mode is automatically activated after 10 minutes of downtime. DigiMic has an automatic wake up activated by movement on the thimble. DigiMic is sold singularly or in sets.



| DigiMic - Digital External Micrometer |                                  |                      |        |        |        |        |
|---------------------------------------|----------------------------------|----------------------|--------|--------|--------|--------|
| Code No                               | Description                      | Max Error Range (mm) | B (mm) | C (mm) | D (mm) | L (mm) |
| DM025                                 | 0-25mm Digital Micrometer        | 0.002                | 8      | 25     | 3      | 35     |
| DM050                                 | 25-50mm Digital Micrometer       | 0.002                | 10     | 33     | 3      | 61     |
| DM075                                 | 50-75mm Digital Micrometer       | 0.003                | 11     | 46     | 3      | 86     |
| DM100                                 | 75-100mm Digital Micrometer      | 0.003                | 12     | 59     | 3      | 112    |
| DMSET100                              | 0-100mm Digital 4 Micrometer Set | As above             |        |        |        |        |

Custom variants available for eternal grooves, splines, threads.







| Contents  | Page No. |
|---|----------|
| Surface Finish                                    |          |
| Figura Overview                                   | 123      |
| Figura CR   | 125      |
| Figura RD   | 127      |
| Figura Accessories                                | 131      |
| Contour & Roughness Measurement Analysis Software | 133      |
| Roundness Measurement Analysis Software           | 135      |



# Surface Finish

# The Figura Range from Bowers Group

## Features & Benefits

### Highly Accurate Contour Detector

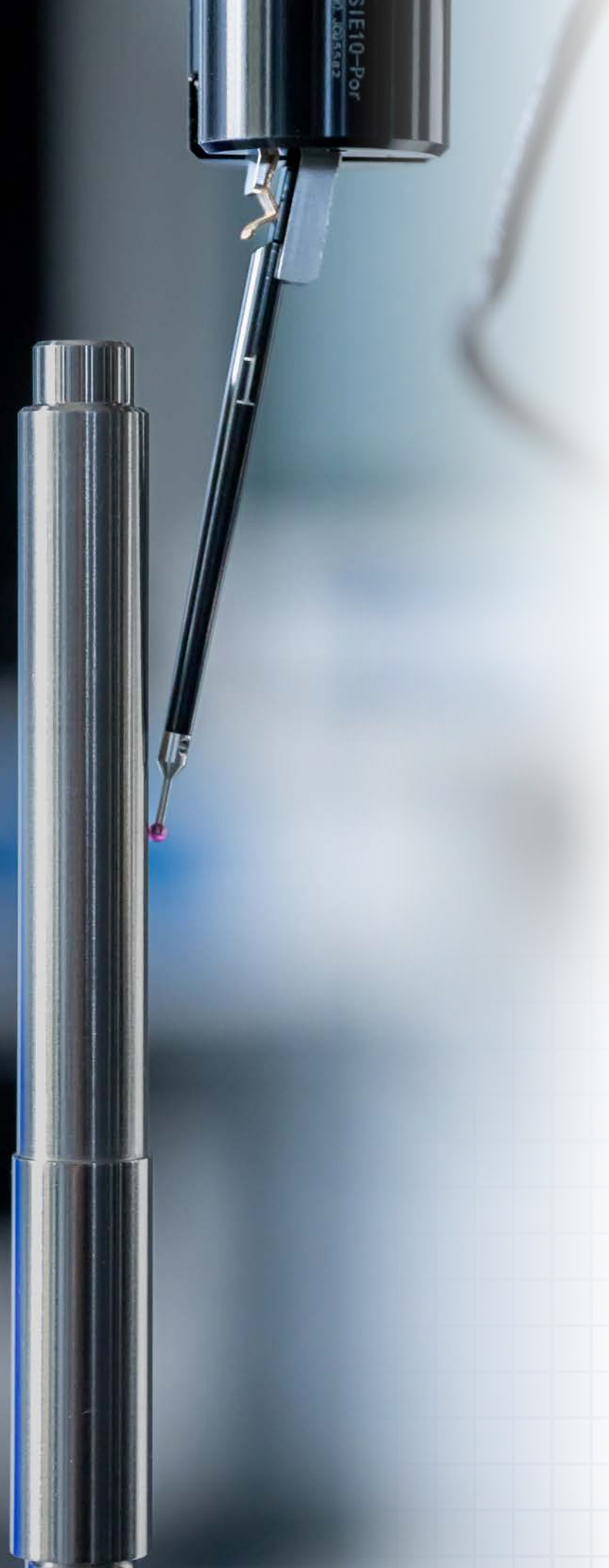
- Precisely determine even the smallest deviations from the geometrical ideal shape

### High Precision Surface Measurement

- High-precision surface measurement device where the surface roughness of a workpiece affects its technical functionality
- Easily operate the machine from the control unit by moving the detector along the Z and R axis

### Fast & Safe Operation

- All operations indicated with clear and intuitive icons including approaching and retracting the probe
- Emergency stop available from the control unit to enhance safety in measurement



The Bowers Figura range offers fast and accurate measurement of Contour, Roughness & Roundness.



Have you seen our video?  
**Bowers Figura Range Overview**



# Figura CR

## Contour and Roughness Measurement

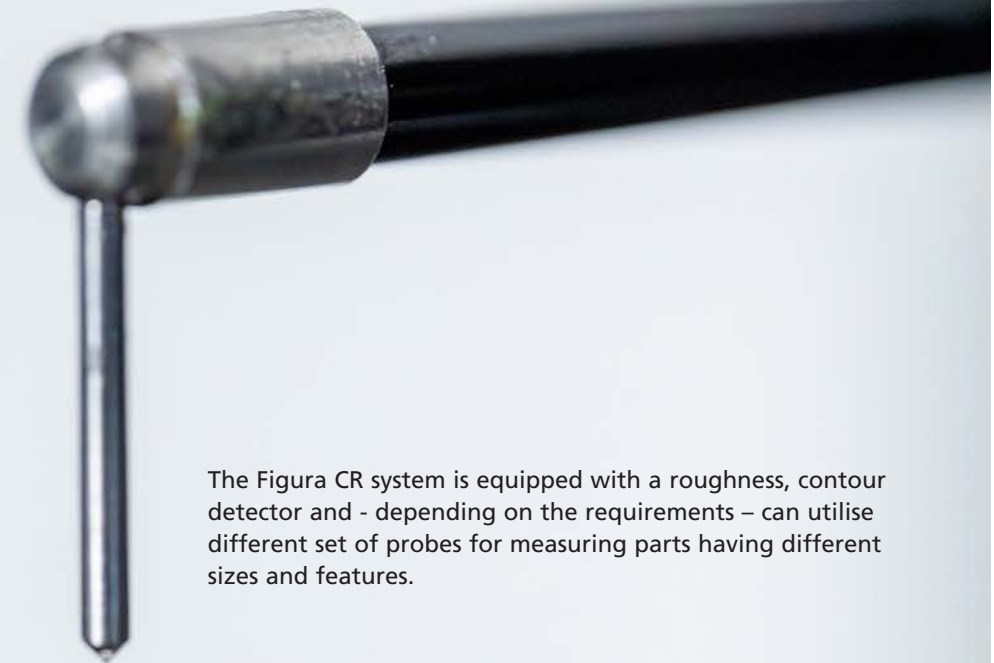
### Features & Benefits

- Available in range of sizes and configurations to meet a variety of applications and customer requirements



# Figura CR

## Contour and Roughness Measurement



The Figura CR system is equipped with a roughness, contour detector and - depending on the requirements - can utilise different set of probes for measuring parts having different sizes and features.

# Figura RD

Roundness Measurement



# Figura RD

Roundness Measurement

## Features

The Figura RD system is capable of high accuracy measurements including:

- Roundness
- Cylindricity
- Coaxiality
- Concentricity
- Flatness
- Straightness
- Full Runout
- Parallelism
- Perpendicularity





# Figura RD

## Roundness Measurement

### Features & Benefits

#### Stable Performance

- Marble operation table for stable and reliable performance without deformation
- Floor-mounted anti-vibration operation table
- Air-floating spindle structure design for turntable unit bearing system

#### High Accuracy, Precision Measurements

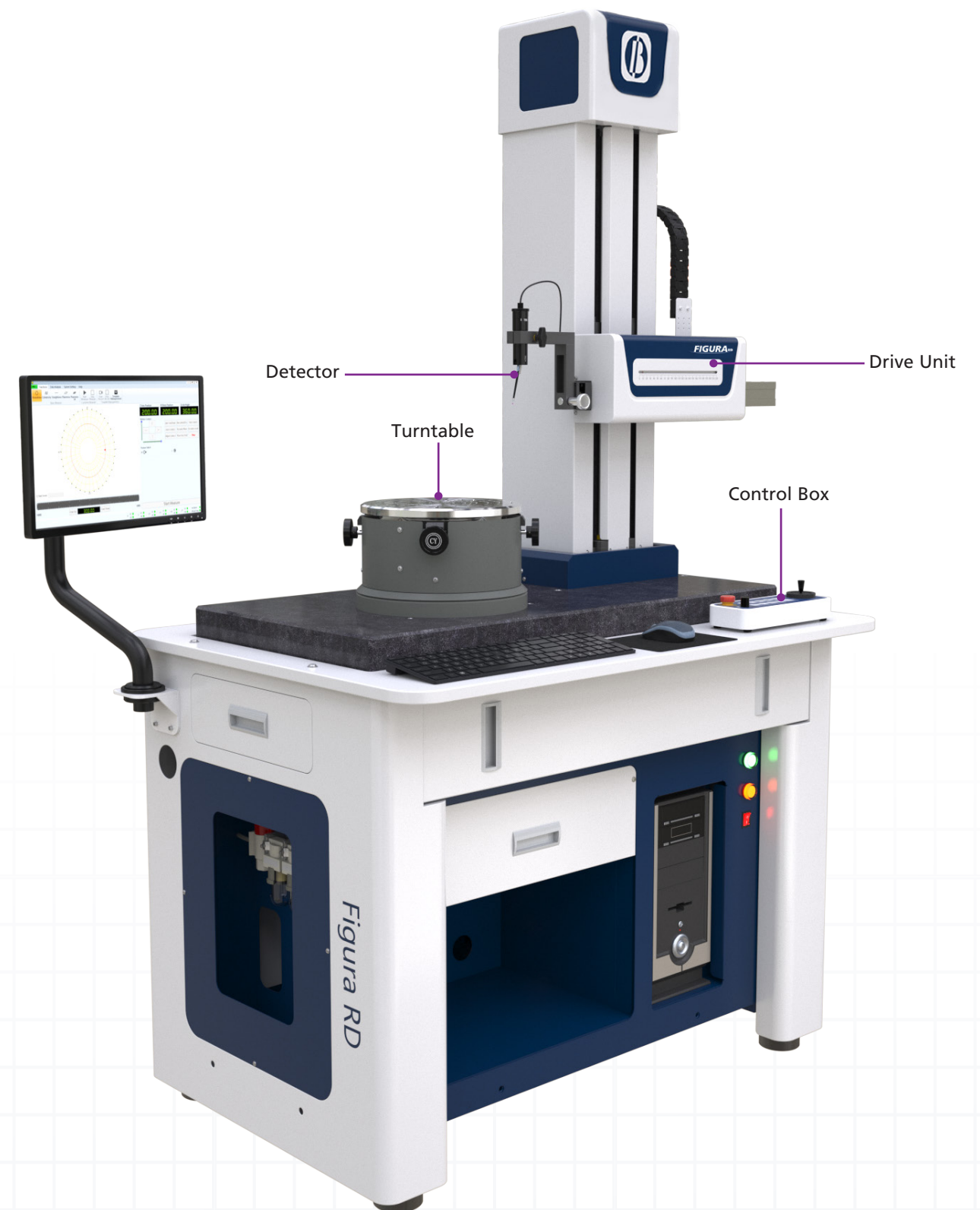
- Easily operate the machine from the control unit by moving the detector along the Z and R axis
- All operations indicated with clear and intuitive icons including approaching and retracting the probe
- Mounting with a high precision detector and red ruby stylus
- Adjustable stylus measuring angle enables matching of differently shaped and differently positioned parts
- Customised length stylus arm can be equipped with detector for different applications
- High-precision fully automatic centering and levelling adjustments
- Excellent eccentricity elimination function, enabling fast and convenient measurement operation

129



# Figura RD

## Roundness Measurement



130



# Figura

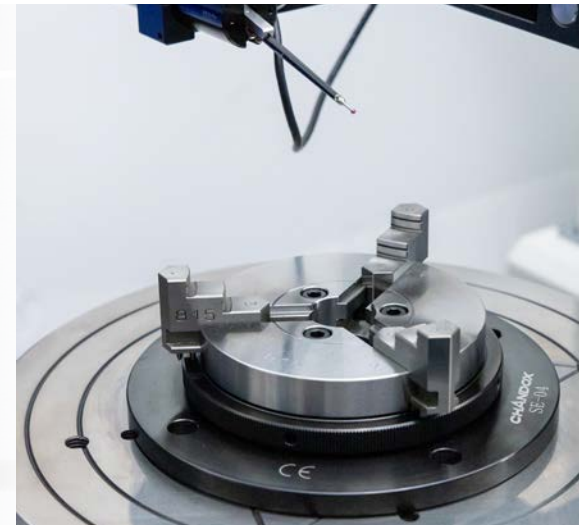
## Accessories

- A full range of accessories is available to meet a variety of applications and customer requirements



# Figura

## Accessories



### 3 Jaw Chuck with Reversible Anvils

- High quality 3 jaw chuck
- Reversible anvils offer secure holding of objects with radial symmetry
- Perfect for measuring cylindrical parts

## Stylus

- Ruby Stylus
- Carbon Fibre Stylus Arm with magnetic attachment manual weight and carbide chisel tip
- Surface Finish Stylus with diamond tip



### Indexable Manual Sine Table

- High precision linear and angular adjustment table
- Precise centering and levelling capability
- Easy and precise adjustment
- High accuracy, repeatable measurements



# Contour & Roughness Measurement Analysis Software

The Figura range's integrated contour measurement & roughness measurement analysis software enables all operations to be performed quickly and intuitively.

- User friendly, intuitive software
- Separate measurement, analysis and result report function
- Create, save, and repeat multiple inspection sequences
- Arrange measurement values and 3D colour maps freely for easy-to-read results
- Quickly generate inspection reports as a PDF
- Ultra-fast reporting with SPC included
- Regular software updates

## Contour & Roughness Measurement Analysis Software

Integrated measurement analysis software enables easy-to-read contour measurement, analysis, and report functions.



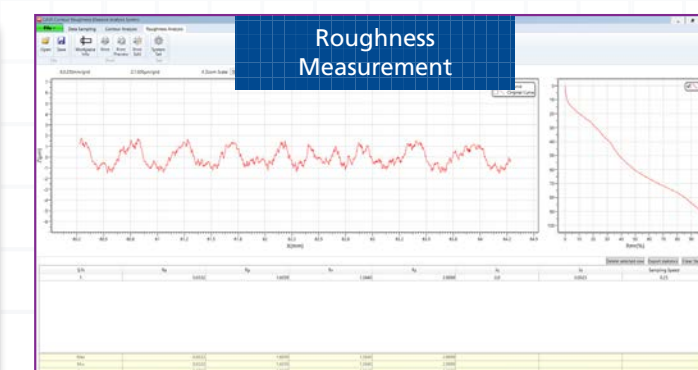
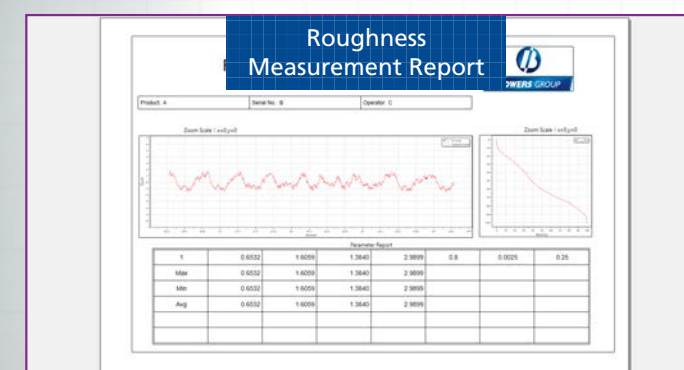
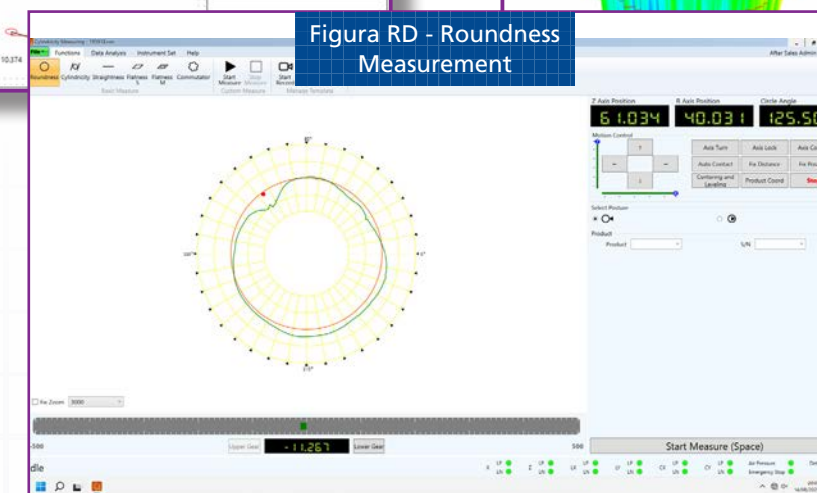
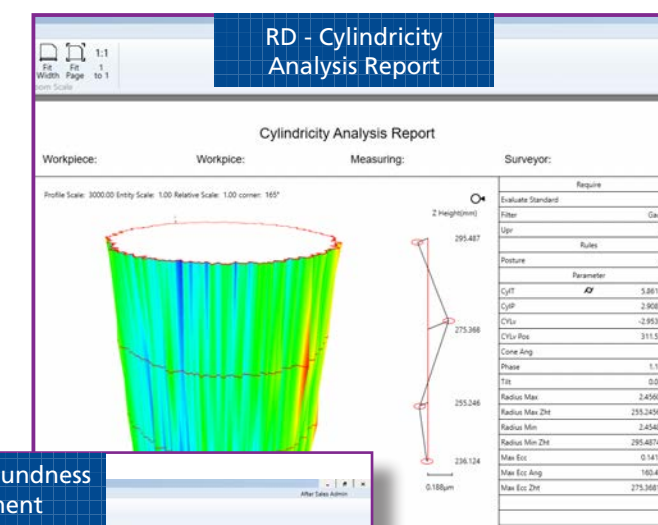
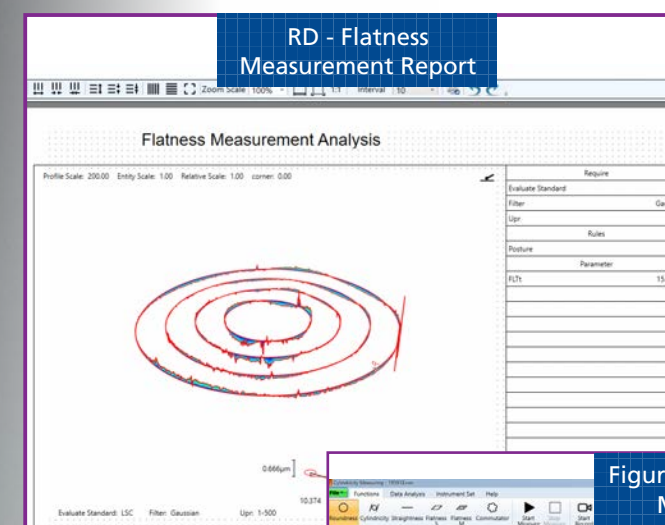
# Roundness Measurement Analysis Software

The Figura range's integrated roundness measurement analysis software enables all operations to be performed quickly and intuitively.

- User friendly, intuitive software
- Separate measurement, analysis and result report function
- Create, save, and repeat multiple inspection sequences
- Arrange measurement values and 3D colour maps freely for easy-to-read results
- Quickly generate inspection reports as a PDF
- Ultra-fast reporting with SPC included
- Regular software updates

## Roundness Measurement Analysis Software

Integrated measurement analysis software enables easy-to-read roundness, flatness, cylindricity and roughness measurement, analysis, and report functions.





## **FIND OUT MORE**

To find out more about Bowers Group, please contact

**E:** [sales@bowersgroup.co.uk](mailto:sales@bowersgroup.co.uk)

**W:** [www.bowersgroup.co.uk/contact-us](http://www.bowersgroup.co.uk/contact-us)

**T:** +44 1276 469866

### **Comprehensive Service & Support**

To find out more about service and support for Bowers Group,  
please contact

**E:** [service@bowersgroup.co.uk](mailto:service@bowersgroup.co.uk)

**W:** [www.bowersgroup.co.uk/contact-us](http://www.bowersgroup.co.uk/contact-us)

**T:** +44 1276 469866



Go back to **Contents**



**BOWERS GROUP**