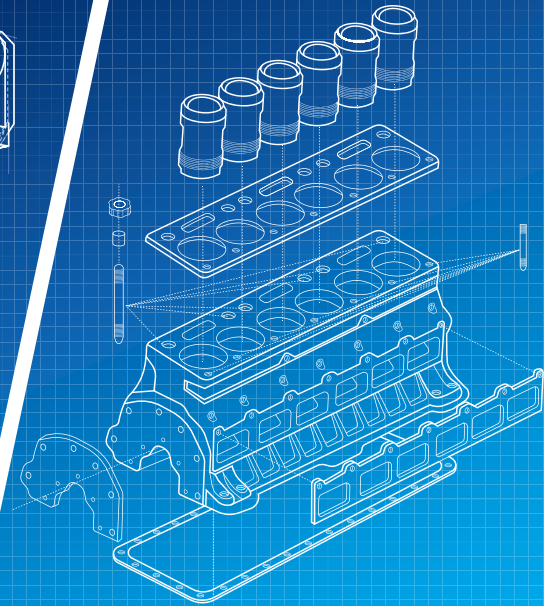
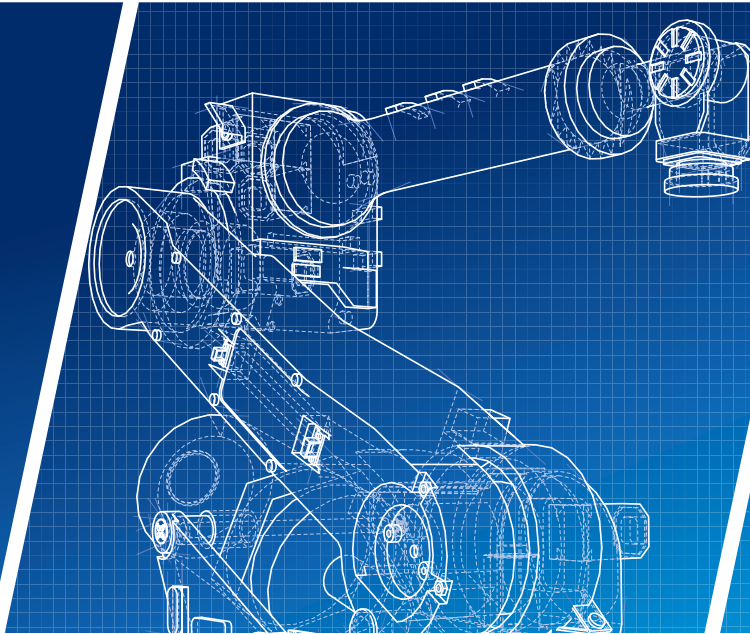




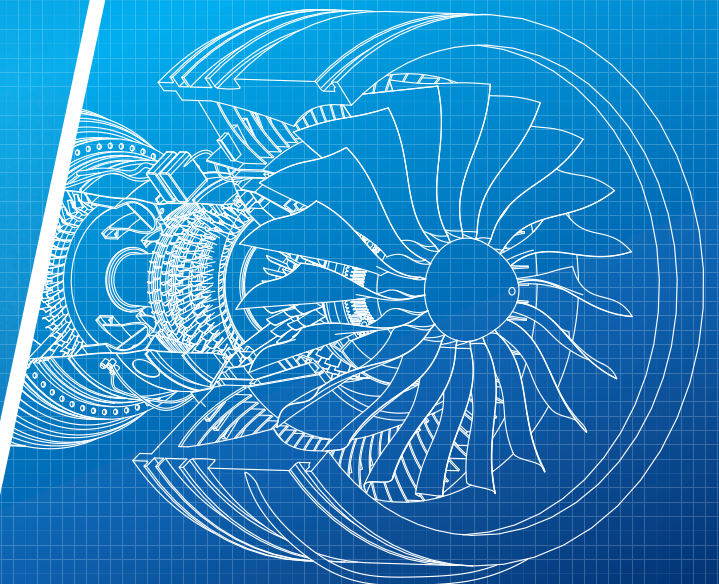
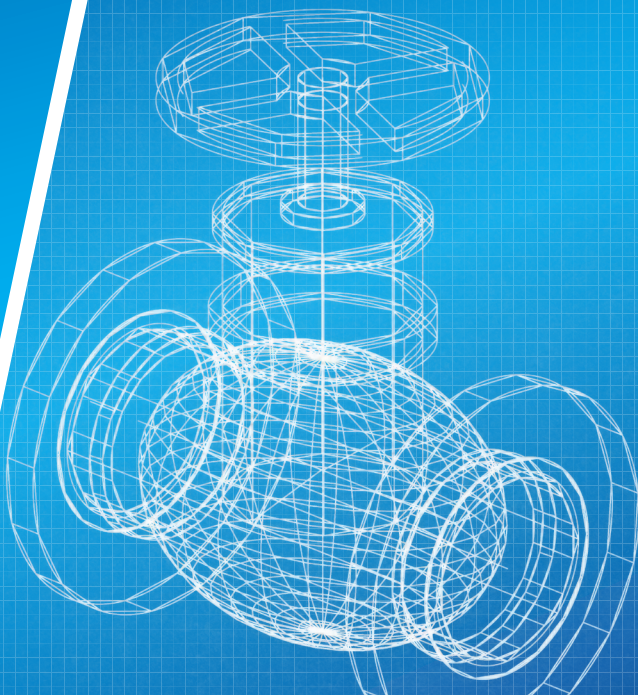
**BOWERS GROUP**

PARTNERS IN PRECISION

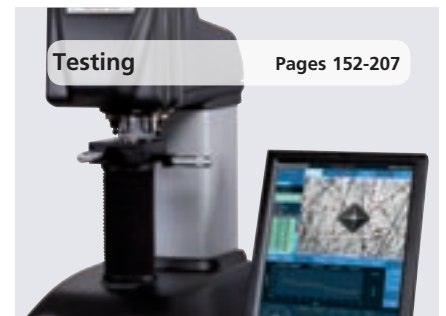
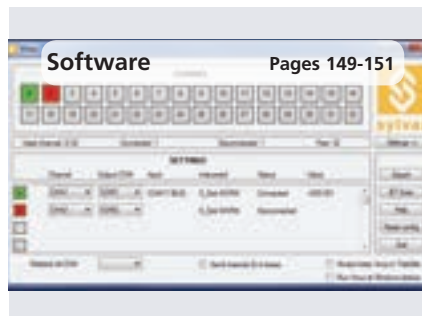
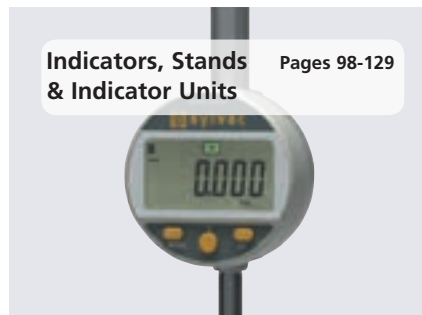


## **METROLOGY ESSENTIALS**

PRODUCT CATALOGUE 2019-20







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**Index** Pages 282-288

For our full range of Spares & Accessories visit [www.bowersgroup.co.uk](http://www.bowersgroup.co.uk)

Visit [www.bowersgroup.co.uk](http://www.bowersgroup.co.uk) for latest pricing

## ISO 9001:2015 – Quality Guaranteed

In 2018 Bowers Group Camberley site achieved the latest **ISO 9001:2015** Quality Management Systems Standard. This prestigious certification is a true testament to The Bowers Group's dedication to the highest levels of quality management and customer satisfaction. ISO 9001:2015 is the newest update to the quality management system standard, which provides an integrated approach to quality management and continual improvement. This, in conjunction with Bowers' existing UKAS accreditation to ISO/IEC 17025:2005, ensures its customers can have complete confidence that the Bowers range of products is designed and manufactured to the highest standard.



RS31323

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### Testing Product Specialist

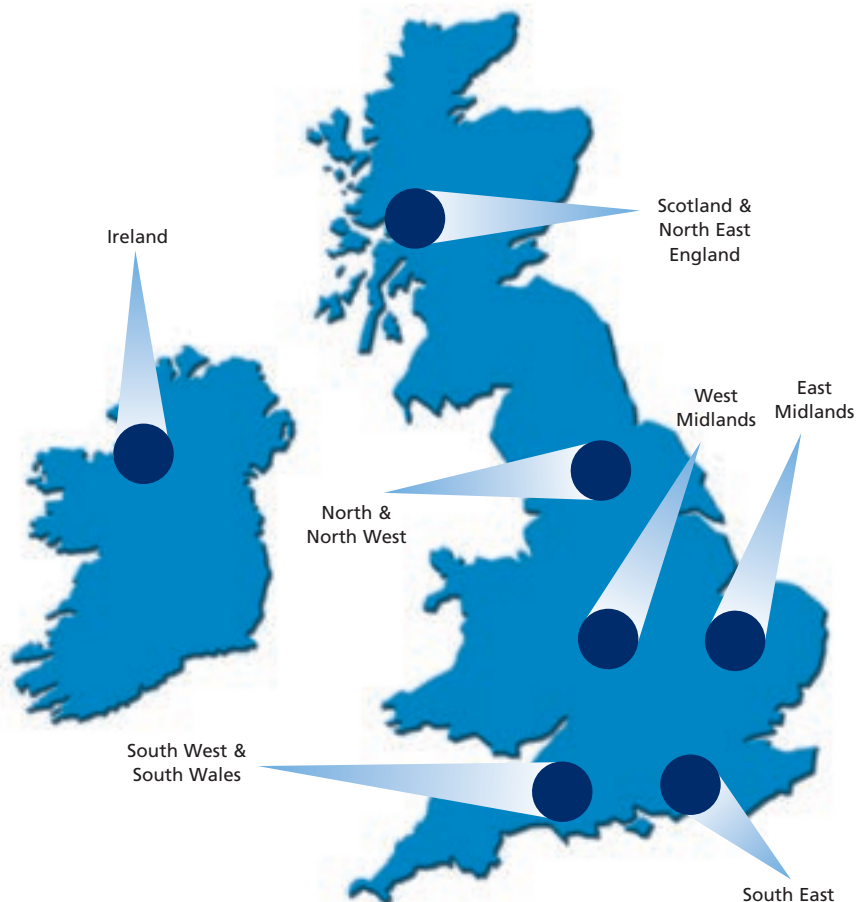
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## Bowers Group

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.

Reflecting the all-inclusive nature of our products and services, Bowers UK provides British industry with the widest choice of cost effective, quality measuring instruments currently available. Supplementing Bowers' own famous range of gauges, our enviable 'sole UK agent' status means that we can offer superior products from many pre-eminent metrology companies, such as Trimos, Sylvac, Gagemaker, Innovatest, Accretech and Wyler. Bowers' diverse range of quality measuring instruments allows us to offer cost effective solutions to UK industries' measuring challenges. Helping in the decision making process, our network of skilled Sales Engineers is happy to give on-site demonstrations of our full product range.



## Baty International

Baty International is one of the world's leading manufacturers of Optical Profile Projectors, Co-ordinate Measuring Systems and Gauging Products. Baty's product range includes two dimensional (profile measuring) equipment and full 3 dimensional (coordinate measuring) systems. Baty also services and calibrates contact and non contact dimensional measuring equipment. Baty products are for industrial, manufacturing and professional use, on the shop-floor, in tool rooms, and in other areas where precision measurement is critical.



## Moore & Wright

Founded in 1906 by innovative young engineer Frank Moore, Moore & Wright has been designing, manufacturing and supplying precision measuring equipment to global industry for over 100 years. With roots fixed firmly in Sheffield, the company began by manufacturing a range of calipers, screwdrivers, punches and other engineer's tools.

Now part of Bowers Group, Moore & Wright continues its commitment to supplying industry with high quality, affordable products. Its ongoing pledge to research and development ensures that Moore & Wright remains at the forefront of global innovation.



## CV Instruments

With the largest selection of portable and bench hardness testers currently available within the UK, the CV arm of Bowers Group has evolved into an all-inclusive material testing quality instrument supplier, with cost effective solutions to coating thickness, surface finish and many other disciplines now available.

**Bowers is also exclusive UK reseller for the following leading metrology brands:**



## Analogue Bore Gauges

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

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.



### XTA Micro Features

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



MXTA10M – XTA Micro

### Features

- Range 2-300mm (0.080"-12")
- 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 fitted case

### 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  | 12.50             | XTR12i  | 0.500               |
| XTR20M  | 20.00             | 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              |



## Analogue Bore Gauges

**XTA MICRO:** Individual instruments supplied with setting ring and UKAS

| Code No | Code No (without Ring) | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) | Code No | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) |
|---------|------------------------|------------|---------------|------------|-------------------|---------|--------------|-----------------|--------------|---------------------|
| MXTA1M  | MXTA1W                 | 2-2.5      | 0.004         | 9          | 2.50              | MXTA1i  | 0.080-0.100  | 0.00015         | 0.35         | 0.1000              |
| MXTA2M  | MXTA2W                 | 2.5-3      | 0.004         | 9          | 2.50              | MXTA2i  | 0.100-0.120  | 0.00015         | 0.35         | 0.1000              |
| MXTA3M  | MXTA3W                 | 3-4        | 0.004         | 12         | 4.00              | MXTA3i  | 0.120-0.160  | 0.00015         | 0.47         | 0.1600              |
| MXTA4M  | MXTA4W                 | 4-5        | 0.004         | 18         | 4.00              | MXTA4i  | 0.160-0.200  | 0.00015         | 0.70         | 0.1600              |
| MXTA5M  | MXTA5W                 | 5-6        | 0.004         | 18         | 5.00              | MXTA5i  | 0.200-0.250  | 0.00015         | 0.70         | 0.2000              |
| MXTA6M  | MXTA6W                 | 6-8        | 0.004         | 58         | 8.00              | MXTA6i  | 1/4-5/16     | 0.00015         | 2.28         | 0.3125              |
| MXTA8M  | MXTA8W                 | 8-10       | 0.004         | 58         | 8.00              | MXTA8i  | 5/16-3/8     | 0.00015         | 2.28         | 0.3125              |
| MXTA10M | MXTA10W                | 10-12.5    | 0.004         | 58         | 12.50             | MXTA10i | 3/8-1/2      | 0.00015         | 2.28         | 0.500               |
| MXTA12M | MXTA12W                | 12.5-16    | 0.004         | 62         | 12.50             | MXTA12i | 1/2-5/8      | 0.00015         | 2.44         | 0.500               |
| MXTA16M | MXTA16W                | 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              |

**XTA MICRO SETS:** Supplied with individual instrument, setting rings and UKAS

| Code No | Code No (without Ring) | Range (mm) | Measuring Heads | Setting Rings | Code No | Range (inch) |
|---------|------------------------|------------|-----------------|---------------|---------|--------------|
| SMXTA1M | SMXTA1W                | 2-3        | 2               | 1             | SMXTA1i | 0.080-0.120  |
| SMXTA2M | SMXTA2W                | 3-6        | 3               | 2             | SMXTA2i | 0.120-0.250  |
| SMXTA3M | SMXTA3W                | 6-10       | 2               | 1             | SMXTA3i | 1/4-3/8      |
| SMXTA4M | SMXTA4W                | 10-20      | 3               | 2             | SMXTA4i | 3/8-3/4      |



SMXTA3M

**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                |



## Digital Bore Gauges

Bowers' Bluetooth XT3-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 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.



Non Bluetooth is available upon request



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

### DATA TRANSMISSION

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

### Features

- Ergonomic design with larger and clearer LCD display
- IP67 Electronics
- Simple 2-button operation
- 4 preset memories
- Proximity output with built-in Bluetooth
- Bi-directional communication
- 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
- 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 fitted wooden case





## Digital Bore Gauges

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

**DISPLAY UNITS ONLY**

| 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            |

**SETS:** Supplied with one digital display unit, heads, rings and UKAS

| Code No (with BT) | Range (mm) | Measuring Heads | Setting Rings | Code No (with BT) | Range (inch) |
|-------------------|------------|-----------------|---------------|-------------------|--------------|
| SXTD1M-BT         | 2-6        | 5               | 3             | SXTD1i-BT         | 0.080-0.250  |
| 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          |

**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

### DEPTH STOP

| Code No | Range (mm) | Range (inch) |
|---------|------------|--------------|
| DSTOP01 | 2-6        | 0.080-0.25   |



SXTD5M-BT



SXTD5U-BT

## Digital Pistol Grip Bore Gauge

Bowers' XT3-BT 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.



WiFi

Option



Non Bluetooth is available upon request



### DATA TRANSMISSION

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

### 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"

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

- 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 fitted wooden case



## Digital Pistol Grip Bore Gauge

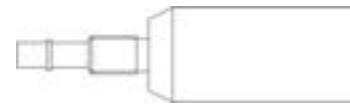
**TECHNICAL SPECIFICATION:** Individual instruments supplied with digital pistol grip, head, ring and UKAS

**DISPLAY UNITS ONLY**

| 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              |

**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          |



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

**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          |

### 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                |

### DEPTH STOP

| Code No | Range (mm) | Range (inch) |
|---------|------------|--------------|
| DSTOP01 | 2-6        | 0.080-0.25   |

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



SXTH5M-BT

## Digital Lever Bore Gauge

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 IP65 rated digital indicators, rendering it resistant to coolant, water and airborne particles. A 'wireless' gauge module is also available, enabling cable free communication with remote data collectors, PCs etc.

The cost-effective new XTL boasts hardwearing extended travel carbide measuring anvils and is able to measure diameters up to 100mm.

### Features

- Measuring range 6-100mm
- 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
- Bluetooth® indicator option available



### INDIVIDUAL INSTRUMENTS: Supplied with head, ring and UKAS certificates

| Code No | Range (mm) | Accuracy (mm) | Depth (mm) | Setting Ring (mm) |
|---------|------------|---------------|------------|-------------------|
| XTL6M   | 6-8        | 0.004         | 58         | 8.00              |
| XTL8M   | 8-10       | 0.004         | 58         | 8.00              |
| XTL10M  | 10-12.5    | 0.004         | 58         | 12.50             |
| XTL12M  | 12.5-16    | 0.004         | 62         | 12.50             |
| XTL16M  | 16-20      | 0.004         | 62         | 20.00             |
| XTL20M  | 20-25      | 0.004         | 66         | 20.00             |
| XTL25M  | 25-35      | 0.004         | 66         | 35.00             |
| XTL35M  | 35-50      | 0.004         | 80         | 35.00             |
| XTL50M  | 50-65      | 0.005         | 80         | 65.00             |
| XTL65M  | 65-80      | 0.005         | 80         | 65.00             |
| XTL80M  | 80-100     | 0.005         | 85         | 80.00             |

| Code No | Range (inch) | Accuracy (inch) | Depth (inch) | Setting Ring (inch) |
|---------|--------------|-----------------|--------------|---------------------|
| XTL6i   | 1/4-5/16     | 0.00015         | 2.28         | 0.312               |
| XTL8i   | 5/16-3/8     | 0.00015         | 2.28         | 0.312               |
| XTL10i  | 3/8-1/2      | 0.00015         | 2.28         | 0.500               |
| XTL12i  | 1/2-5/8      | 0.00015         | 2.44         | 0.500               |
| XTL16i  | 5/8-3/4      | 0.00015         | 2.44         | 0.750               |
| XTL20i  | 3/4-1        | 0.00015         | 2.62         | 0.750               |
| XTL25i  | 1-1 3/8      | 0.00015         | 2.62         | 1.375               |
| XTL35i  | 1 3/8-2      | 0.00015         | 3.15         | 1.375               |
| XTL50i  | 2-2 5/8      | 0.00020         | 3.15         | 2.625               |
| XTL65i  | 2 5/8-3 1/4  | 0.00020         | 3.15         | 2.625               |
| 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  | 6-10       | Mini Indicator     | 1/4-3/8      | SXTL3i  |
| SXTL4M  | 10-20      | Mini Indicator     | 3/8-3/4      | SXTL4i  |
| SXTL5M  | 20-50      | Standard Indicator | 3/4-2        | SXTL5i  |
| SXTL6M  | 50-100     | Standard Indicator | 2-4          | SXTL6i  |

### 6-20MM LEVER GAUGE DATA TRANSMISSION

| Code No     | Description                  |
|-------------|------------------------------|
| 30-926-6821 | Powered Opto / USB           |
| 25-604-013  | Wireless Powered Opto Module |

### 20-100MM LEVER GAUGE DATA TRANSMISSION

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



SXTL4M



## XT500 Large Diameter 3-point Bore Gauge

The Bowers XT500 large diameter 3-point bore-gauge has been designed specifically for the measurement of internal diameters between 300 and 500mm. The newly designed constant-force digital readout ensures that the measuring pressure remains constant throughout the measurement whilst radiussed measuring anvils provide optimum centralisation in the part. Anvil sets are supplied in 25mm steps (300-325, 325-350 etc) and each set has been manufactured to the exact toleranced size. The 300-325mm 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.



WiFi

Option

RS232

USB

Non Bluetooth is available on request

### Features

- Measuring range: 300-500mm
- 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 fitted case



The Bowers XT500 with extension for deeper bores

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

| Code No (with BT) | 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               |

### EXTENSIONS TO THE XT500

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

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

| Code No (with BT) | 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             |
| 30-981-7100 | USB Dongle BT Smart for PC/D300S/D400S |

## Electronic Bore Gauge - Ultima

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.

WiFi

Option

RS232



### ULTIMA HOLDERS

| Code No | Range (mm) | Description   |
|---------|------------|---------------|
| PH2     | 2-6        | With Probe    |
| PH3     | 6-20       | With Probe    |
| PH4     | 20-100     | With Probe    |
| PH5     | 100-310    | With Probe    |
| PW2     | 2-6        | Without Probe |
| PW3     | 6-20       | Without Probe |
| PW4     | 20-100     | Without Probe |
| PW5     | 100-310    | Without Probe |

### Features

- UKAS certificates standard for all measuring heads and setting rings
- Measuring range 2-310mm (0.080"-12.000")
- Resolution: 0.0001mm (0.00001")
- Constant spring pressure for improved repeatability
- Good positive feel as heads self-centre in the bore
- Bowers Fastfit measuring heads for rapid changeover
- Ceramic anvils on heads above 12mm
- Blind-bore measurement standard above 12mm
- Possible to connect 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



USET8 20-50mm Set

### ULTIMA SETS

| Code No | Range (mm) | Description                 |
|---------|------------|-----------------------------|
| USET2   | 2-6        | With Sylvac D50S display    |
| USET3   | 6-10       | With Sylvac D50S display    |
| USET4   | 10-20      | With Sylvac D50S display    |
| USET7   | 6-20       | With Sylvac D50S display    |
| USET8   | 20-50      | With Sylvac D50S display    |
| USET9   | 50-100     | With Sylvac D50S display    |
| USET10  | 20-100     | With Sylvac D50S display    |
| USET2W  | 2-6        | Without Sylvac D50S display |
| USET3W  | 6-10       | Without Sylvac D50S display |
| USET4W  | 10-20      | Without Sylvac D50S display |
| USET7W  | 6-20       | Without Sylvac D50S display |
| USET8W  | 20-50      | Without Sylvac D50S display |
| USET9W  | 50-100     | Without Sylvac D50S display |
| USET10W | 20-100     | Without Sylvac D50S 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+               |



## 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               | PH2         |
| 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               | PH2         |
| ULH8    | 3.0-4.0    | 0.118-0.157   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 12                   | 0.47                   | ULR4    | 4                 | 0.157               | PH2         |
| ULH9    | 4.0-5.0    | 0.157-0.197   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 18                   | 0.71                   | ULR5    | 5                 | 0.197               | PH2         |
| ULH10   | 5.0-6.0    | 0.197-0.236   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 18                   | 0.71                   | ULR5    | 5                 | 0.197               | PH2         |
| ULH11   | 6-8        | 0.236-0.315   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 60                   | 2.36                   | ULR8    | 8                 | 0.315               | PH3         |
| ULH12   | 8-10       | 0.315-0.393   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 60                   | 2.36                   | ULR8    | 8                 | 0.315               | PH3         |
| ULH13   | 10-12      | 0.393-0.472   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR12   | 12                | 0.472               | PH3         |
| ULH14   | 12-14      | 0.472-0.550   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR12   | 12                | 0.472               | PH3         |
| ULH15   | 14-17      | 0.550-0.670   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR17   | 17                | 0.670               | PH3         |
| ULH16   | 17-20      | 0.670-0.787   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 61                   | 2.40                   | ULR17   | 17                | 0.670               | PH3         |
| ULH17   | 20-24      | 0.787-0.945   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 69                   | 2.72                   | ULR24   | 24                | 0.945               | PH4         |
| ULH18   | 24-28      | 0.945-1.100   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 69                   | 2.72                   | ULR24   | 24                | 0.945               | PH4         |
| ULH19   | 28-32      | 1.100-1.260   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 69                   | 2.72                   | ULR32   | 32                | 1.260               | PH4         |
| ULH20   | 32-38      | 1.260-1.500   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 72                   | 2.83                   | ULR32   | 32                | 1.260               | PH4         |
| ULH21   | 38-44      | 1.500-1.730   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 72                   | 2.83                   | ULR44   | 44                | 1.730               | PH4         |
| ULH22   | 44-50      | 1.730-1.970   | 0.0010        | 0.00004         | 0.0010             | 0.00004              | 72                   | 2.83                   | ULR44   | 44                | 1.730               | PH4         |
| ULH23   | 50-60      | 1.970-2.360   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR60   | 60                | 2.360               | PH4         |
| ULH24   | 60-70      | 2.360-2.756   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR60   | 60                | 2.360               | PH4         |
| ULH25   | 70-80      | 2.756-3.150   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR80   | 80                | 3.150               | PH4         |
| ULH26   | 80-90      | 3.150-3.543   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR80   | 80                | 3.150               | PH4         |
| ULH27   | 90-100     | 3.543-3.940   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR100  | 100               | 3.940               | PH4         |
| ULH28   | 100-110    | 3.940-4.330   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR100  | 100               | 3.940               | PH5         |
| ULH29   | 110-120    | 4.330-4.725   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR120  | 120               | 4.725               | PH5         |
| ULH30   | 120-130    | 4.725-5.120   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR120  | 120               | 4.725               | PH5         |
| ULH31   | 130-140    | 5.120-5.510   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR140  | 140               | 5.510               | PH5         |
| ULH32   | 140-150    | 5.510-5.900   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR140  | 140               | 5.510               | PH5         |
| ULH33   | 150-160    | 5.900-6.300   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR160  | 160               | 6.300               | PH5         |
| ULH34   | 160-170    | 6.300-6.690   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR160  | 160               | 6.300               | PH5         |
| ULH35   | 170-180    | 6.690-7.090   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR180  | 180               | 7.090               | PH5         |
| ULH36   | 180-190    | 7.090-7.480   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR180  | 180               | 7.090               | PH5         |
| ULH37   | 190-200    | 7.480-7.875   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR200  | 200               | 7.875               | PH5         |
| ULH38   | 200-210    | 7.875-8.270   | 0.0015        | 0.00006         | 0.0015             | 0.00006              | 80                   | 3.15                   | ULR200  | 200               | 7.875               | PH5         |
| ULH39   | 210-220    | 8.270-8.661   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR220  | 220               | 8.661               | PH5         |
| ULH40   | 220-230    | 8.661-9.055   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR220  | 220               | 8.661               | PH5         |
| ULH41   | 230-240    | 9.055-9.449   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR240  | 240               | 9.449               | PH5         |
| ULH42   | 240-250    | 9.449-9.842   | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR240  | 240               | 9.449               | PH5         |
| ULH43   | 250-260    | 9.842-10.236  | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR260  | 260               | 10.236              | PH5         |
| ULH44   | 260-270    | 10.236-10.630 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR260  | 260               | 10.236              | PH5         |
| ULH45   | 270-280    | 10.630-11.024 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR280  | 280               | 11.024              | PH5         |
| ULH46   | 280-290    | 11.024-11.417 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR280  | 280               | 11.024              | PH5         |
| ULH47   | 290-300    | 11.417-11.811 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR300  | 300               | 11.811              | PH5         |
| ULH48   | 300-310    | 11.811-12.200 | 0.0020        | 0.00008         | 0.0020             | 0.00008              | 80                   | 3.15                   | ULR300  | 300               | 11.811              | PH5         |



ULH19 28-32mm head



ULH25 70-80mm head

## Special Bore Measurement

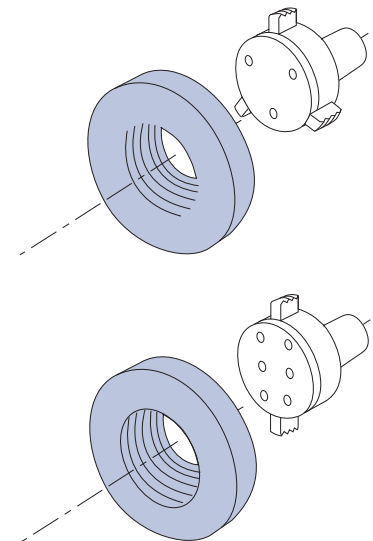
Although Bowers produces the most comprehensive series of bore gauges and internal measuring equipment available, not all applications can be covered by our standard instrument range. In line with our customer care ethos, Bowers has earned a reputation for manufacturing special heads for measuring non-standard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



### Threads

#### Screw Threads

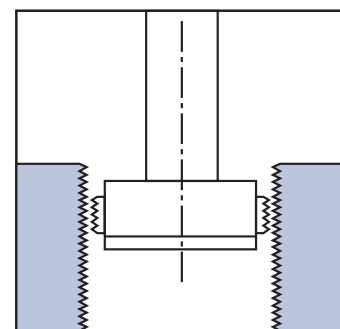
To measure effective (functional) diameter, pitch diameter, major diameter, between M4 - 300mm. / No. 8 UN - 12" diameter.



2 Point



3 Point



#### Ball Screw Threads

From Ø M10.



#### External Threads

External Thread





## Special Bore Measurement - Grooves

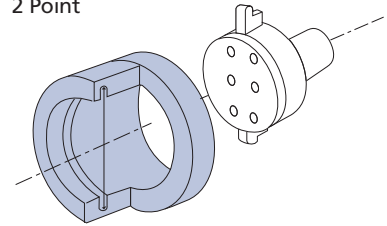
- Interchangeable with standard heads
- Suits Bowers XTD, XTH and Ultima
- Special forms, radius, ball contacts
- Depth stops available for quick location
- Annular grooves possible

### Grooves

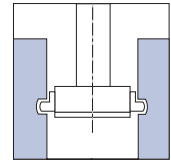
For sizes from 2-300mm diameter.



2 Point

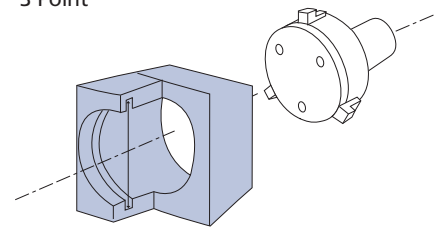


Side view



Groove Head with Depth Stop

3 Point



## Brake Caliper Measurement



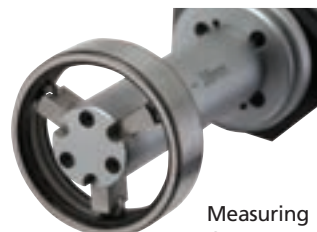
Caliper Groove Measurement



## Ball Race Measurement

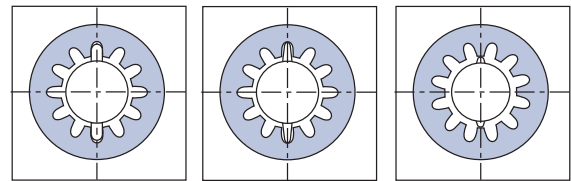
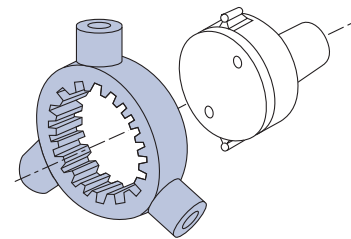


Measuring Component



## Special Bore Measurement - Internal Spline

2 and 3 point heads available.  
Anvils manufactured from tool steel.  
Between pin, major and minor diameter heads available.  
Diameters from 8-300mm diameter (5/16"-12").



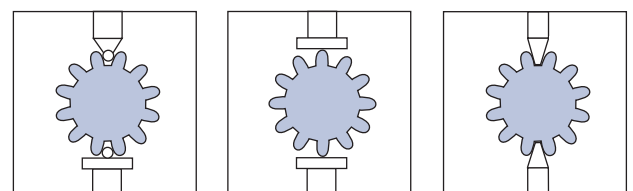
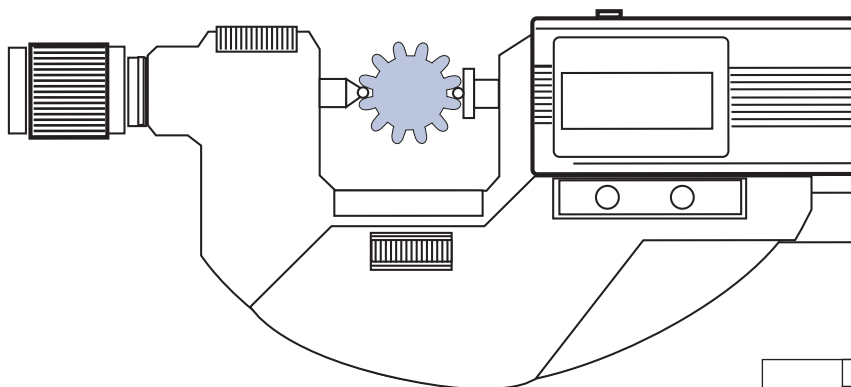
Pitch Diameter

Major Diameter

Minor Diameter

## Special Measurement - External Spline

Frames fitted with 1 x ball and 1 x pin.



Pitch Diameter

Major Diameter

Minor Diameter

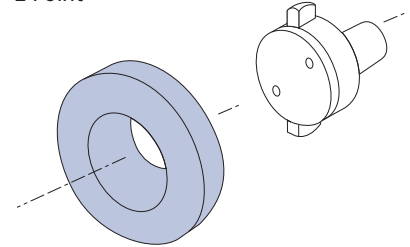
## Special Bore Measurement - Spherical

### 2 Point Spherical

Measurement of ovality in bore.  
Measurement of bores with irregularities.



2 Point

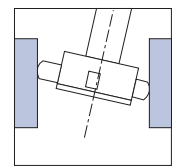
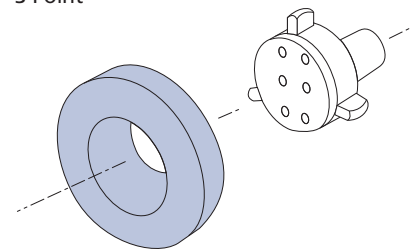


### 3 Point Spherical

Gives good repeatability even when out of line with bore centre.  
Available from 6-300mm diameter on digital systems.

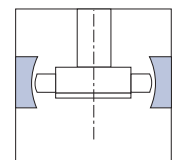
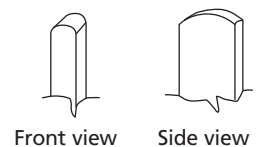
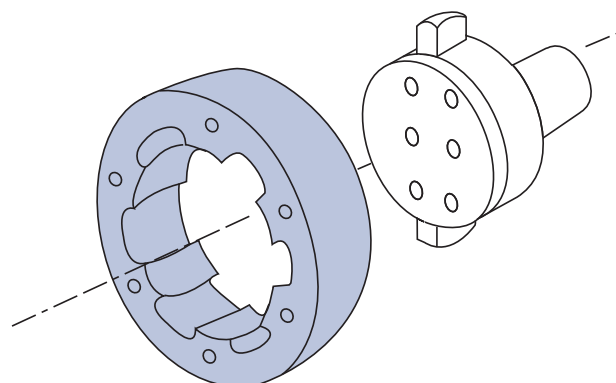


3 Point



### Spherical Radius

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



## Special Bore Measurement - Deep Hole Pneumatic

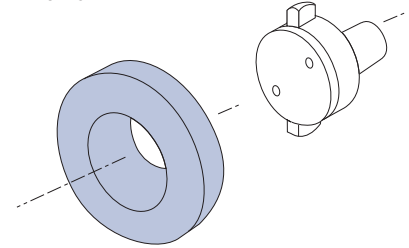
Operated by a pneumatic actuator powered by a 3 bar compressed air supply - either from a compressor or a workshop air-line. The measurement data is collected by a capacitive probe fitted just behind, and in constant contact with the measuring head. This direct contact ensures high-quality transducer-type 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.

### Features

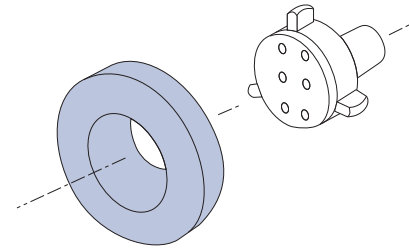
- Measures diameters from 50-310mm, up to 15m deep
- Spherical, Tungsten Carbide anvils
- 2 point and 3 point heads available
- Accuracy  $\pm 0.005\text{mm}$  (subject to bore condition)
- Quick set-up time
- Easy to use
- Not adversely effected by temperature fluctuation
- Robust design
- Various readouts available



2 Point



3 Point

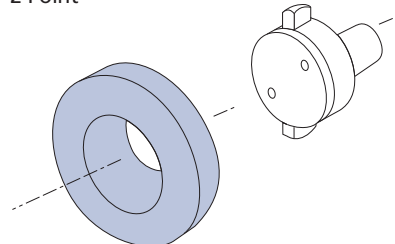


### Deep Hole XT - Under 2 Metres

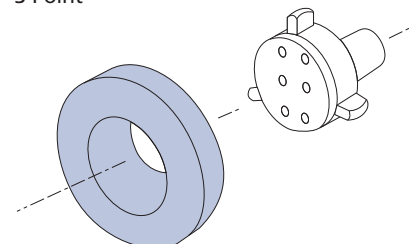
Up to 2.0 metres deep with standard extensions.



2 Point



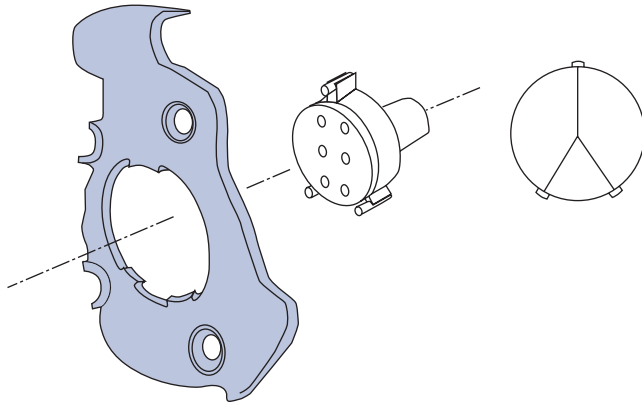
3 Point



## Special Bore Measurement - Miscellaneous

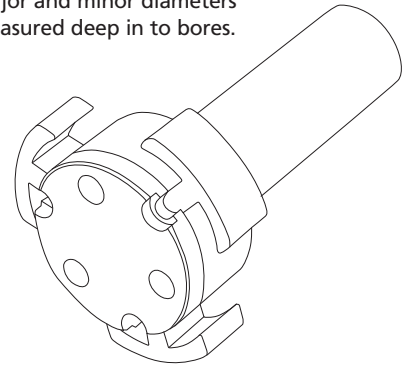
### Irregular Spacing

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



### Gun Barrel Head

Measurement of smooth bore and rifled bore gun barrels. Major and minor diameters measured deep in to bores.

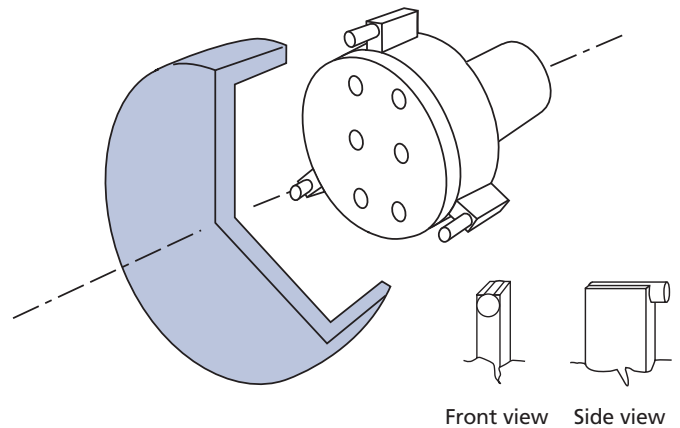


### Right Angled Adaptor



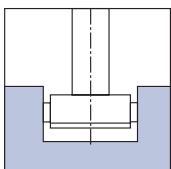
### Blind Bore

Standard between 2-6mm and 12.5-300mm. Between 6-12.5mm on request.



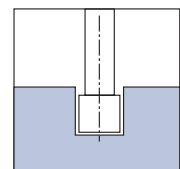
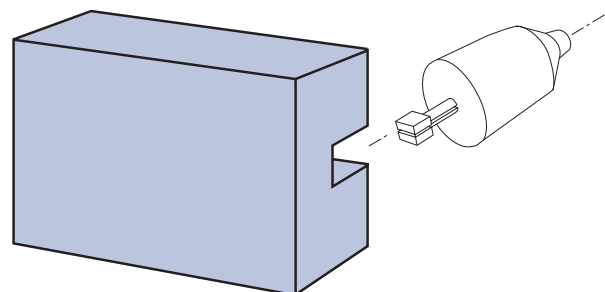
### Slot Width (Large)

Slot widths from 6-100mm.



### Slot Width (Small)

Slot widths from 2-6mm.



## Special Bore Measurement - Measurement of Dovetail Slots & Turbine Blade Grooves

### 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:

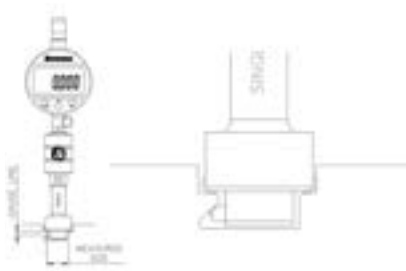
The Bowers dovetail variable gauge is able to output the actual size and position as opposed to competitors' attribute (Go / No Go) gauging. The gauge has a long working life and doesn't wear like attribute gauging.

### Potential Industries:

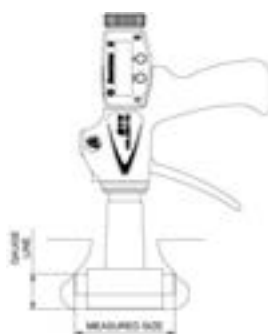
- Aerospace
- Nuclear
- Turbines
- Power Generation



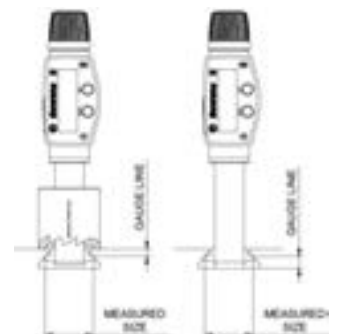
Single side measurement for set-up / symmetry



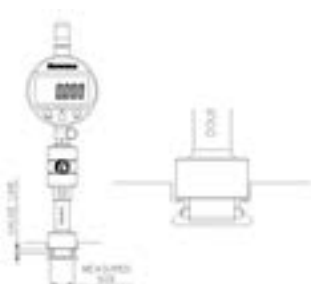
Measurement of dovetail seat face width



Other Dovetail & Fir Tree Slots



Double side measurement for overall width



Measurement of bottom lobe width



## Special 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

### Potential Industries:

- Oil & Gas
- Hydraulics
- Industrial Pipework



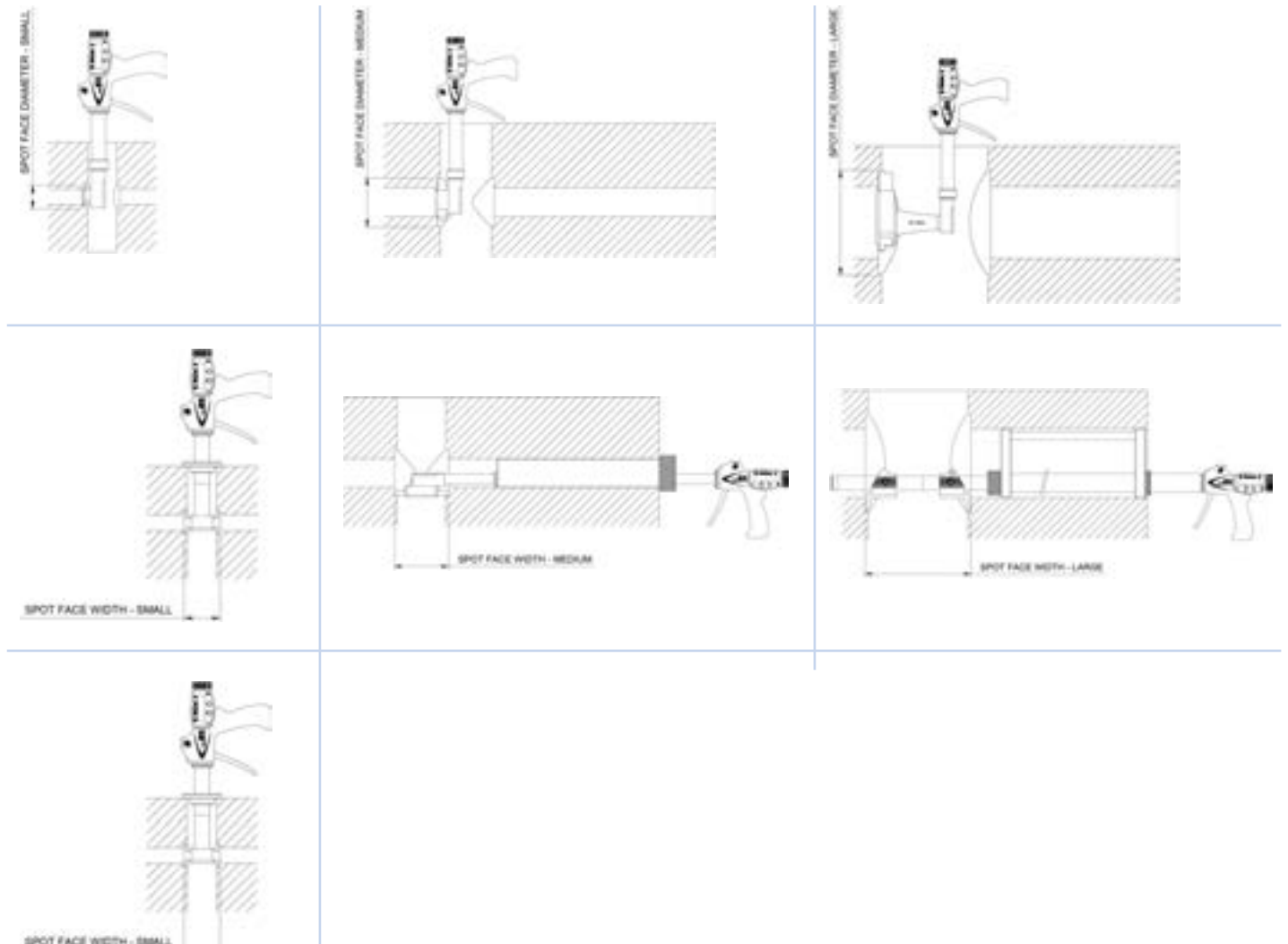
Typical part

### 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



## SmartPlugs

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



### Features

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



## SmartPlugs

### Indicators



**Type A**  
Waterproof Mini Indicator with Shroud  
Preset value maximum 130mm



**Type B**  
Mechanical Dial Gauge



**Type C**  
Standard Digital Indicator  
also available with shroud



**P12D**  
Transducer probe



**MGU2**  
MicroGauge Display

### Holders



**SMA001M**  
M6 Holder short 8mm stem



**SMA002M**  
M6 Holder long 8mm stem



**SMA003**  
M6 100mm extension



**SMA028**  
M6-M10 Adapter  
(to use M10 holders with M6 plugs)



**SMA004**  
M6 Probe holder 8mm stem

**SMPDS00-09**  
Depth Stop



**SMA007**  
M10 100mm extension



**SMA006M**  
M10 Holder long 8mm stem



**SMA008**  
M10 Probe holder 8mm stem



**SMA005M**  
M10 Holder short 8mm

**SMPDS00-09**  
Depth Stop

### SmartPlugs

**M6 Thread Range 6-20mm**  
Please state size to be measured



**M10 Thread Range 15-280mm**  
Please state size to be measured



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

## SmartPlugs

### SmartPlug Applications & Options



SmartPlug with TiN coated body



SmartPlug with MicroGauge head



SmartPlug with ceramic contacts



SmartPlug for blind bore measurement



SmartPlug with depth stop



SmartPlug with extension



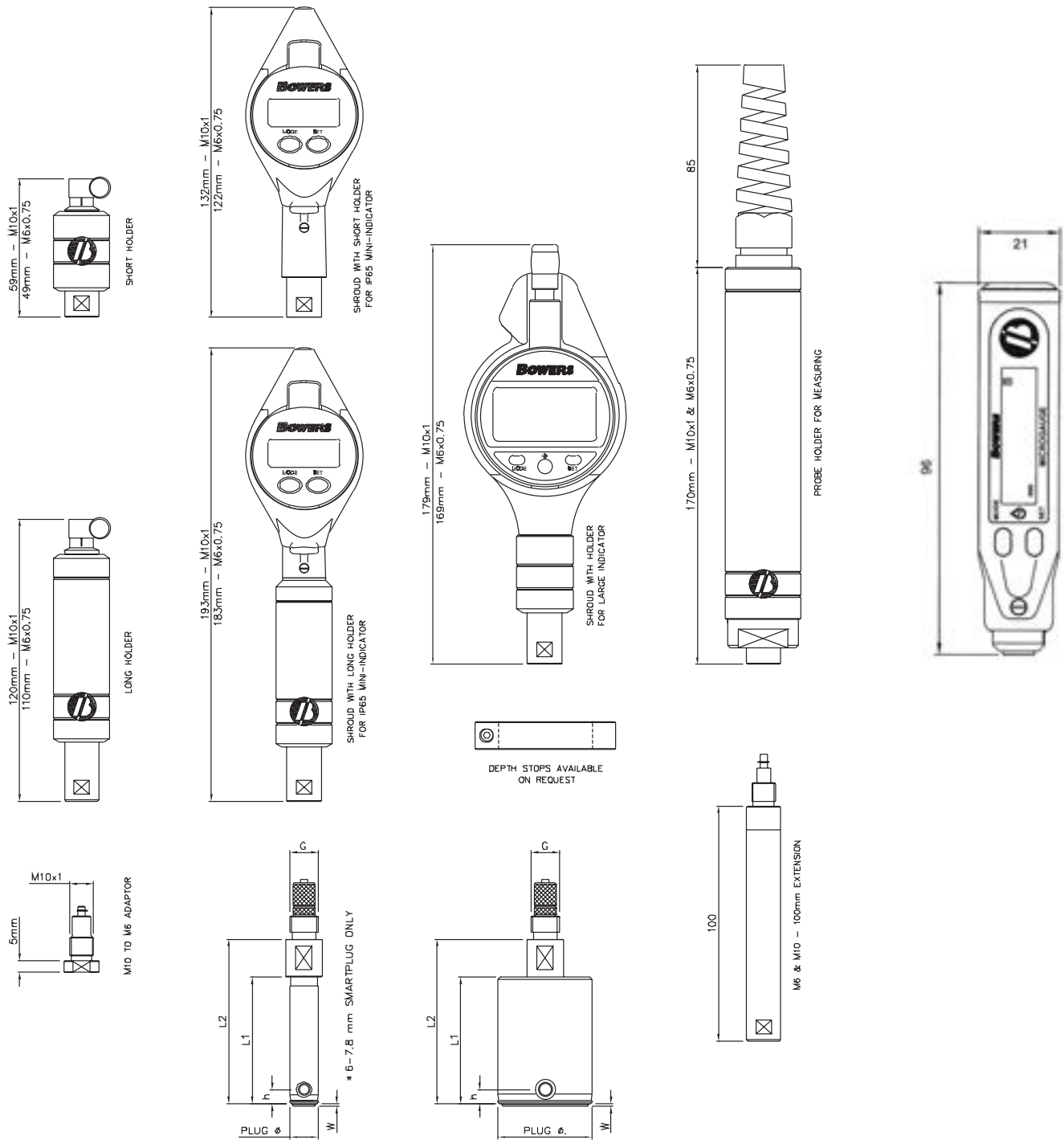
SmartPlug with transducer holder and standalone display



SmartPlug for large diameters (up to 280mm)

## SmartPlugs

### SmartPlug Technical Detail



## SmartPlugs

### 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 |

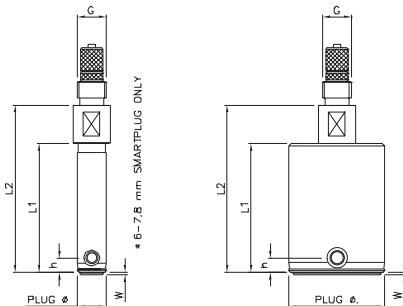
Sizes from 2.98mm - 6mm available on request, also available as Blind Bore heads (BB)

### 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   |
| 70.1-100  | 0.2   | 4   | 2.5   | 35 | 44   | 1.5 | M10x1   |
| 100-280   | 0.2   | 4   | n/a   | 35 | 44   | 1.5 | M10x1   |

\* max measuring depth 27mm between 6 and 7.8mm

Sizes from 2.98mm - 6mm available on request



TiN coated body

Ceramic contacts

Ruby contacts

### SMARTPLUG ACCESSORIES

| Code No   | Description   |
|-----------|---|
| SMA001M   | M6 Holder short 8mm stem                                      |
| SMA002M   | M6 Holder long 8mm stem                                       |
| SMA003    | M6 100mm extension  |
| SMA004    | M6 Probe holder 8mm stem                                      |
| SMA009M   | *Type A Mini indicator with shroud & M6 short holder 8mm stem |
| SMA011M   | *Type A Mini indicator with shroud & M6 long holder 8mm stem  |
| SMA013    | Type C Indicator with shroud & M6 holder 8mm stem             |
| SMA013-BT | Type C Bluetooth Indicator with shroud & M6 holder 8mm stem   |
| SMA028    | M6-M10 Adapter (to use M10 holders with M6 plugs)             |

| Code No     | Description  |
|-------------|--|
| SMA005M     | M10 Holder short 8mm   |
| SMA006M     | M10 Holder long 8mm stem   |
| SMA007      | M10 100mm extension  |
| SMA008      | M10 Probe holder 8mm stem  |
| SMA015M     | *Type A Mini indicator with shroud & M10 short holder 8mm stem         |
| SMA017M     | *Type A Mini indicator with shroud & M10 long 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) |

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

### SMARTPLUG INDICATING UNITS

| Code No | Description  |
|---------|--|
| SMA021  | *Type 'A' digital Mini indicator. Res. 0.001mm           |
| SMA022  | Type 'B' mechanical dial-gauge. 0.001mm graduation       |
| SMA023  | Type 'C' digital indicator. Res. 0.001mm                 |
| SMA031  | Type 'C' Nano Bluetooth Digital Indicator (0.0001mm res) |

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



Bluetooth  
SMART  
Option

WiFi

Option

IoT  
READY  
Option

RS232

Note: BT denotes Bluetooth

## SmartPlug Setting Rings

- Complete with UKAS Calibration Certificates

### SETTING RING (MM) GRADE NOMINAL

| Code No | Setting Ring (mm) |
|---------|-------------------|
| SPR1N   | 1.50 - 3.00       |
| SPR3N   | 3.00 - 6.10       |
| SPR6N   | 6.10 - 9.27       |
| SPR9N   | 9.27 - 12.95      |
| SPR12N  | 12.95 - 20.96     |
| SPR20N  | 20.96 - 28.83     |
| SPR28N  | 28.83 - 38.35     |
| SPR38N  | 38.35 - 51.05     |
| SPR51N  | 51.05 - 63.75     |
| SPR63N  | 63.75 - 76.45     |
| SPR76N  | 76.45 - 89.15     |
| SPR89N  | 89.15 - 101.85    |
| SPR101N | 101.85 - 120.90   |
| SPR120N | 120.90 - 139.95   |
| SPR139N | 139.95 - 159.00   |
| SPR159N | 159.00 - 178.05   |
| SPR178N | 178.05 - 197.10   |
| SPR197N | 197.10 - 203.20   |

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

### SETTING RING (MM) GRADE "X"

| Code No | Setting Ring (mm) |
|---------|-------------------|
| SPR1X   | 1.50 - 3.00       |
| SPR3X   | 3.00 - 6.10       |
| SPR6X   | 6.10 - 9.27       |
| SPR9X   | 9.27 - 12.95      |
| SPR12X  | 12.95 - 20.96     |
| SPR20X  | 20.96 - 28.83     |
| SPR28X  | 28.83 - 38.35     |
| SPR38X  | 38.35 - 51.05     |
| SPR51X  | 51.05 - 68.75     |
| SPR63X  | 68.75 - 76.45     |
| SPR76X  | 76.45 - 89.15     |
| SPR89X  | 89.15 - 101.85    |
| SPR101X | 101.85 - 120.90   |
| SPR120X | 120.90 - 139.95   |
| SPR139X | 139.95 - 159.00   |
| SPR159X | 159.00 - 178.05   |
| SPR178X | 178.05 - 197.10   |
| SPR197X | 197.10 - 203.20   |

Larger setting rings are available upon request

### SETTING RING (MM) GRADE "XX"

| Code No  | Setting Ring (mm) |
|----------|-------------------|
| SPR1XX   | 1.50 - 3.00       |
| SPR3XX   | 3.00 - 6.10       |
| SPR6XX   | 6.10 - 9.27       |
| SPR9XX   | 9.27 - 12.95      |
| SPR12XX  | 12.95 - 20.96     |
| SPR20XX  | 20.96 - 28.83     |
| SPR28XX  | 28.83 - 38.35     |
| SPR38XX  | 38.55 - 51.05     |
| SPR51XX  | 51.05 - 63.75     |
| SPR63XX  | 63.75 - 76.45     |
| SPR76XX  | 76.45 - 89.15     |
| SPR89XX  | 89.15 - 101.85    |
| SPR101XX | 101.85 - 120.90   |
| SPR120XX | 120.90 - 139.95   |
| SPR139XX | 139.95 - 159.00   |
| SPR159XX | 159.00 - 178.05   |
| SPR178XX | 178.05 - 197.10   |
| SPR197XX | 197.10 - 203.20   |



### DEPTH STOPS

| Code No | Range (mm) |
|---------|------------|
| SMPDS00 | below 6    |
| SMPDS01 | 6-8.5      |
| SMPDS02 | 8.5-13     |
| SMPDS03 | 13-17.5    |
| SMPDS04 | 17.5-25    |
| SMPDS05 | 25-32.5    |
| SMPDS06 | 32.5-40    |
| SMPDS07 | 40-47.5    |
| SMPDS08 | 47.5-55    |
| SMPDS09 | 55-62.5    |
| SMPDS10 | 62.5-70    |
| SMPDS11 | 70-77.5    |
| SMPDS12 | 77.5-85    |
| SMPDS13 | 85-92.5    |
| SMPDS14 | 92.5-100   |



## Air Gauging "a new approach"

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 diameters, but geometric and relational characteristics, such as squareness, parallelism, ovality, taper and straightness.

The working range of our standard air gauge tooling is approx 0.08mm. For optimum accuracy, Bowers produce the UKAS Calibrated Setting Masters at the Upper and Lower product limits.

## 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 really 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
- Foot pedal for preset-clear-part characteristic-hold-data transfer

### 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 select automatically 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 130mm, height 111mm, depth 105mm
- Mass: 600g (700g with the power supply)

### D400S – Multifunctional Multichannel Features

The D400S from Sylvac allows users to display readings simultaneously from multigauging applications. All of which offers readings for each dimension, the MIN, MAX and DELTA.

- 7" touchscreen display and customizable display interface
- Aluminium body
- 12VDC/30VDC Power supply
- RJ-45 Ethernet TCP4
- USB host (for usb key) and USB device (virtual keyboard)
- Footswitch
- M-BUS
- 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 characteristic by fixture
- Up to 128 part references
- Calibration mode
- Individual probe display
- Displays resolution up to 5 decimals E 7
- SPC functions
- Measurement transfer by USB or RS232
- PLC programming



Bowers Air1/2

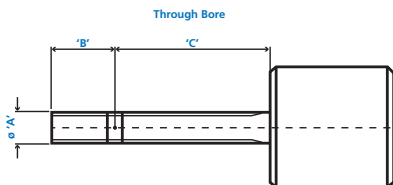


D4005

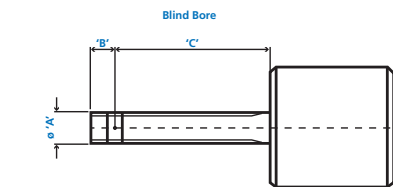
## Air Gauge Tooling

Standard: 3.00-14.10mm

| ø'A' Range    | 'B'   | 'C'   |
|---------------|-------|-------|
| ø3.00 - 4.70  | 4.76  | 20.65 |
| ø4.70 - 6.30  | 12.70 | 22.30 |
| ø6.30 - 14.10 | 12.70 | 25.40 |



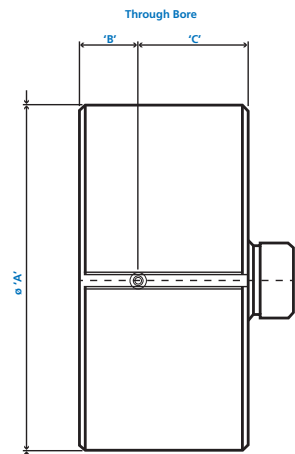
| ø'A' Range    | 'B'  | 'C'   |
|---------------|------|-------|
| ø3.00 - 4.70  | 3.97 | 21.45 |
| ø4.70 - 6.30  | 3.97 | 31.05 |
| ø6.30 - 14.10 | 3.97 | 34.15 |



- Mercer System Bayonet Adapter (included)
- Federal System 3/8" - 32 NS Internal Thread, Air Box Unit Assembly NOT included
- Bowers PC2200 System Hexagonal Handle (included)

Standard: 76.45-203.20mm

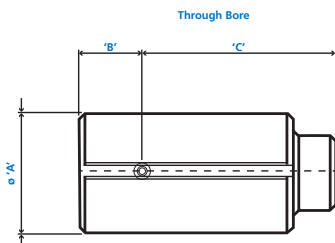
Supplied with handle, hose and connector



| ø'A' Range     | 'B'   | 'C'   |
|----------------|-------|-------|
| ø76.45 - 203.2 | 19.05 | 31.75 |

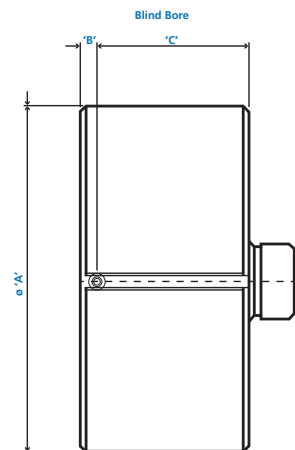
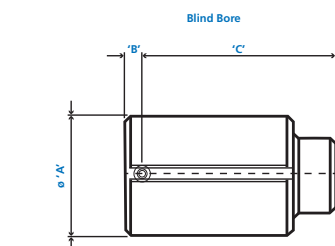
Standard: 14.10-76.45mm

| ø'A' Range     | 'B'   | 'C'   |
|----------------|-------|-------|
| ø14.10 - 37.85 | 15.90 | 35.20 |
| ø37.85 - 76.45 | 19.05 | 34.95 |



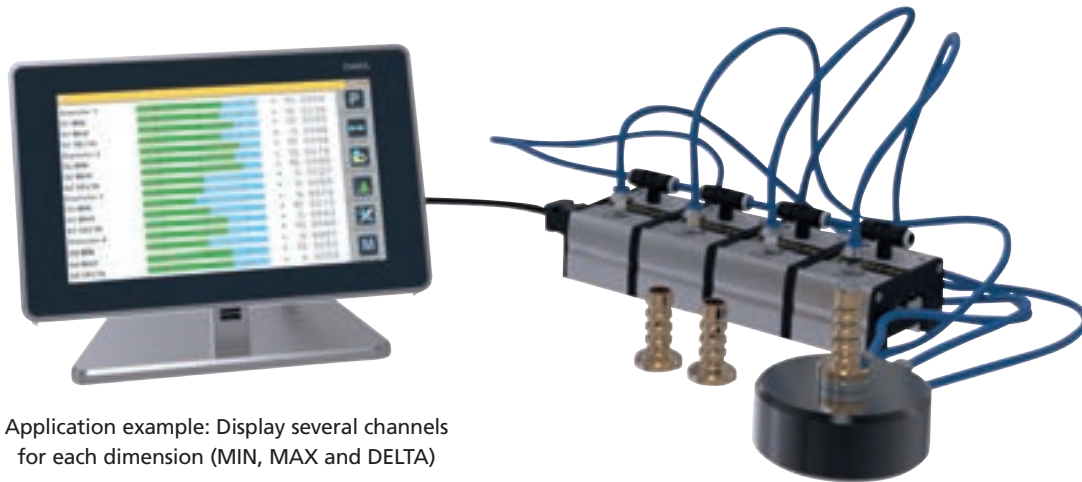
- Mercer System Bayonet Adapter (included)
- Federal System 3/8" - 32 NS Internal Thread, Air Box Unit Assembly NOT included
- Bowers PC2200 System Hexagonal Handle (included)

| ø'A' Range     | 'B'  | 'C'   |
|----------------|------|-------|
| ø14.10 - 37.85 | 3.97 | 47.15 |
| ø37.85 - 76.45 | 3.97 | 50.00 |



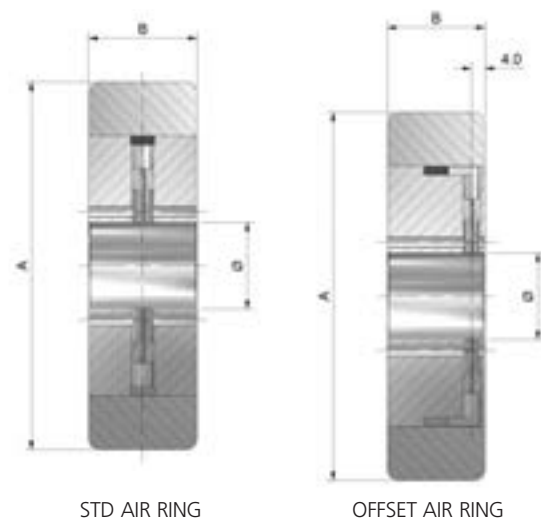
| ø'A' Range     | 'B'  | 'C'   |
|----------------|------|-------|
| ø76.45 - 203.2 | 3.97 | 46.60 |

## D400S Multifunctional/Multichannel Display



Application example: Display several channels for each dimension (MIN, MAX and DELTA)

### Air Rings



STD AIR RING

OFFSET AIR RING

#### AIR RINGS - SPECIFICATION

| Size Range (mm) | Size Range (inch) | Dia A (mm) | Dia A (inch) | B (mm) | B (inch) |
|-----------------|-------------------|------------|--------------|--------|----------|
| 3.17-6.35       | 1/8-1/4           | 63.50      | 2.5          | 19.05  | 3/4      |
| 6.35-25.40      | 1/4-1             | 82.55      | 3 1/4        | 25.40  | 1        |
| 25.40-38.10     | 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    |
| 50.80-63.5      | 2-2.5             | 133.35     | 5 1/4        | 28.58  | 1 1/8    |

### Master Setting Rings

#### RING CODES

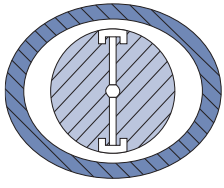
|        |                       | From mm | To mm  | From inch | To inch |
|--------|-----------------------|---------|--------|-----------|---------|
| R1X    | RING GAUGE (CLASS X)  | 1.5     | 3      | 0.059     | 0.118   |
| R3X    | RING GAUGE (CLASS X)  | 3       | 6.1    | 0.118     | 0.24    |
| R6X    | RING GAUGE (CLASS X)  | 6.1     | 9.27   | 0.24      | 0.365   |
| R9X    | RING GAUGE (CLASS X)  | 9.27    | 12.95  | 0.365     | 0.51    |
| R12X   | RING GAUGE (CLASS X)  | 12.95   | 20.96  | 0.51      | 0.825   |
| R20X   | RING GAUGE (CLASS X)  | 20.96   | 28.83  | 0.825     | 1.135   |
| R28X   | RING GAUGE (CLASS X)  | 28.83   | 38.35  | 1.135     | 1.51    |
| R38X   | RING GAUGE (CLASS X)  | 38.35   | 51.05  | 1.51      | 2.01    |
| R51X   | RING GAUGE (CLASS X)  | 51.05   | 63.75  | 2.01      | 2.51    |
| R63X   | RING GAUGE (CLASS X)  | 63.75   | 76.45  | 2.51      | 3.01    |
| R76X   | RING GAUGE (CLASS X)  | 76.45   | 89.15  | 3.01      | 3.51    |
| R89X   | RING GAUGE (CLASS X)  | 89.15   | 101.85 | 3.51      | 4.01    |
| R101X  | RING GAUGE (CLASS X)  | 101.85  | 120.9  | 4.01      | 4.76    |
| R120X  | RING GAUGE (CLASS X)  | 120.9   | 139.95 | 4.76      | 5.51    |
| R139X  | RING GAUGE (CLASS X)  | 139.95  | 159    | 5.51      | 6.26    |
| R159X  | RING GAUGE (CLASS X)  | 159     | 178.05 | 6.26      | 7.01    |
| R178X  | RING GAUGE (CLASS X)  | 178.05  | 197.1  | 7.01      | 7.76    |
| R197X  | RING GAUGE (CLASS X)  | 197.1   | 203.2  | 7.76      | 8       |
| R1XX   | RING GAUGE (CLASS XX) | 1.5     | 3      | 0.059     | 0.118   |
| R3XX   | RING GAUGE (CLASS XX) | 3       | 6.1    | 0.118     | 0.24    |
| R6XX   | RING GAUGE (CLASS XX) | 6.1     | 9.27   | 0.24      | 0.365   |
| R9XX   | RING GAUGE (CLASS XX) | 9.27    | 12.95  | 0.365     | 0.51    |
| R12XX  | RING GAUGE (CLASS XX) | 12.95   | 20.96  | 0.51      | 0.825   |
| R20XX  | RING GAUGE (CLASS XX) | 20.96   | 28.83  | 0.825     | 1.135   |
| R28XX  | RING GAUGE (CLASS XX) | 28.83   | 38.35  | 1.135     | 1.51    |
| R38XX  | RING GAUGE (CLASS XX) | 38.35   | 51.05  | 1.51      | 2.01    |
| R51XX  | RING GAUGE (CLASS XX) | 51.05   | 63.75  | 2.01      | 2.51    |
| R63XX  | RING GAUGE (CLASS XX) | 63.75   | 76.45  | 2.51      | 3.01    |
| R76XX  | RING GAUGE (CLASS XX) | 76.45   | 89.15  | 3.01      | 3.51    |
| R89XX  | RING GAUGE (CLASS XX) | 89.15   | 101.85 | 3.51      | 4.01    |
| R101XX | RING GAUGE (CLASS XX) | 101.85  | 120.9  | 4.01      | 4.76    |
| R120XX | RING GAUGE (CLASS XX) | 120.9   | 139.95 | 4.76      | 5.51    |
| R139XX | RING GAUGE (CLASS XX) | 139.95  | 159    | 5.51      | 6.26    |
| R159XX | RING GAUGE (CLASS XX) | 159     | 178.05 | 6.26      | 7.01    |
| R178XX | RING GAUGE (CLASS XX) | 178.05  | 197.1  | 7.01      | 7.76    |
| R197XX | RING GAUGE (CLASS XX) | 197.1   | 203.2  | 7.76      | 8       |

CLASS X OR XX TO ANSI/ASME B89.1.6M. All Setting Rings are supplied with UKAS Certificates



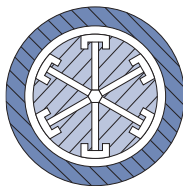
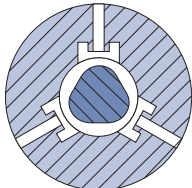
## Air Gauge Tooling Applications

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



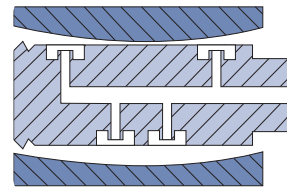
### OUT-OF-ROUNDNESS

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.



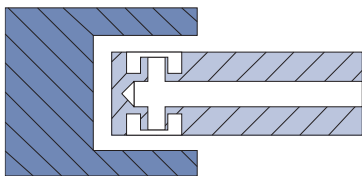
### AVERAGING

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.



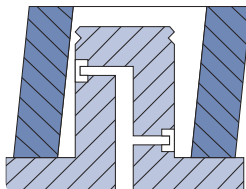
### STRAIGHTNESS

A common application of Air Gauging is to dynamically measure the straightness or "bow" of an inside or outside diameter. In this case, a custom designed air plug makes verifying a part's straightness simple and fast. (A straightness air plug cannot measure diameter).



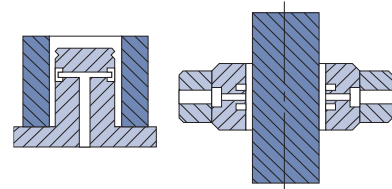
### GROOVE WIDTH

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. This also allows for "match" gauging between spool and valve components.

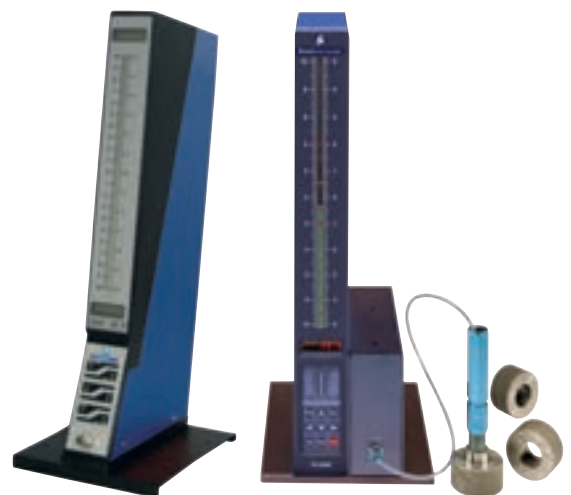
## Air / Electronics Columns

For the more traditional methods of Air Gauging Bowers offers a variety of display options e.g. air/electronic, which is capable of measuring functions including static and dynamic gauging, classification grading, probe mixing, ie (A+B) , (A-B).

### FEATURES OF AIR/ELECTRONIC COLUMNS

|                          | AEP 2045   | PC 2200  |
|--------------------------|--|--|
| Display Type             | Tri-colour bar / Digital numeric                         | Tri-colour bar / Digital numeric                         |
| User Interface           | Keypad   | Keypad or remote program (1)                             |
| Channels                 | 1  | 1 or 2 depending on model                                |
| Memory Capability        | 16 Tooling Characteristics                               | 4 Tooling Characteristics                                |
| Resolution               | Up to 0.0001mm   | Up to 0.0001mm   |
| Relative/Absolute        | REL/ABS  | REL/ABS  |
| Measuring Mode           | Static/Dynamic/TIR                                       | Static/Dynamic/TIR                                       |
| Units                    | mm or inch   | mm or inch   |
| Direct RS232             | Yes  | Yes  |
| Data Collection          | On board (2)   | External   |
| Connectivity             | USB  | RS232  |
| Display Options          | Tri-colour bar /<br>Digital Numeric Tolerance + Approach | Tri-colour bar /<br>Digital Numeric Tolerance + Approach |
| Auto Channel Recognition | No   | No   |
| Grading                  | Yes  | Yes  |
| Dimension (mm) (HxWxD)   | 500x60x200   | 450x57x215   |
| Weight Approx (kg)       | 4.7  | 5  |
| Power Requirements       | 230 VAC 50Hz   | 110/220 VAC 50Hz   |

(1) Additional parts / software required. (2) 1000 measurements. Download to Flash Drive via USB.



55-2045-AEP

PC 2200

## Bowers MicroGauge 2-Point Bore Gauge

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.



Depth Stop

### Features

- System range: 1-10mm
- 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
- Stand available as an option



FTS001 - Floating Table



## Bowers MicroGauge 2-Point Bore Gauge

**TECHNICAL SPECIFICATION:** Individual measuring heads, readouts and setting rings

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

**Note:** MicroGauge individual set configurations available on request

**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 |

### DATA TRANSMISSION

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



SMG004M

### STANDS

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

## Baty Traditional 2 Point Bore Comparator Set

Baty Dial Indicating Bore Gauges allow rapid and accurate checking of bores for size, ovality, taper, wear, etc. in the workshop or inspection room.

### Features

All models operate on the proven principle of two diametrically opposed measuring points, one fixed and one moving, plus a spring-loaded centralising shoe

- To check the actual size of bore, the gauge must be set to size with a ring gauge or micrometer and inserted into the bore. It is then necessary to 'rock' the gauge slowly to locate its measuring axis to the bore, shown by the point of reversal of the indicator hand or analogue display. The reading at that point is the deviation from set or normal size
- For larger bores, a range of interchangeable extension rods allow a single instrument to cover a wide range of bore sizes
- All bore gauges come supplied in a wooden case



2104



2101



2151



2351

### BATY TRADITIONAL 2 POINT BORE COMPARATOR SET

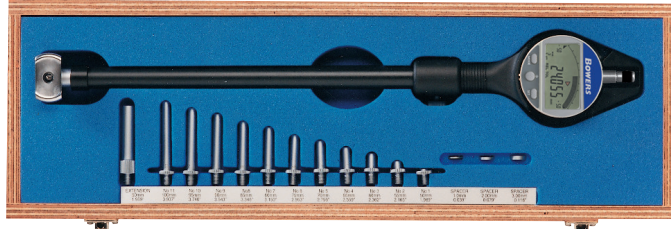
| Code No | Capacity (mm) | Capacity (inch) | Depth (mm) | Depth (inch) | Resolution (mm) | Resolution (inch) |
|---------|---------------|-----------------|------------|--------------|-----------------|-------------------|
| 2101    |               | 7/8-2           |            | 6            |                 | 0.0005            |
| 2103    |               | 7/8-2           |            | 6            |                 | 0.0001            |
| 2151    |               | 2-6             |            | 12           |                 | 0.0005            |
| 2153    |               | 2-6             |            | 12           |                 | 0.0001            |
| 2351    |               | 6-24            |            | 18           |                 | 0.0005            |
| 2353    |               | 6-24            |            | 18           |                 | 0.0001            |
| 2102    | 22.5-50       |                 | 150        |              | 0.01            |                   |
| 2104    | 22.5-50       |                 | 150        |              | 0.002           |                   |
| 2152    | 50-150        |                 | 300        |              | 0.01            |                   |
| 2154    | 50-150        |                 | 300        |              | 0.002           |                   |
| 2352    | 150-600       |                 | 450        |              | 0.01            |                   |
| 2354    | 150-600       |                 | 450        |              | 0.002           |                   |

## Bowers Mechanical & Digital Cylinder Bore Gauge

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

**WiFi**  
Option

**RS232**



CBGD030

### MECHANICAL & DIGITAL CYLINDER BORE GAUGE

| Code No | Range (mm) | Resolution (mm) | Graduation | Measuring Depth (mm) | Measuring Depth (inch) |
|---------|------------|-----------------|------------|----------------------|------------------------|
| TGB652M | 12.5-22    | 0.01            | 0-50-0     | 150                  | 6                      |
| TGB655M | 12.5-22    | 0.002           | 0-10-0     | 150                  | 6                      |
| CBGD010 | 12.5-22    | 0.001/0.01      | Digital    | 150                  | 6                      |
| TGB702M | 22-50      | 0.01            | 0-50-0     | 150                  | 6                      |
| TGB717M | 22-50      | 0.002           | 0-10-0     | 150                  | 6                      |
| CBGD020 | 22-50      | 0.001/0.01      | Digital    | 150                  | 6                      |
| TGB752M | 50-150     | 0.01            | 0-50-0     | 250                  | 10                     |
| TGB765M | 50-150     | 0.002           | 0-10-0     | 250                  | 10                     |
| CBGD030 | 50-150     | 0.001/0.01      | Digital    | 250                  | 10                     |
| TGB802M | 150-300    | 0.01            | 0-50-0     | 380                  | 15                     |
| TGB812M | 150-300    | 0.002           | 0-10-0     | 380                  | 15                     |
| TGB821M | 150-600    | 0.01            | 0-50-0     | 380                  | 15                     |
| TGB851M | 150-600    | 0.002           | 0-10-0     | 380                  | 15                     |
| CBGD040 | 150-300    | 0.001/0.01      | Digital    | 380                  | 15                     |
| CBGD050 | 150-600    | 0.001/0.01      | Digital    | 380                  | 15                     |

Special depths are available on request. Imperial range available on request  
Setting master kit available (see P259)

### Standard Features

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

### Digital Features

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

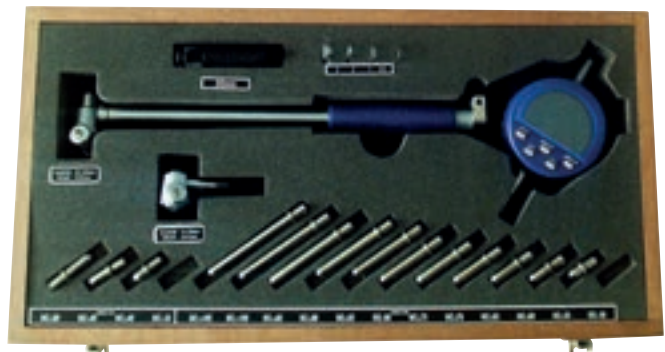
## Cylinder Bore Gauge Sets 316 Series

### Features

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

### Digital Bore Gauge Sets

- Supplied with digital indicator with bar graph and numerical display



### CYLINDER BORE GAUGES (ANALOGUE)

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW316-01 | 6-10       | 0.01            |
| MW316-02 | 10-18      | 0.01            |
| MW316-03 | 18-35      | 0.01            |
| MW316-04 | 35-50      | 0.01            |
| MW316-05 | 50-160     | 0.01            |
| MW316-06 | 160-250    | 0.01            |

### DIGITAL BORE GAUGE SET

| Code No   | Range (mm) | Resolution (mm) | Resolution (inch) | Measuring Depth (mm) | Measuring Depth (inch) |
|-----------|------------|-----------------|-------------------|----------------------|------------------------|
| MW316-12D | 35-160     | 0.001           | 0.0005            | 150                  | 6                      |

Setting master kit available (see P259)

## Universal Gauge Sets

These gauges are used for measuring internal and external dimensions, such as grooves, shoulders, recesses, threads, tapers, gears, splines, hole centres, a wide range of measuring contacts are available to enable measurement of various features.

 **Bluetooth**  
SMART  
Option

 **WiFi**  
Option

 **IoT**  
READY

 **RS232**

 **USB**



### Features

- Internal and external measurement
- Range 30-255mm Internal / 0-220mm External with 20mm Anvil Travel
- 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
- Special anvil designs available P.O.A



TGUSET1



TGUSET2

### UNIVERSAL GAUGE SETS

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

### 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 (Pair)                                      |
| TGUA004    | Flat Measuring Anvil (Pair)                                  |
| TGUA005    | Spherical contacts (Pair)                                    |
| 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 and Accessories

### Digital Indicator and Protective Shroud

Code No  
TGUA001-AN



Note: AN denotes Analogue

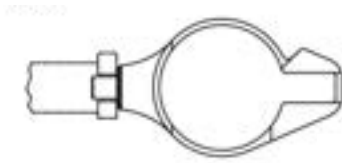
Code No  
TGUA001  
TGUA001-BT



Note: BT denotes Bluetooth

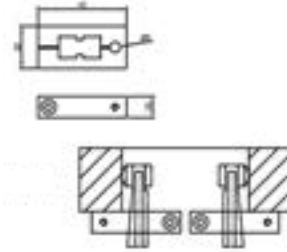
### Protective Shroud for Dial/Digital Indicator

Code No  
TGUA002



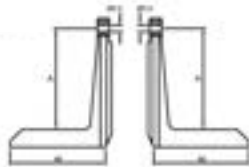
### Adjustable Depth Stops for Measuring Arms (Pair)

Code No  
TGUA010



### Measuring Arms (Pair)

| Dimn - A | Code No |
|----------|---------|
| 50       | TGUA006 |
| 75       | TGUA007 |
| 100      | TGUA008 |



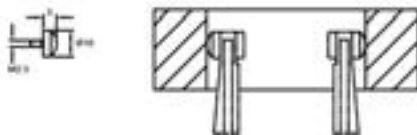
### Flat Tips (Single)

Code No  
TGUA004



### Spherical Tips (Single)

Code No  
TGUA005



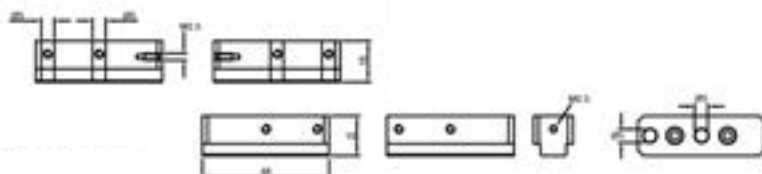
### Clamping Insert (Single)

Code No  
TGUA003



### Mounting Attachments for use with the following Anvils (Pair)

Code No  
TGUA009



## Universal Gauge and Accessories

### Shoulder Anvils Flat Outside Spigot Diameter (Pair)

Code No  
TGUA011



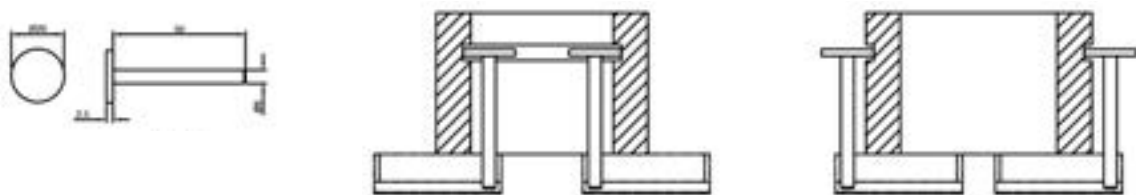
### Semi-Cylindrical Anvils for Inside Register Diameters (Pair)

Code No  
TGUA012



### DISC Anvils for measuring Groove Diameter (Pair)

Code No  
TGUA013



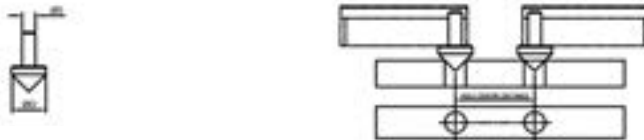
### DISC Anvils for measuring Groove Diameter (Pair)

Code No  
TGUA014



### Cone Anvils for Measuring Hole Centre Distance (Pair)

| Code No | Dimn - D |
|---------|----------|
| TGUA019 | 13       |
| TGUA020 | 25       |
| TGUA021 | 50       |



### Vee Support for Length Measurement (Single)

Code No  
TGUA022

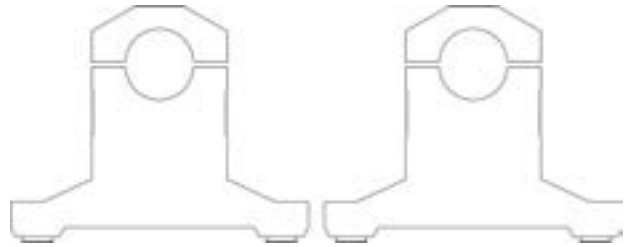




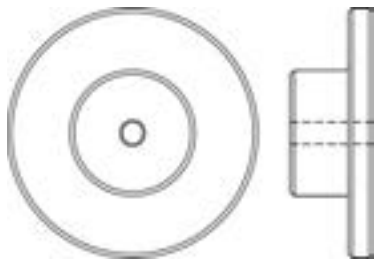
## Universal Bench Gauge & Accessories

### Measuring Arms

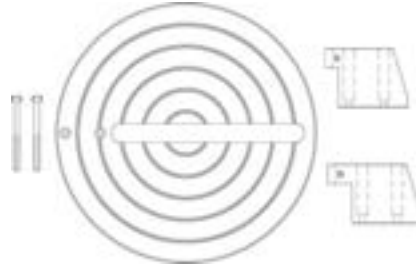
| Code No | Description                            |
|---------|--|
| TGUA023 | Bench Stands (Pair)                    |
| TGUA028 | Squareness Setting Gauge               |
| TGUA024 | Table & Mountings                      |
| TGUA025 | Small Dia (Ø6) Measuring Anvils (Pair) |
| TGUA026 | Standard Contact Mounting Arms (Pair)  |



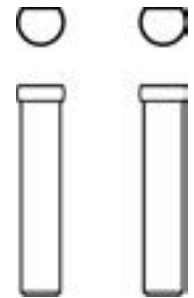
TGUA023



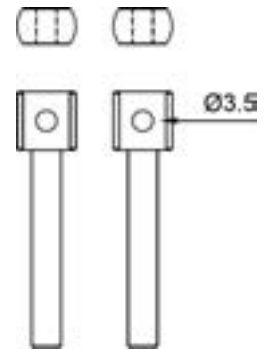
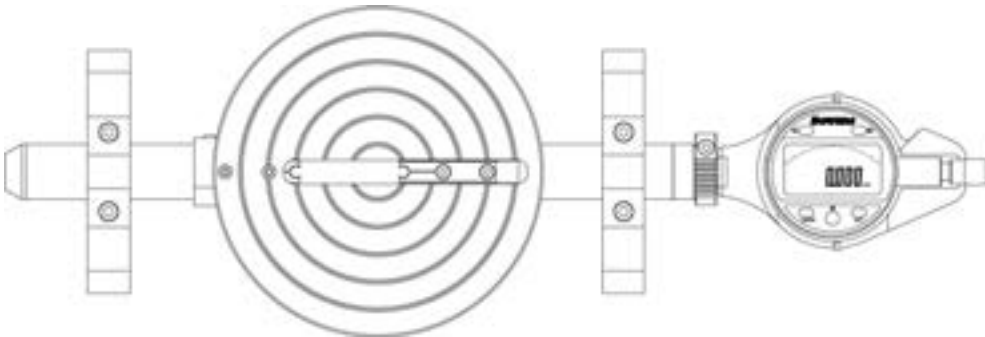
TGUA028



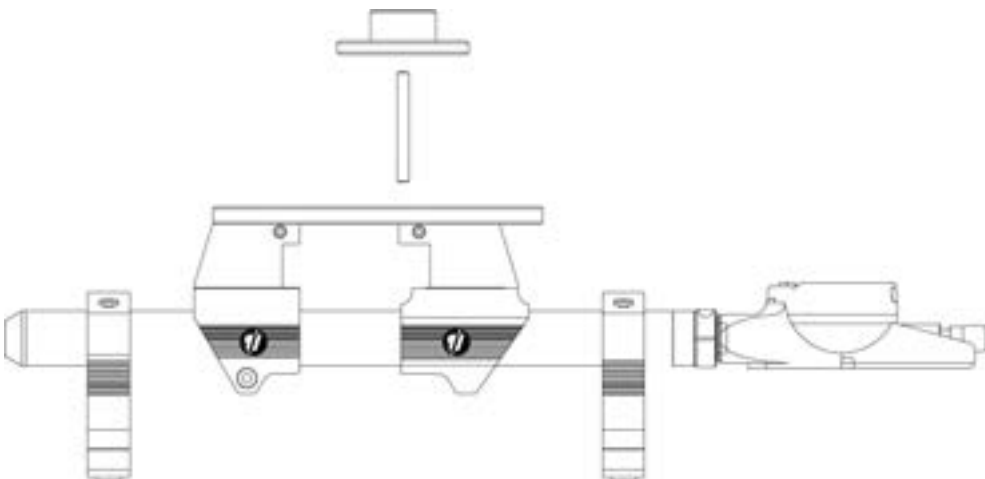
TGUA024



TGUA025



TGUA026



## Universal Gauge and Accessories

### 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 up to 1550 Internal and 1650 External



## Universal Setting Gauge

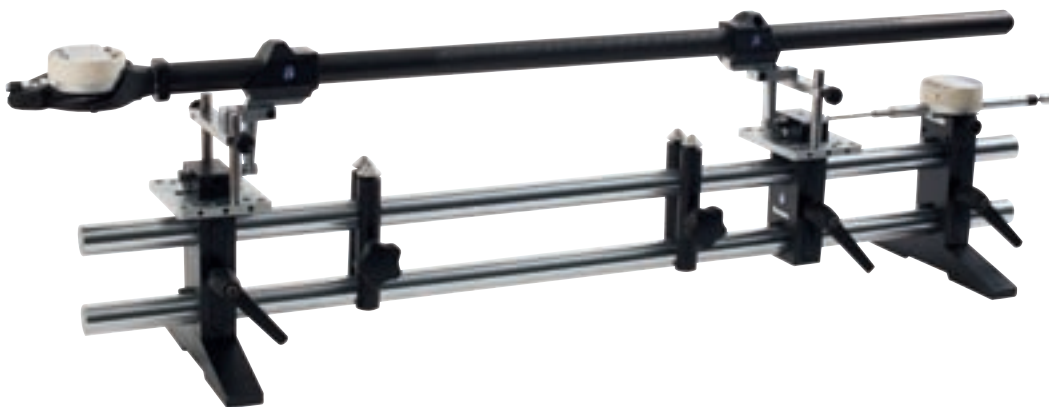
To improve the quality of your large diameter machined parts, the portable Universal Setting Gauge from Bowers has been developed as an easy to use comparator tool which can be set up next to the gauge being utilised.

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.

### Features

- Available in 3 different lengths:  
Up to 550mm Internal - 650mm External  
Up to 1050mm Internal - 1150mm External  
Up to 1550mm Internal - 1650mm External
- 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 (see below)
- Can be orientated vertically up to 1050mm internal / 1150 external when a base and vertical guide, (USGS) are fitted



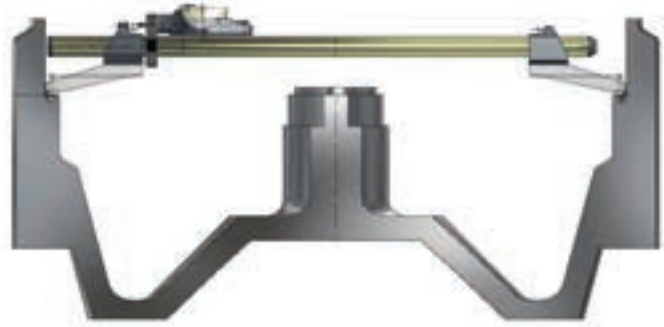
### UNIVERSAL SETTING GAUGE

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

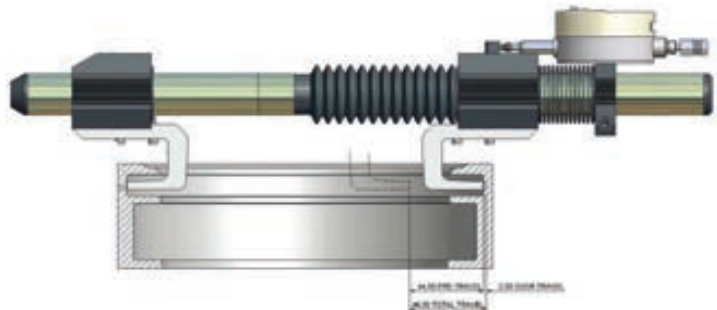
Digital Indicators available on request

## Bowers Universal Gauge Specials

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



Extended Travel Special Application Universal Gauge.



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

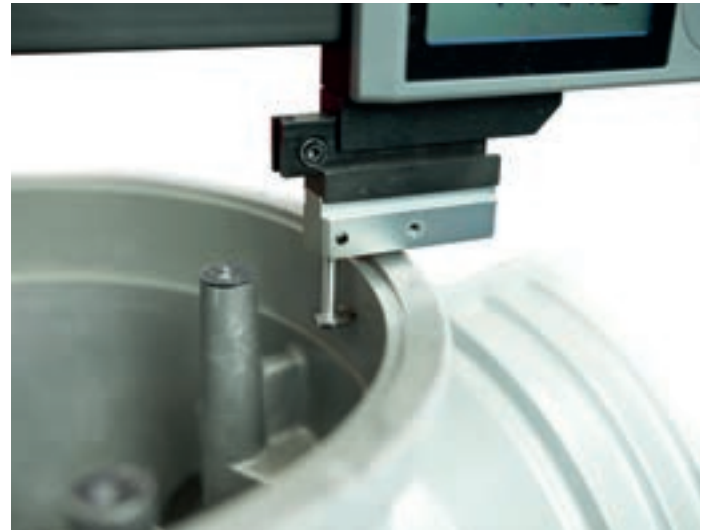


## UNICAL 2 Universal Digital Caliper

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.

### 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



UNICAL2-400 with accessories

### UNICAL 2 UNIVERSAL DIGITAL CALIPER

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

## Checkmaster Comparator

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.

### Features

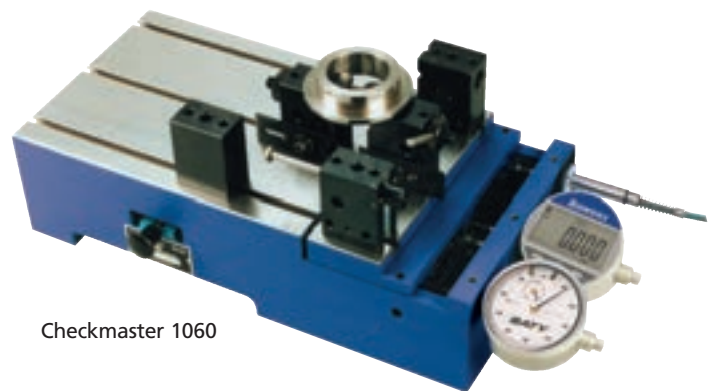
- Unique 3 gauge station and readout capability
- Remarkable versatility and repeatability
- Accepts most dial indicators, digital indicators (12.7mm travel) and Gauging Probes
- Excellent gauge repeatability and reproducibility (G.R. & R.) capability
- Exceptionally tough for shopfloor on-line inspection
- Measuring force, with adjustable setting
- Multi functional
- Ideal for SPC and 100% inspection
- Left or right hand operation

### 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 1060



1060-UTS

### CHECKMASTER COMPARATOR

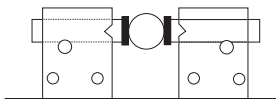
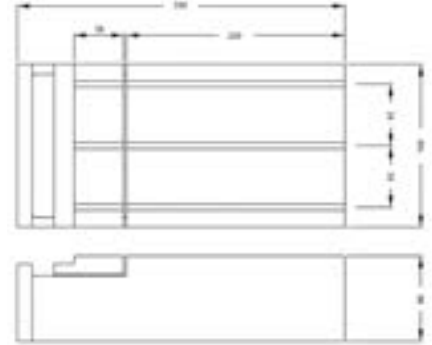
| Code No  | Description                                |
|----------|--|
| 1060-UTS | Universal Tooling Set for 1060 Checkmaster |

## Checkmaster Tooling Applications and Dimensions

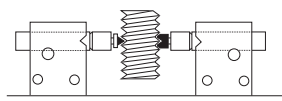
### Features

- 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

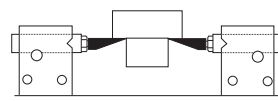
**Checkmaster 1060**  
Code No: 1060



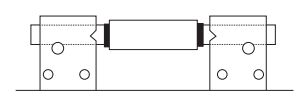
Outside Diameter



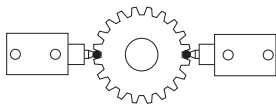
Thread Features



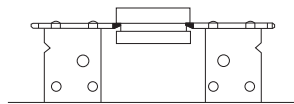
Undercut Depth



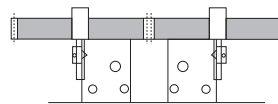
Length



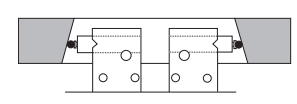
External Spline / Gear PCD



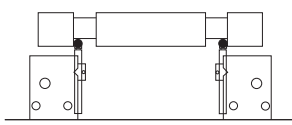
External Diameter



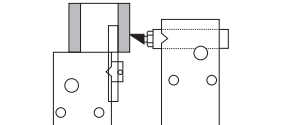
Rolling Gear Test



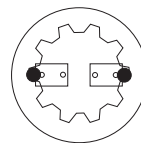
Internal Taper



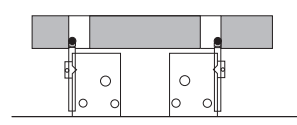
Bearing Face Distance



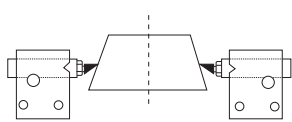
Concentricity / Wall Thickness



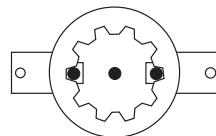
Internal Spline (Large Diameter)



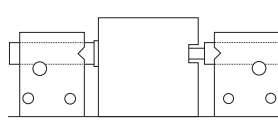
Hole / Slot Position



External Taper



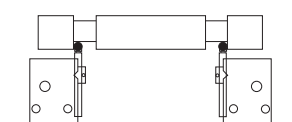
Internal Spline (Small Diameter)



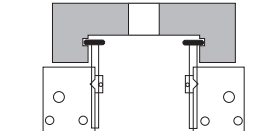
Slot Depth



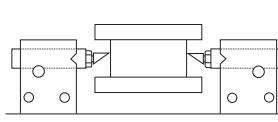
Hole Centres



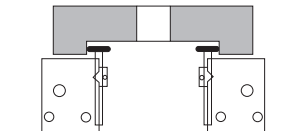
Web Thickness



Internal Recess Diameter



Recess Diameter



Bore Diameter

## INTEX Comparator Beam Gauge

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

 **Bluetooth**  
SMART  
Option

 **WiFi**  
Option

 **IoT**  
READY

 **RS232**

### Features

- Lightweight and rigid
- Measuring ranges: 200-400mm, 400-600mm, 600-800mm, 800-1000mm
- Sizes over 1000mm available on request
- Internal and external measurement
- 2mm travel on moving contacts
- Adjustable fixed contacts with up to 250mm adjustment range
- Digital or analogue indicator available
- Hardened steel wear pads locate gauge onto component aiding repeatability and prolonging service life
- Setting master required to set the instrument
- Instrument supplied without tooling



INTEXA01

### 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   |

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

Note: BT denotes Bluetooth



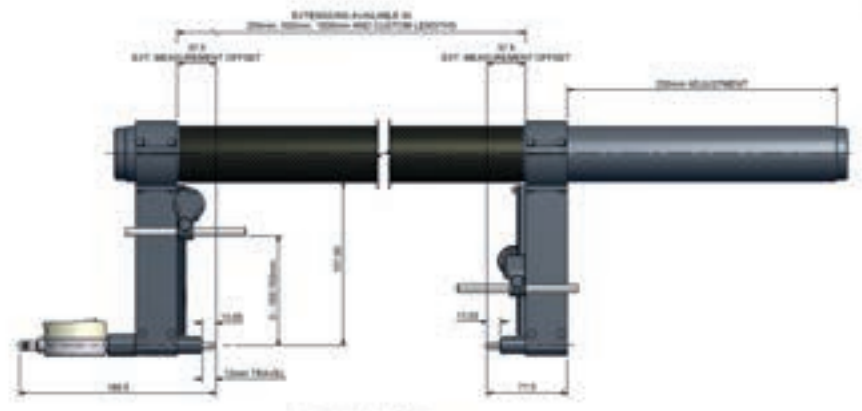
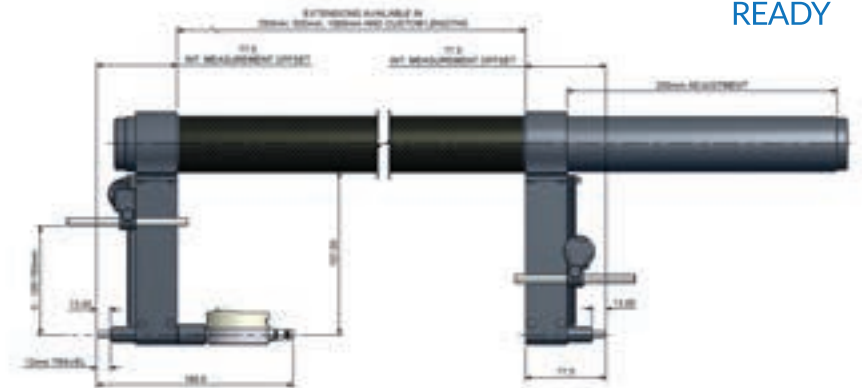
## Carbon Fibre Comparator Beam Gauge

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+.



### Features

- Extremely lightweight even at 4m span
- Extremely low co-efficient of thermal expansion
- Measuring capacity of standard set:  
External: 0 > 1930mm  
Internal: 150 > 2150mm
- 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
- Bluetooth option available



### 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

CFBG01 - Carbon Fibre Beam Gauge Set

## Moore & Wright Traditional External Micrometer 1961 Series

### Features

- Standard: BS870, DIN 863/1, ISO361
- Tungsten carbide measuring faces
- 5 mm spindle diameter
- Tapered bow frame
- Pearl-chrome plated frame with insulation pads
- Speeder type ratchet
- Choice of standard or vernier type sleeve
- Locking lever
- Adjusting key
- Supplied in plastic pocket case



### MECHANICAL EXTERNAL MICROMETER

| Code No | Range (mm) | Resolution (mm) | Code No | Range (inch) | Resolution (inch) |
|---------|------------|-----------------|---------|--------------|-------------------|
| 1961M   | 0-25       | 0.01            | 1961    | 0-1          | 0.001             |
| 1961MB  | 0-25       | 0.002           | 1961B   | 0-1          | 0.0001            |

### ACCURACY

| Micrometer Range<br>Max Size up to | Measuring Faces |             | Screw Pitch Accuracy |
|------------------------------------|-----------------|-------------|----------------------|
|                                    | Flatness        | Parallelism |                      |
| 25mm                               | 0.001mm         | 0.003mm     | 0.003mm              |
| 1"                                 | 0.00005"        | 0.0001"     | 0.0001"              |

## Moore & Wright Traditional External Micrometer 1965 Series

### Features

- Standard: BS870, DIN 863/1, ISO361
- Tungsten carbide measuring faces
- 6.5mm spindle diameter
- Blue textured tapered bow frame
- Speeder type ratchet
- Choice of standard or vernier type sleeve
- Locking lever
- Adjusting key
- Supplied in plastic pocket case



### MECHANICAL EXTERNAL MICROMETER

| Code No | Range (mm) | Resolution (mm) | Code No | Range (inch) | Resolution (inch) |
|---------|------------|-----------------|---------|--------------|-------------------|
| 1965M   | 0-25       | 0.01            | 1965    | 0-1          | 0.001             |
| 1965MB  | 0-25       | 0.002           | 1965B   | 0-1          | 0.0001            |

### ACCURACY

| Micrometer Range<br>Max Size up to | Measuring Faces |             | Screw Pitch Accuracy |
|------------------------------------|-----------------|-------------|----------------------|
|                                    | Flatness        | Parallelism |                      |
| 25mm                               | 0.001mm         | 0.003mm     | 0.003mm              |
| 1"                                 | 0.00005"        | 0.0001"     | 0.0001"              |

## Moore & Wright Traditional External Micrometers, 966 Series

Complies with: BS870, DIN 863/1, ISO361

### 966 Series Features:

- Tungsten carbide measuring faces
- Blue textured frame finish
- Speeder type ratchet
- Locking lever
- Adjusting key
- Supplied in case
- Choice of standard or vernier type sleeve
- Spindle diameter 6.5mm
- Supplied with setting standard



### ACCURACY

| Micrometer Range | Measuring Faces |             | Screw Pitch |
|------------------|-----------------|-------------|-------------|
| Max Size up to   | Flatness        | Parallelism | Accuracy    |
| 50mm             | 0.001mm         | 0.003mm     | 0.003mm     |
| 2"               | 0.00005"        | 0.0001"     | 0.0001"     |
| 150mm            | 0.001mm         | 0.005mm     | 0.003mm     |
| 6"               | 0.00005"        | 0.0002"     | 0.0001"     |

### MOORE & WRIGHT MICROMETER SETTING STANDARDS

| Metric  |             |                    | Imperial |               |                      |
|---------|-------------|--------------------|----------|---------------|----------------------|
| Code No | Length (mm) | Tolerance +/- (mm) | Code No  | Length (inch) | Tolerance +/- (inch) |
| 980M25  | 25mm        | 0.001              | 9801     | 1             | 0.00005              |
| 980M50  | 50mm        | 0.002              | 9802     | 2             | 0.0001               |
| 980M75  | 75mm        | 0.002              | 9803     | 3             | 0.0001               |
| 980M100 | 100mm       | 0.002              | 9804     | 4             | 0.0001               |
| 980M125 | 125mm       | 0.002              | 9805     | 5             | 0.0001               |

Hardened and Ground Steel Measuring Faces with Flat Ends  
Fitted Insulating Sleeve  
Marked with Nominal Size

### MECHANICAL EXTERNAL MICROMETERS - METRIC: 25-150MM

| Code No  | Range (mm) | Description           | Code No   | Range (mm) | Description            |
|----------|------------|-----------------------|-----------|------------|------------------------|
| 1966M50  | 25-50      | 0.01mm Carbide anvils | 1966MB50  | 25-50      | 0.002mm Carbide anvils |
| 1966M75  | 50-75      | 0.01mm Carbide anvils | 1966MB75  | 50-75      | 0.002mm Carbide anvils |
| 1966M100 | 75-100     | 0.01mm Carbide anvils | 1966MB100 | 75-100     | 0.002mm Carbide anvils |
| 1966M125 | 100-125    | 0.01mm Carbide anvils | 1966MB125 | 100-125    | 0.002mm Carbide anvils |
| 1966M150 | 125-150    | 0.01mm Carbide anvils | 1966MB150 | 125-150    | 0.002mm Carbide anvils |

### MECHANICAL EXTERNAL MICROMETERS - IMPERIAL: 1-6"

| Code No | Range (inch) | Description                | Code No | Range (inch) | Description                |
|---------|--------------|----------------------------|---------|--------------|----------------------------|
| 19662   | 1-2          | 0.001" Res, Carbide anvils | 1966B2  | 1-2          | 0.001" Res, Carbide anvils |
| 19663   | 2-3          | 0.001" Res, Carbide anvils | 1966B3  | 2-3          | 0.001" Res, Carbide anvils |
| 19664   | 3-4          | 0.001" Res, Carbide anvils | 1966B4  | 3-4          | 0.001" Res, Carbide anvils |
| 19665   | 4-5          | 0.001" Res, Carbide anvils | 1966B5  | 4-5          | 0.001" Res, Carbide anvils |
| 19666   | 5-6          | 0.001" Res, Carbide anvils | 1966B6  | 5-6          | 0.001" Res, Carbide anvils |

## Moore & Wright External Micrometer 200 Series

### Features

- Standard: DIN 863 / 1
- Tungsten carbide measuring faces
- Satin chrome scale
- Hammertone finish frame with insulated grip
- Tapered for easier access to difficult areas
- Constant force ratchet on thimble
- Locking lever
- Adjusting key
- Supplied in case with setting standard



### EXTERNAL MICROMETER METRIC

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW200-01 | 0-25       | 0.01            |
| MW200-02 | 25-50      | 0.01            |
| MW200-03 | 50-75      | 0.01            |
| MW200-04 | 75-100     | 0.01            |

### EXTERNAL MICROMETER IMPERIAL

| Code No   | Range (inch) | Resolution (inch) |
|-----------|--------------|-------------------|
| MW200-01I | 0-1          | 0.0005            |
| MW200-02I | 1-2          | 0.0005            |
| MW200-03I | 2-3          | 0.0005            |
| MW200-04I | 3-4          | 0.0005            |

## Moore & Wright Workshop Blade Micrometer 275 Series

### Features

- Standard: DIN 863
- Measuring grooves, keyways etc.
- Blade 6.5mm non-rotating spindle
- Blade 1.25mm thick
- Satin chrome scale
- Hammertone finish frame with insulated grip
- Tapered for easier access to difficult areas
- Constant force ratchet on thimble
- Adjusting key
- Supplied in case



### BLADE EXTERNAL MICROMETER

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW275-01 | 0-25       | 0.01            |
| MW275-02 | 25-50      | 0.01            |
| MW275-03 | 50-75      | 0.01            |
| MW275-04 | 75-100     | 0.01            |

## Moore & Wright Traditional Micrometers, Boxed Sets

### Features

- Complies with BS870, DIN 863 / 1, ISO361
- Resolutions of 0.01mm or 0.002mm metric, 0.001" or 0.0001" imperial
- Tungsten carbide measuring faces
- 6.5mm spindle diameter for range between 0-150mm, 0-6"
- 6.8mm spindle diameter for range between 150-300mm, 6-12"
- Speeder type ratchet
- Locking lever
- Adjusting key
- Supplied with setting standards
- Supplied in fitted case



### RESOLUTION 0.01MM

| Code No  | Range (mm) | Description    | Quantity       |
|----------|------------|----------------|----------------|
| MEB-122M | 0-75       | Carbide anvils | 3 Micrometers  |
| MEB-322M | 0-150      | Carbide anvils | 6 Micrometers  |
| MEB-522M | 0-300      | Carbide anvils | 12 Micrometers |

### RESOLUTION 0.002MM

| Code No  | Range (mm) | Description    | Quantity       |
|----------|------------|----------------|----------------|
| MEB-222M | 0-75       | Carbide anvils | 3 Micrometers  |
| MEB-422M | 0-150      | Carbide anvils | 6 Micrometers  |
| MEB-622M | 0-300      | Carbide anvils | 12 Micrometers |

### RESOLUTION 0.001"

| Code No  | Range (inch) | Description    | Quantity       |
|----------|--------------|----------------|----------------|
| MEB-122E | 0-3          | Carbide anvils | 3 Micrometers  |
| MEB-322E | 0-6          | Carbide anvils | 6 Micrometers  |
| MEB-522E | 0-12         | Carbide anvils | 12 Micrometers |

### RESOLUTION 0.0001"

| Code No  | Range (inch) | Description    | Quantity       |
|----------|--------------|----------------|----------------|
| MEB-222E | 0-3          | Carbide anvils | 3 Micrometers  |
| MEB-422E | 0-6          | Carbide anvils | 6 Micrometers  |
| MEB-622E | 0-12         | Carbide anvils | 12 Micrometers |

## Moore & Wright Point Micrometer 270 Series

### Features

- Standard: DIN 863
- Pointed spindle and anvil for measuring hard to reach places like the web thickness of drills, small grooves, keyways
- Tungsten carbide measuring faces
- Hammertone finished frame with high quality insulated grip
- Tapered for easier access to difficult areas
- Constant force ratchet on thimble
- Locking lever
- Adjusting key
- Supplied with settings standard
- Supplied in case



### POINT MICROMETER

| Code No  | Range (mm) | Resolution (mm) | Accuracy (mm) | Point Angle |
|----------|------------|-----------------|---------------|-------------|
| MW270-01 | 0-25       | 0.01            | 0.004         | 15°         |
| MW270-02 | 25-50      | 0.01            | 0.004         | 15°         |
| MW270-03 | 50-75      | 0.01            | 0.005         | 15°         |
| MW270-04 | 75-100     | 0.01            | 0.005         | 15°         |
| MW270-05 | 0-25       | 0.01            | 0.004         | 30°         |
| MW270-06 | 25-50      | 0.01            | 0.004         | 30°         |
| MW270-07 | 50-75      | 0.01            | 0.005         | 30°         |
| MW270-08 | 75-100     | 0.01            | 0.005         | 30°         |

## Moore & Wright Workshop Digital Point Micrometer 270 Series

### Features

- Standard: DIN 863
- Large LCD display
- Digital functions: mm/inch conversion, ABS/INC, on/off, zero-setting, battery low indication
- Pointed spindle and anvil for measuring hard to reach places like the web thickness of drills, small grooves, keyways
- Tungsten carbide measuring faces
- Hammertone finished frame with high quality insulated grip
- Tapered for easier access to difficult areas
- Constant force ratchet on thimble
- Locking lever
- Adjusting key
- Supplied with settings standard
- Supplied in case



### DIGITAL POINT MICROMETER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Point Angle |
|-------------|------------|--------------|-----------------|-------------------|---------------|-------------|
| MW270-01DDL | 0-25       | 0-1          | 0.001           | 0.00005           | 0.004         | 30°         |
| MW270-02DDL | 25-50      | 1-2          | 0.001           | 0.00005           | 0.004         | 30°         |
| MW270-03DDL | 50-75      | 2-3          | 0.001           | 0.00005           | 0.005         | 30°         |
| MW270-04DDL | 75-100     | 3-4          | 0.001           | 0.00005           | 0.005         | 30°         |

## Moore & Wright Workshop Digital Micrometer 200 Series

### Features

- Standard: DIN 863
- Large LCD display
- Functions: mm/inch conversion, ABS/INC, on/off, zero-setting
- Tungsten carbide measuring faces
- Hammertone finished frame with high quality insulated grip
- Tapered for easier access to difficult areas
- Constant force ratchet on thimble
- Locking lever
- Supplied with settings standard over 25mm
- Supplied in case



### WORKSHOP DIGITAL EXTERNAL MICROMETER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) |
|-------------|------------|--------------|-----------------|-------------------|
| MW200-01DBL | 0-25       | 0-1          | 0.001           | 0.00005           |
| MW200-02DBL | 25-50      | 1-2          | 0.001           | 0.00005           |
| MW200-03DBL | 50-75      | 2-3          | 0.001           | 0.00005           |
| MW200-04DBL | 75-100     | 3-4          | 0.001           | 0.00005           |

## Moore & Wright Digital External Micrometers 201 Series

### Features

- Standard: DIN 863
- Protected to IP54 specifications
- Large LCD display
- Digital functions: mm/inch conversion, ABS/INC, on/off, zero-setting
- Rugged steel design
- Tungsten carbide measuring faces
- Hammertone finished frame with high quality insulated grip
- Tapered for easier access to difficult areas
- Constant force ratchet on thimble
- Locking lever
- Ball attachment included
- Supplied with settings standard over 25mm
- Supplied in case



### DIGITAL EXTERNAL MICROMETER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) |
|-------------|------------|--------------|-----------------|-------------------|
| MW201-01DAB | 0-25       | 0-1          | 0.001           | 0.00005           |
| MW201-02DAB | 25-50      | 1-2          | 0.001           | 0.00005           |
| MW201-03DAB | 50-75      | 2-3          | 0.001           | 0.00005           |
| MW201-04DAB | 75-100     | 3-4          | 0.001           | 0.00005           |

## Sylvac S\_Mike PRO

Complies with: DIN 863

### Features

- Automatic wake-up by moving the measuring spindle
- Sleep mode after 20 min. of no use
- Position memorised in sleep mode
- Water protected for heavy-duty work with coolants and lubricants, protection rating IP67 according to IEC 60529, with or without connector
- Measuring range 0-102mm covered with 3 instruments only
- Set of 3 micrometers 0-102mm available
- Quick displacement of the measuring spindle 12mm / rotation
- Battery life 12,000 hours
- Non-rotating spindle
- Preset function
- Setting masters provided where applicable



30-803-0300



The Sylvac Smart and BT anywhere apps allows communication with Bowers Bluetooth Android 8.0 IOS 10 Bluetooth 4.0 required

### S\_MIKE PRO - STANDARD

| Code No     | Range (mm)  | Maximum Error (µm) | Repeatability (µm) | Output                              | Protection Rating              |
|-------------|-------------|--------------------|--------------------|-------------------------------------|--------------------------------|
| 30-803-0300 | 0-30*       | 3                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-0600 | 30-66       | 4                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1000 | 66-102      | 5                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1360 | 100-136     | 7                  | 2                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1600 | 125-161     | 8                  | 2                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-803-0306 | 0-30*       | 3                  | 1                  | Bluetooth                           | IP67 with or without connector |
| 30-903-0606 | 30-66       | 4                  | 1                  | Bluetooth                           | IP67 with or without connector |
| 30-903-1006 | 66-102      | 5                  | 1                  | Bluetooth                           | IP67 with or without connector |
| 30-903-1306 | 0-102 (Set) | 3-5                | 1                  | Bluetooth                           | IP67 with or without connector |

\*Adjustable measuring force 5N / 10N



## Sylvac S\_Mike PRO

Complies with: DIN 863

### Features

- Automatic wake-up by moving the measuring spindle
- Sleep mode after 20 min. of no use
- Position memorised in sleep mode
- Water protected for heavy-duty work with coolants and lubricants, protection rating IP67 according to IEC 60529, with or without connector
- Quick displacement of the measuring spindle 12mm / rotation
- Battery life 12,000 hours
- Non-rotating spindle
- Preset function
- Bluetooth available with different anvils on request



Tempered steel knife shaped anvils 0.7mm



30-803-0302

Tempered steel anvils type Ø 2mm



30-803-0301

Tempered steel disc anvils



30-803-0303

### S\_MIKE PRO Ø2 - 2MM DIAMETER ANVILS

| Code No      | Range (mm) | Maximum Error (µm) | Repeatability (µm) | Proximity                           | Protection Rating              |
|--------------|------------|--------------------|--------------------|-------------------------------------|--------------------------------|
| 30-803-0301* | 0-25       | 3                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-0601  | 25-60      | 4                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1001  | 60-95      | 5                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |

\*Adjustable measuring force 5N / 10N

### S\_MIKE PRO - BLADE ANVILS

| Code No      | Range (mm) | Maximum Error (µm) | Repeatability (µm) | Proximity                           | Protection Rating              |
|--------------|------------|--------------------|--------------------|-------------------------------------|--------------------------------|
| 30-803-0302* | 0-25       | 3                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-0602  | 25-60      | 4                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1002  | 60-95      | 5                  | 1                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1302  | 95-130     | 6                  | 2                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-1602  | 120-155    | 7                  | 2                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |

\*Adjustable measuring force 5N / 10N

### S\_MIKE PRO - SPECIAL ANVILS

| Code No      | Range (mm) | Maximum Error (µm) | Repeatability (µm) | Description                          | Proximity                           | Protection Rating              |
|--------------|------------|--------------------|--------------------|--------------------------------------|-------------------------------------|--------------------------------|
| 30-803-0303* | 0-30       | 4                  | 1                  | Ø25 Disc anvils                      | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-0304* | 0-30       | 3                  | 1                  | Flat Ø6.5 / Spherical Ø7             | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-903-0305* | 0-30       | 3                  | 1                  | Spherical Ø7 Anvils                  | USB / RS 232 / Digimatic / Wireless | IP67 with or without connector |
| 30-803-0309  | 0-25       | 3                  | 1                  | Knife Anvil / Cone Anvil (Bluetooth) | Bluetooth                           | IP67                           |
| 30-803-0310  | 0-25       | 3                  | 1                  | Spherical / Point Anvils (Bluetooth) | Bluetooth                           | IP67                           |

\*Adjustable measuring force 5N / 10N

## Moore & Wright Tube Micrometer 255 Series

### Features

- Standard: DIN 863
- Spherical anvil for measuring tube wall thickness
- Tungsten carbide measuring faces on spindle
- Satin chrome scale
- Hammertone finished frame with insulated grip
- Constant force ratchet on thimble
- Supplied in case



### TUBE MICROMETER

| Code No  | Range (mm) | Resolution (mm) | Accuracy (mm) | Dimn - A | Dimn - B |
|----------|------------|-----------------|---------------|----------|----------|
| MW255-01 | 0-25       | 0.01            | 0.006         | 27.5mm   | 4.75mm   |

## Moore & Wright Digital Tube Micrometer 255-DDL Series

### Features

- Standard: DIN 863
- Digital functions: mm/inch conversion, on/off, zero-setting, battery low indication, hold, 0...ABS
- Spherical anvil for measuring tube wall thickness
- Tungsten carbide measuring faces on spindle
- Chrome plated frame with high quality insulated grip
- Constant force ratchet on thimble
- Supplier with battery cover key
- Supplied in case



### DIGITAL TUBE MICROMETER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Dimn - A | Dimn - B |
|-------------|------------|--------------|-----------------|-------------------|---------------|----------|----------|
| MW255-01DDL | 0-25       | 0-1          | 0.001           | 0.00005           | 0.003         | 27.5mm   | 4.75mm   |

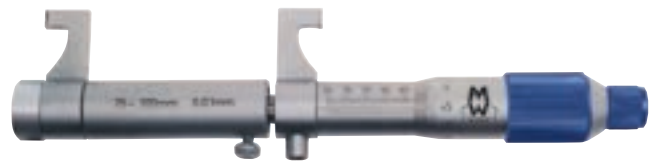
## Moore & Wright Caliper Type Inside Micrometer 280 Series

### Features

- Standard: DIN 863
- Measuring the inside of a bore or hole
- Pin diameter 2mm, length 5mm (only applicable to MW280-01)
- Satin chrome finished frame
- Constant force ratchet thimble
- Locking clamp for positive locking of spindle
- Adjusting key
- Supplied in case



MW280-01



MW280-04

### CALIPER TYPE INSIDE MICROMETER

| Code No  | Range (mm) | Resolution (mm) | Accuracy (mm) | Setting Rings |
|----------|------------|-----------------|---------------|---------------|
| MW280-01 | 5-30       | 0.01            | 0.005         | Yes           |
| MW280-02 | 25-50      | 0.01            | 0.005         | Yes           |
| MW280-03 | 50-75      | 0.01            | 0.005         | No            |
| MW280-04 | 75-100     | 0.01            | 0.005         | No            |
| MW280-05 | 100-125    | 0.01            | 0.005         | No            |
| MW280-06 | 125-150    | 0.01            | 0.005         | No            |
| MW280-07 | 150-175    | 0.01            | 0.005         | No            |
| MW280-08 | 175-200    | 0.01            | 0.005         | No            |

## Moore & Wright Digital Caliper Type Inside Micrometer 280-DDL Series

### Features

- Standard: DIN 863
- Digital functions: mm/inch conversion, on/off, zero-setting, battery low indication, hold, 0...ABS
- Measuring the inside of a bore or hole
- Pin diameter 2mm, length 5mm (only applicable to MW280-01DDL)
- Satin chrome finished frame
- Constant force ratchet thimble
- Locking clamp for positive locking of spindle
- Supplied in case



MW280-01DDL



MW280-05DDL

### DIGITAL CALIPER TYPE INSIDE MICROMETER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Setting Rings |
|-------------|------------|--------------|-----------------|-------------------|---------------|---------------|
| MW280-01DDL | 5-30       | 0.2-1.2      | 0.001           | 0.00005           | 0.003         | Yes           |
| MW280-02DDL | 25-50      | 1-2          | 0.001           | 0.00005           | 0.003         | Yes           |
| MW280-03DDL | 50-75      | 2-3          | 0.001           | 0.00005           | 0.004         | No            |
| MW280-04DDL | 75-100     | 3-4          | 0.001           | 0.00005           | 0.004         | No            |
| MW280-05DDL | 100-125    | 4-5          | 0.001           | 0.00005           | 0.005         | No            |
| MW280-06DDL | 125-150    | 5-6          | 0.001           | 0.00005           | 0.005         | No            |

## Moore & Wright Workshop External Micrometer Set 215 Series

### Features

- Standard: DIN 863
- Tungsten carbide measuring faces
- Satin-chrome scale
- Satin-chrome forged steel frame with insulated grip
- Constant force ratchet on thimble
- Adjusting key
- Supplied with setting standards
- Supplied in wooden box



### WORKSHOP EXTERNAL MICROMETER SET - Metric

| Code No    | Range (mm) | Resolution (mm) | Note                 |
|------------|------------|-----------------|----------------------|
| MW215-01BL | 0-75       | 0.01            | 3 Micrometers In Set |
| MW215-02BL | 0-100      | 0.01            | 4 Micrometers In Set |
| MW215-03BL | 0-150      | 0.01            | 6 Micrometers In Set |
| MW215-04BL | 0-200      | 0.01            | 8 Micrometers In Set |

### WORKSHOP EXTERNAL MICROMETER SET - Imperial

| Code No     | Range (inch) | Resolution (inch) | Note                 |
|-------------|--------------|-------------------|----------------------|
| MW215-01BLI | 0-3          | 0.001             | 3 Micrometers In Set |
| MW215-02BLI | 0-4          | 0.001             | 4 Micrometers In Set |
| MW215-03BLI | 0-6          | 0.001             | 6 Micrometers In Set |
| MW215-04BLI | 0-8          | 0.001             | 8 Micrometers In Set |

## Moore & Wright Micrometer with Interchangeable Anvils 217 Series

### Features

- Standard: DIN 863
- Features wide measuring range with interchangeable anvils
- Hardened and ground spindles/anvils
- Tungsten carbide measuring faces
- Satin-chrome scale
- Strong forged steel hammertone finish frame with insulated grip
- Constant force ratchet on thimble
- Adjusting key
- Supplied with setting standards
- Supplied in wooden box



### MICROMETER WITH INTERCHANGEABLE ANVILS

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW217-01 | 0-100      | 0.01            |
| MW217-02 | 0-150      | 0.01            |
| MW217-03 | 100-200    | 0.01            |
| MW217-04 | 150-300    | 0.01            |
| MW217-05 | 200-300    | 0.01            |

## Moore & Wright Large External Metric Micrometer 210 Series

### Features

- Standard: DIN 863
- Tungsten carbide measuring faces
- Satin-chrome scale
- Strong forged steel hammertone finish frame with insulated grip
- Constant force ratchet on thimble
- Adjusting key
- Supplied with setting standards
- Supplied in wooden box



### LARGE EXTERNAL MICROMETER

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW210-01 | 100-125    | 0.01            |
| MW210-02 | 125-150    | 0.01            |
| MW210-03 | 150-175    | 0.01            |
| MW210-04 | 175-200    | 0.01            |
| MW210-05 | 200-225    | 0.01            |
| MW210-06 | 225-250    | 0.01            |
| MW210-07 | 250-275    | 0.01            |
| MW210-08 | 275-300    | 0.01            |

## Moore & Wright Digital Large External Micrometer 210-DDL Series



### Features

- Standard: DIN 863
- Digital functions: mm/inch conversion, on/off, zero-setting, battery low indication, hold, 0...ABS
- Tungsten carbide measuring faces
- Strong forged steel hammertone finish frame with insulated grip
- Constant force ratchet on thimble
- Supplied with setting standards and battery cover key
- Supplied in wooden box

### EXTERNAL MICROMETER - Metric Range Only

| Code No     | Range (mm) | Resolution (mm) |
|-------------|------------|-----------------|
| MW210-01DDL | 100-125    | 0.001           |
| MW210-02DDL | 125-150    | 0.001           |
| MW210-03DDL | 150-175    | 0.001           |
| MW210-04DDL | 175-200    | 0.001           |
| MW210-05DDL | 200-225    | 0.001           |
| MW210-06DDL | 225-250    | 0.001           |
| MW210-07DDL | 250-275    | 0.001           |
| MW210-08DDL | 275-300    | 0.001           |

## Moore & Wright Traditional External Micrometers 971 Series: 150-450mm / 6-18"

Complies with: BS870, DIN 863/1, ISO361, where applicable

### Features

- Complies with: BS870, DIN 863/1, ISO361
- Capacities from 150-450mm / 6-18"
- Lightweight frame with ribs and reliefs providing both high strength and user comfort
- Blue textured frame finish
- Hardened or tungsten carbide anvils 6.8mm diameter
- 'Speeder' type ratchet and locking lever
- Supplied in a case with recess for setting gauge
- Setting gauge supplied separately



### ACCURACY

| Micrometer Capacity | Measuring Faces |          | Screw Pitch |
|---------------------|-----------------|----------|-------------|
| Max Size up to      | Flatness        | Accuracy | Accuracy    |
| 225mm               | 0.001mm         | 0.005mm  | 0.003mm     |
| 9"                  | 0.00005"        | 0.0002"  | 0.0001"     |
| 300mm               | 0.003mm         | 0.008mm  | 0.003mm     |
| 12"                 | 0.0001"         | 0.0003"  | 0.0001"     |
| 375mm               | 0.003mm         | 0.013mm  | 0.005mm     |
| 15"                 | 0.0001"         | 0.0005"  | 0.0002"     |
| 450mm               | 0.003mm         | 0.015mm  | 0.005mm     |
| 18"                 | 0.0001"         | 0.0006"  | 0.0002"     |

### MOORE & WRIGHT TRADITIONAL EXTERNAL MICROMETERS, 971 SERIES: 150-450MM / 6-18"

| Code No  | Description           | Size      |
|----------|-----------------------|-----------|
| 1971M175 | 0.01mm Carbide Anvils | 150-175mm |
| 197117   | 0.001" Carbide Anvils | 6-7"      |
| 1971M200 | 0.01mm Carbide Anvils | 175-200mm |
| 197118   | 0.001" Carbide Anvils | 7-8"      |
| 1971M225 | 0.01mm Carbide Anvils | 200-225mm |
| 197119   | 0.001" Carbide Anvils | 8-9"      |
| 1971M250 | 0.01mm Carbide Anvils | 225-250mm |
| 197110   | 0.001" Carbide Anvils | 9-10"     |
| 1971M275 | 0.01mm Carbide Anvils | 250-275mm |
| 197111   | 0.001" Carbide Anvils | 10-11"    |
| 1971M300 | 0.01mm Carbide Anvils | 275-300mm |
| 197112   | 0.001" Carbide Anvils | 11-12"    |
| 1971M325 | 0.01mm Carbide Anvils | 300-325mm |
| 197113   | 0.001" Carbide Anvils | 12-13"    |
| 1971M350 | 0.01mm Carbide Anvils | 325-350mm |
| 197114   | 0.001" Carbide Anvils | 13-14"    |
| 1971M375 | 0.01mm Carbide Anvils | 350-375mm |
| 197115   | 0.001" Carbide Anvils | 14-15"    |
| 1971M400 | 0.01mm Carbide Anvils | 375-400mm |
| 197116   | 0.001" Carbide Anvils | 15-16"    |
| 1971M425 | 0.01mm Carbide Anvils | 400-425mm |
| 197117   | 0.001" Carbide Anvils | 16-17"    |
| 1971M450 | 0.01mm Carbide Anvils | 425-450mm |
| 197118   | 0.001" Carbide Anvils | 17-18"    |

### SETTING STANDARD

| Code No | Size  | Diameter (mm) |
|---------|-------|---------------|
| 980M150 | 150mm | 8.0           |
| 9806    | 6"    | 8.0           |
| 980M175 | 175mm | 9.5           |
| 9807    | 7"    | 9.5           |
| 980M200 | 200mm | 9.5           |
| 9808    | 8"    | 9.5           |
| 980M225 | 225mm | 9.5           |
| 9809    | 9"    | 9.5           |
| 980M250 | 250mm | 9.5           |
| 98010   | 10"   | 9.5           |
| 980M275 | 275mm | 9.5           |
| 98011   | 11"   | 9.5           |
| 980M300 | 300mm | 11.1          |
| 98012   | 12"   | 11.1          |
| 980M325 | 325mm | 11.1          |
| 98013   | 13"   | 11.1          |
| 980M350 | 350mm | 11.1          |
| 98014   | 14"   | 11.1          |
| 980M375 | 375mm | 12.5          |
| 98015   | 15"   | 12.5          |
| 980M400 | 400mm | 12.5          |
| 98016   | 16"   | 12.5          |
| 980M425 | 425mm | 12.5          |
| 98017   | 17"   | 12.5          |



# Moore & Wright Traditional Adjustable Micrometers

## Features

- Complies with BS870, DIN 863 / 1, ISO361
- Tungsten carbide measuring faces
- 6.8mm spindle diameter
- Blue textured frame finish
- Ribbed bow frames (sizes up to 150mm / 6")
- Lightweight fabricated tubular bow frame (sizes 750-1800mm / 36-72")
- 'Speeder' type ratchet
- Locking lever
- Each model supplied with setting gauges
- All sizes supplied in either a durable plastic or aluminium framed case



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### METRIC WITH CARBIDE ANVILS 0.01MM READING

| Code No | Description    | Range (mm) | Setting Gauges | Interchangeable Anvils |
|---------|----------------|------------|----------------|------------------------|
| MEA021M | Carbide Anvils | 0-50       | 1              | 2                      |
| MEA041M | Carbide Anvils | 0-100      | 3              | 4                      |
| MEA051M | Carbide Anvils | 50-150     | 4              | 4                      |
| MEA081M | Carbide Anvils | 100-200    | 4              | 4                      |
| MEA121M | Carbide Anvils | 200-300    | 4              | 4                      |
| MEA061M | Carbide Anvils | 0-150      | 5              | 6                      |
| MEA131M | Carbide Anvils | 150-300    | 6              | 6                      |
| MEA181M | Carbide Anvils | 300-450    | 6              | 6                      |
| MEA241M | Carbide Anvils | 450-600    | 6              | 6                      |
| MEA301M | Carbide Anvils | 600-750    | 3              | 6                      |
| MEA361M | Carbide Anvils | 750-900    | 3              | 6                      |
| MEA421M | Carbide Anvils | 900-1050   | 3              | 6                      |
| MEA491M | Carbide Anvils | 1050-1200  | 3              | 6                      |
| MEA541M | Carbide Anvils | 1200-1350  | 3              | 6                      |
| MEA601M | Carbide Anvils | 1350-1500  | 3              | 6                      |
| MEA661M | Carbide Anvils | 1500-1650  | 3              | 6                      |
| MEA721M | Carbide Anvils | 1650-1800  | 3              | 6                      |

### ACCURACY

| Micrometer Range | Measuring Faces Flatness | Screw Pitch Accuracy |
|------------------|--------------------------|----------------------|
| 0-50mm           | 0.001mm                  | 0.003mm              |
| 0-100mm          | 0.001mm                  | 0.003mm              |
| 50-150mm         | 0.001mm                  | 0.003mm              |
| 100-200mm        | 0.001mm                  | 0.003mm              |
| 200-300mm        | 0.003mm                  | 0.003mm              |
| 0-150mm          | 0.003mm                  | 0.003mm              |
| 150-300mm        | 0.003mm                  | 0.003mm              |
| 300-450mm        | 0.003mm                  | 0.005mm              |
| 450-600mm        | 0.003mm                  | 0.005mm              |
| 600-750mm        | 0.003mm                  | 0.005mm              |
| 750-900mm        | 0.003mm                  | 0.005mm              |
| 900-1050mm       | 0.003mm                  | 0.005mm              |
| 1050-1200mm      | 0.003mm                  | 0.005mm              |
| 1200-1350mm      | 0.003mm                  | 0.005mm              |
| 1350-1500mm      | 0.003mm                  | 0.005mm              |
| 1500-1650mm      | 0.003mm                  | 0.005mm              |
| 1650-1800mm      | 0.003mm                  | 0.005mm              |

### IMPERIAL WITH CARBIDE ANVILS 0.001" READING

| Code No | Description    | Range (inch) | Setting Gauges | Interchangeable Anvils |
|---------|----------------|--------------|----------------|------------------------|
| MEA021E | Carbide Anvils | 0-2          | 1              | 2                      |
| MEA041E | Carbide Anvils | 0-4          | 3              | 4                      |
| MEA051E | Carbide Anvils | 2-6          | 4              | 4                      |
| MEA081E | Carbide Anvils | 4-8          | 4              | 4                      |
| MEA121E | Carbide Anvils | 8-12         | 4              | 4                      |
| MEA061E | Carbide Anvils | 0-6          | 5              | 6                      |
| MEA131E | Carbide Anvils | 6-12         | 6              | 6                      |
| MEA181E | Carbide Anvils | 12-18        | 6              | 6                      |
| MEA241E | Carbide Anvils | 18-24        | 6              | 6                      |
| MEA301E | Carbide Anvils | 24-30        | 3              | 6                      |
| MEA361E | Carbide Anvils | 30-36        | 3              | 6                      |
| MEA421E | Carbide Anvils | 36-42        | 3              | 6                      |
| MEA481E | Carbide Anvils | 42-48        | 3              | 6                      |
| MEA541E | Carbide Anvils | 48-54        | 3              | 6                      |
| MEA601E | Carbide Anvils | 54-60        | 3              | 6                      |
| MEA661E | Carbide Anvils | 60-66        | 3              | 6                      |
| MEA721E | Carbide Anvils | 66-72        | 3              | 6                      |

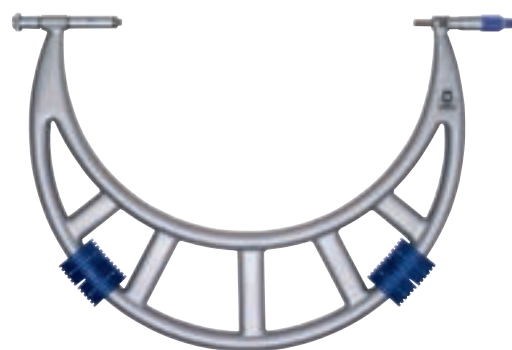
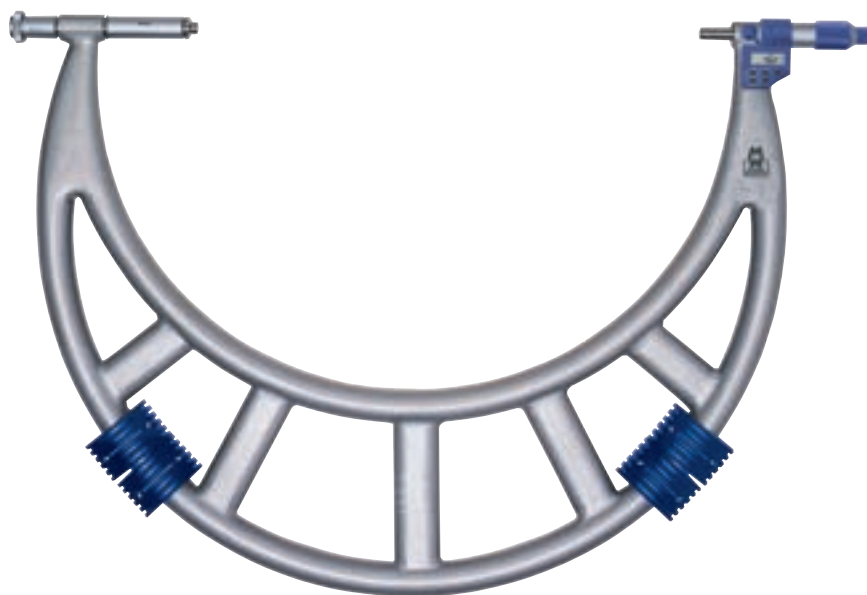
### ACCURACY

| Micrometer Range | Measuring Faces Flatness | Screw Pitch Accuracy |
|------------------|--------------------------|----------------------|
| 0-2"             | 0.00005"                 | 0.0001"              |
| 0-4"             | 0.00005"                 | 0.0001"              |
| 2-6"             | 0.00005"                 | 0.0001"              |
| 4-8"             | 0.00005"                 | 0.0001"              |
| 8-12"            | 0.0001"                  | 0.0001"              |
| 0-6"             | 0.0001"                  | 0.0001"              |
| 6-12"            | 0.0001"                  | 0.0001"              |
| 12-18"           | 0.0001"                  | 0.0002"              |
| 12-18"           | 0.0001"                  | 0.0002"              |
| 24-30"           | 0.0001"                  | 0.0002"              |
| 30-36"           | 0.0001"                  | 0.0002"              |
| 36-42"           | 0.0001"                  | 0.0002"              |
| 42-48"           | 0.0001"                  | 0.0002"              |
| 48-54"           | 0.0001"                  | 0.0002"              |
| 54-60"           | 0.0001"                  | 0.0002"              |
| 60-66"           | 0.0001"                  | 0.0002"              |
| 66-72"           | 0.0001"                  | 0.0002"              |

## Moore & Wright Large Adjustable External Digital Micrometer 220 Series

### Features

- Standard: DIN 863
- Digital functions: tolerance indication, on/off, zero-setting, battery low indication
- Features wide measuring range with interchangeable anvils
- Tube type low weight model
- Tungsten carbide measuring faces
- Hardened and ground spindles/anvils
- Satin-chrome scale
- Dural frame with insulated grips
- Constant force ratchet on thimble
- Adjusting key
- Supplied with setting standards
- Supplied in wooden box



MW220-02

### LARGE ADJUSTABLE EXTERNAL MICROMETER

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW220-01 | 300-400    | 0.01            |
| MW220-02 | 400-500    | 0.01            |
| MW220-03 | 500-600    | 0.01            |
| MW220-04 | 600-700    | 0.01            |
| MW220-05 | 700-800    | 0.01            |
| MW220-06 | 800-900    | 0.01            |
| MW220-07 | 900-1000   | 0.01            |
| MW220-08 | 1000-1200  | 0.01            |
| MW220-09 | 1200-1400  | 0.01            |

### LARGE ADJUSTABLE DIGITAL EXTERNAL MICROMETER - Metric Range Only

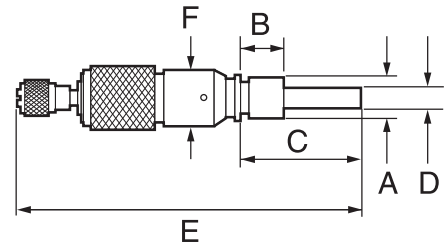
| Code No     | Range (mm) | Resolution (mm) |
|-------------|------------|-----------------|
| MW220-01DDL | 300-400    | 0.001           |
| MW220-02DDL | 400-500    | 0.001           |
| MW220-03DDL | 500-600    | 0.001           |
| MW220-04DDL | 600-700    | 0.001           |
| MW220-05DDL | 700-800    | 0.001           |
| MW220-06DDL | 800-900    | 0.001           |
| MW220-07DDL | 900-1000   | 0.001           |



## Moore & Wright Micrometer Heads

Complies with BS1734 and DIN 863 where applicable

Moore & Wright micrometer heads are available in a range of standard sizes and configurations. However, if you have specific requirements which are not covered by the models listed below then please contact our Customer Service Department.



### METRIC: MICROMETER HEADS

| Code No   | Range (mm) | Principal dimensions in mm |          |          |          |          |          | Basic Features |               |         | Description       |
|-----------|------------|----------------------------|----------|----------|----------|----------|----------|----------------|---------------|---------|-------------------|
|           |            | Dimn - A                   | Dimn - B | Dimn - C | Dimn - D | Dimn - E | Dimn - F | Ratchet        | Locking Screw | Speeder |                   |
| MHM-522M  | 0-25       | 12.7                       | 19.0     | 50.8     | 6.8      | 122.0    | 16.5     | Yes            | No            | No      | Flat Spindle      |
| MHM-543M  | 0-25       | 9.525                      | 19.0     | 45.6     | 6.8      | 122.0    | 16.5     | Yes            | Yes           | Yes     | Flat Spindle      |
| MW310-15R | 0-15       | 9.5                        | 9.5      | 26.0     | 5.0      | 61.0     | 13.5     | No             | No            | No      | Spherical Spindle |

### SMALL MICROMETER HEAD

| Code No  | Range (mm) | Note                  | Resolution (mm) | Dimn - A | Dimn - B | Dimn - C | Dimn - D | Dimn - E | Dimn - F |
|----------|------------|-----------------------|-----------------|----------|----------|----------|----------|----------|----------|
| MW310-15 | 0-15       | Measuring face - Flat | 0.01            | 9.50     | 9.50     | 26.00    | 5.00     | 61.00    | 13.50    |
| MW310-25 | 0-25       | Measuring face - Flat | 0.01            | 12.00    | 16.00    | 46.00    | 6.50     | 115.00   | 18.00    |

### IMPERIAL: MICROMETER HEADS

| Code No  | Range (inch) | Principal dimensions in inches |          |          |          |          |          | Basic Features |               |         | Description  |
|----------|--------------|--------------------------------|----------|----------|----------|----------|----------|----------------|---------------|---------|--------------|
|          |              | Dimn - A                       | Dimn - B | Dimn - C | Dimn - D | Dimn - E | Dimn - F | Ratchet        | Locking Screw | Speeder |              |
| MHM-543E | 0-1          | 0.375                          | 0.75     | 1.795    | 0.268    | 4.813    | 0.650    | Yes            | Yes           | Yes     | Flat Spindle |
| MHM-771E | 0-1          | 0.5                            | 0.75     | 2.000    | 0.268    | 4.531    | 1.138    | No             | No            | Yes     | Flat Spindle |

## Moore & Wright Digital Micrometer Head 312 Series

### Features

- Standard: DIN 862
- Digital functions: mm/inch conversion, ABS/INC, on/off, zero-setting
- Universal micrometer head for X-Y stages or other purposes
- Large LCD display
- Constant force ratchet on thimble



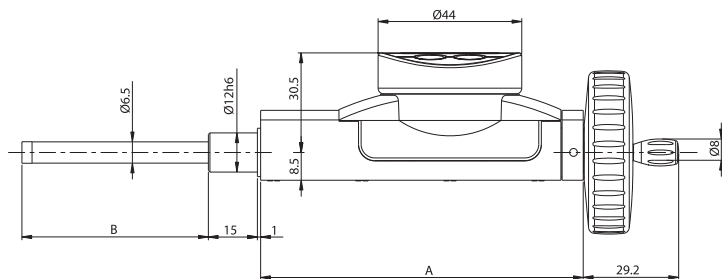
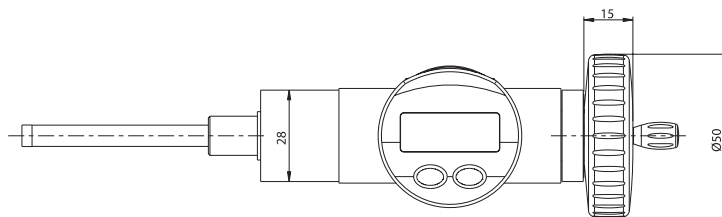
### DIGITAL MICROMETER HEAD

| Code No   | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Dimn - A | Dimn - B | Dimn - C |
|-----------|------------|--------------|-----------------|-------------------|----------|----------|----------|
| MW312-25D | 0-25       | 1            | 0.001           | 0.00005           | 6.5      | 150      | 12.0     |

## Sylvac Digital Micrometer Heads

### Features

- Data output RS232, combined with external power supply
- Fine adjustment available (accessories)
- Type H and V (same model)
- Reduced dimensions, compact design
- Selection of measuring direction, preset function, absolute of relative measurement



Fine adjustment device type 30-852-2310



Use on measuring microscope

### DIGITAL MICROMETER HEADS

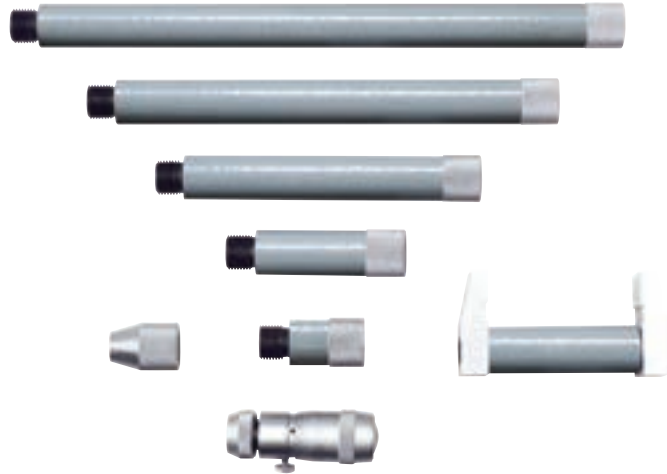
| Code No     | Range (mm) | Maximum Error | Repeatability (µm) | Resolution (mm) | Dimn - A | Dimn - B |
|-------------|------------|---------------|--------------------|-----------------|----------|----------|
| 30-852-2001 | 0-25       | 5             | 2                  | 0.001           | 74.5     | 33.1     |
| 30-852-2011 | 0-50       | 8             | 2                  | 0.001           | 98.5     | 57.1     |

| Code No     | Description            |
|-------------|------------------------|
| 30-852-2310 | Fine adjustment device |

## Moore & Wright Tubular Internal Micrometer 300 Series

### Features

- Standard: DIN 863
- Ideal for large diameters
- Tungsten carbide measuring faces
- All measuring faces are micro-lapped
- Satin-chromed scale and body with lock screw
- All extension pieces equipped with gauge parts are under constant spring loading
- Supplied with setting piece
- Supplied in a wooden box



### TUBULAR INTERNAL MICROMETER

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW300-01 | 50-250     | 0.01            |
| MW300-02 | 50-600     | 0.01            |
| MW300-04 | 150-2000   | 0.01            |



Assembled Micrometer

## Moore & Wright Traditional Internal Micrometers 900 Series

Each model comprises a measuring head, a set of extension rods and a spacing collar to facilitate alternative measuring ranges. The smaller models (901, 902 & 903) have detachable extension handles.

All models supplied in a fitted case.

### Features

- Complies with: BS959



### METRIC

| Code No | Range (mm) | Accuracy (mm) | Head Range (mm) |
|---------|------------|---------------|-----------------|
| 901M    | 25-55      | 0.003         | 5               |
| 902M    | 50-210     | 0.003         | 10              |
| 903M    | 50-310     | 0.003         | 10              |
| 908M825 | 200-825    |               | 25              |

### IMPERIAL

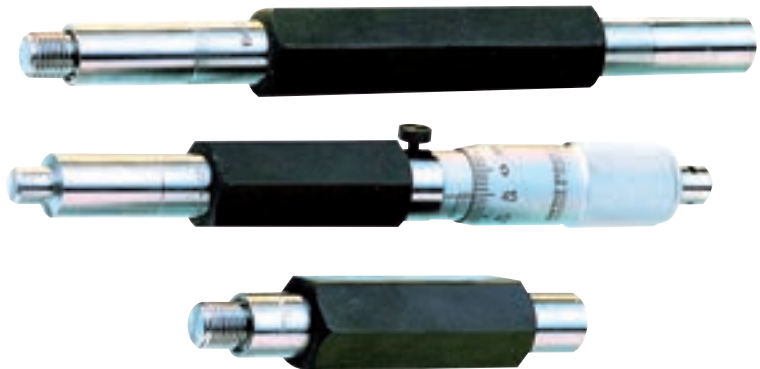
| Code No | Range (inch) | Accuracy (inch) | Head Range (inch) |
|---------|--------------|-----------------|-------------------|
| 901     | 1-2          | 0.0001          | 0.25              |
| 902     | 2-8          | 0.0001          | 0.50              |
| 903     | 2-12         | 0.0001          | 0.50              |
| 908-33  | 8-33         |                 | 1.00              |

## Moore & Wright Traditional Internal Micrometer G700 / G710 Series

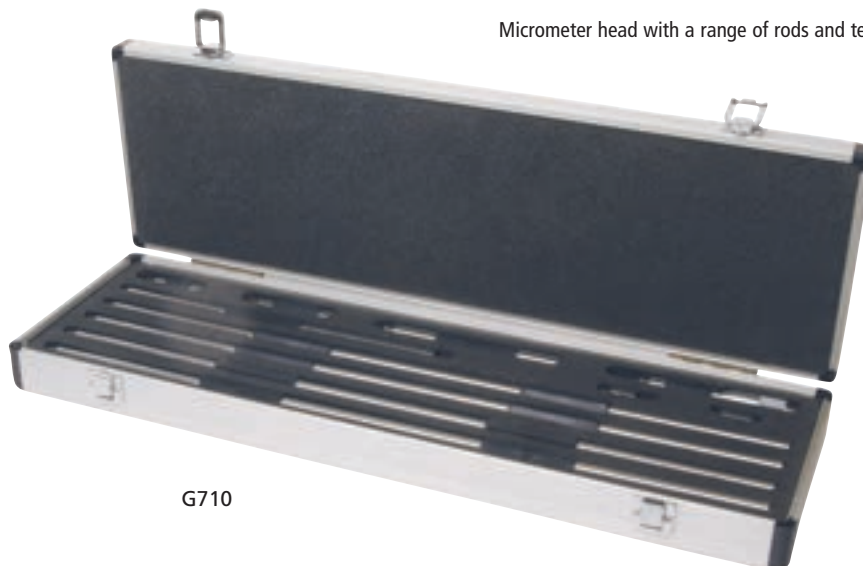
### Features

- Standard: BS959
- Suitable for applications requiring a wide measuring range
- Stick micrometer consists of a micrometer with a set of extension rods
- All models supplied in a fitted case

Please Note: When using a stick micrometer, the instrument should be fully supported to prevent sagging and inaccuracies.



Micrometer head with a range of rods and terminal end.



G710

### METRIC ACCESSORIES

| Code No  | Description      | Range (mm) |
|----------|------------------|------------|
| G700M    | Micrometer Head* | -          |
| MST-791M | Extension Rod    | 25         |
| MST-792M | Extension Rod    | 50         |
| MST-793M | Extension Rod    | 75         |
| MST-794M | Extension Rod    | 150        |
| MST-795M | Extension Rod    | 300        |
| MST-796M | Extension Rod    | 600        |

\*Complete with Terminal End

### METRIC: 150MM-6175MM, RESOLUTION 0.01MM

| Code No | Range (mm) | Head Range (mm) | Rod Length (mm)               |
|---------|------------|-----------------|-------------------------------|
| G704M   | 150-1375   | 25              | 25, 50, 75, 150, 300, 600     |
| G710M   | 150-3175   | 25              | 25, 50, 75, 150, 300, 4 x 600 |
| G720M   | 150-6175   | 25              | 25, 50, 75, 150, 300, 9 x 600 |

### IMPERIAL ACCESSORIES

| Code No  | Description      | Range (inch) |
|----------|------------------|--------------|
| G700E    | Micrometer Head* | -            |
| MST-791E | Extension Rod    | 1            |
| MST-792E | Extension Rod    | 2            |
| MST-793E | Extension Rod    | 3            |
| MST-794E | Extension Rod    | 6            |
| MST-795E | Extension Rod    | 12           |
| MST-796E | Extension Rod    | 24           |

\*Complete with Terminal End

### IMPERIAL: 6"-20' 7", RESOLUTION 0.001"

| Code No | Range (inch) | Head Range (inch) | Rod Length (inch)      |
|---------|--------------|-------------------|------------------------|
| G704    | 6-55         | 1                 | 1, 2, 3, 6, 12, 24     |
| G710    | 6-127        | 1                 | 1, 2, 3, 6, 12, 4 x 24 |
| G720    | 6-247        | 1                 | 1, 2, 3, 6, 12, 9 x 24 |

## Micrometer Ball Attachment

### Features

- To suit the 1961, 1965 and 1966 series micrometers
- Can be fitted to the anvil or spindle on external micrometer series 1961, 1965 and 1966 to enable round or irregular surfaces to be measured
- The ball is hardened and moves freely to allow contact with the object being measured

Note: Always deduct the ball diameter from any reading.



### MICROMETER BALL ATTACHMENT

| Code No | Description       | Diameter (mm) | Diameter (inch) | Note                            |
|---------|-------------------|---------------|-----------------|---------------------------------|
| 878M    | 6.5mm and 6.8mm   | 6.5 ball      | -               | 1 of each spindle size supplied |
| 878     | 0.256" and 0.268" | -             | 0.250 ball      | 1 of each spindle size supplied |

## Micrometer Stand

### Features

- Designed for micrometers up to 100mm
- Painted cast iron base with plastic covered clamping jaws
- Angle adjustable

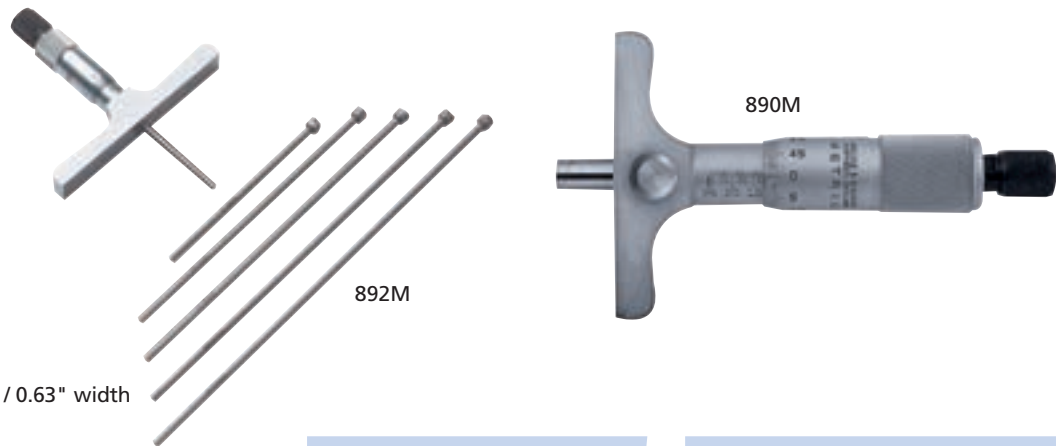


### MICROMETER STAND

| Code No   | Description                       |
|-----------|-----------------------------------|
| MW279-01A | Stand for micrometers up to 100mm |

## Moore & Wright Traditional Depth Gauge Micrometer

Complies with BS6468:1984



### 890 Series:

- Fixed depth rod, 6.5mm diameter
- 63.5mm / 2 1/2" base length 16mm / 0.63" width
- 'Speeder' type ratchet
- Lock screw

### 891 Series:

- Interchangeable depth rods, 4.5mm diameter
- 63.5mm / 2 1/2" base length, 16mm / 0.63" width

### 892 Series:

- As 891 Series except for: 100mm / 4" base length

### DEPTH GAUGE MICROMETER - METRIC

| Code No | Range (mm) |
|---------|------------|
| 890M    | 0-25       |
| 891M75  | 0-75       |
| 891M150 | 0-150      |
| 891M300 | 0-300      |
| 892M75  | 0-75       |
| 892M150 | 0-150      |
| 892M300 | 0-300      |

### DEPTH GAUGE MICROMETER - IMPERIAL

| Code No | Range (inch) |
|---------|--------------|
| 890     | 0-1          |
| 8913    | 0-3          |
| 8916    | 0-6          |
| 89112   | 0-12         |
| 8923    | 0-3          |
| 8926    | 0-6          |
| 89212   | 0-12         |

## Moore & Wright Digital Depth Micrometer 305-DDL Series

### Features

- Standard: DIN 863
- Digital functions: mm / inch conversion, set, on/off, zero-setting, battery low indication, hold, 0...ABS
- Interchangeable rods (spherical ends)
- Rods are hardened and spherically lapped
- Satin chrome finished base
- Constant force ratchet on thimble



### DIGITAL DEPTH MICROMETER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Size of Base (mm) |
|-------------|------------|--------------|-----------------|-------------------|---------------|-------------------|
| MW305-00DDL | 0-25       | 0-1          | 0.001           | 0.00005           | 0.004         | 100               |
| MW305-01DDL | 0-50       | 0-2          | 0.001           | 0.00005           | 0.004         | 100               |
| MW305-02DDL | 0-100      | 0-4          | 0.001           | 0.00005           | 0.005         | 100               |
| MW305-03DDL | 0-150      | 0-6          | 0.001           | 0.00005           | 0.006         | 100               |
| MW305-04DDL | 0-200      | 0-8          | 0.001           | 0.00005           | 0.007         | 100               |
| MW305-05DDL | 0-300      | 0-12         | 0.001           | 0.00005           | 0.009         | 100               |

## Moore & Wright Digital Tyre Profile Depth Gauge 176 Series

### Features

- Spring loaded with a hold measurement button for ease of use
- 2.5mm spindle diameter
- Digital functions: mm/inch conversion, hold readings, on/off, zero-setting
- Vinyl holder supplied as standard
- Supplied on retail packaging



### DIGITAL TYRE PROFILE GAUGE

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) |
|-------------|------------|--------------|-----------------|-------------------|
| MW176-01DTG | 0-25       | 0-1          | 0.01            | 0.0005            |

## Moore & Wright Digital Depth Gauge Caliper 170-DB/DH Series

### Features

- Factory standard
- Standard digital functions : mm / inch conversion, on / off, zero-setting, battery low indication
- Ground micro-lapped measuring surfaces
- Supplied without Hook (B) available with Hook (H)- On Request



Hook detail

### DEPTH CALIPER (Without Hook)

| Code No        | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Size of Base (mm) |
|----------------|------------|--------------|-----------------|-------------------|---------------|-------------------|
| MW170-15DB     | 0-150      | 0-6          | 0.01            | 0.0005            | 0.03          | 100               |
| MW170-20DB     | 0-200      | 0-8          | 0.01            | 0.0005            | 0.03          | 100               |
| MW170-30DB     | 0-300      | 0-12         | 0.01            | 0.0005            | 0.04          | 150               |
| MW170-30DB/100 | 0-300      | 0-12         | 0.01            | 0.0005            | 0.04          | 100               |

### DEPTH CALIPER (With Hook)

| Code No    | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Size of Base (mm) |
|------------|------------|--------------|-----------------|-------------------|---------------|-------------------|
| MW170-15DH | 0-150      | 0-6          | 0.01            | 0.0005            | 0.03          | 100               |
| MW170-20DH | 0-200      | 0-8          | 0.01            | 0.0005            | 0.03          | 100               |
| MW170-30DH | 0-300      | 0-12         | 0.01            | 0.0005            | 0.04          | 100               |

Note: Hook width: 2mm

## Moore & Wright Mechanical Depth Gauge 172 Series

### Features

- Factory standard
- 0-25mm travel mechanical indicator
- Satin chrome finish
- Rods connect together for full 550mm capacity
- Base size: 100mm
- Includes 2 extra points for small hole applications



### MECHANICAL DEPTH GAUGE

| Code No  | Range (mm) | Resolution (mm) |
|----------|------------|-----------------|
| MW172-01 | 0-550      | 0.01            |

## Moore & Wright Digital Depth Gauge 172 Series

### Features

- Factory standard
- 0-25mm / 0-1" travel digital indicator
- Digital functions: mm / inch conversion, on / off, zero-setting
- Rods connect together for full 550mm capacity
- Base size: 100mm
- Includes 2 extra points for small hole applications



### DIGITAL DEPTH GAUGE

| Code No   | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) |
|-----------|------------|--------------|-----------------|-------------------|
| MW172-01D | 0-550      | 0-22         | 0.01            | 0.0005            |



## Sylvac S\_Depth Pro Depth Gauge

### Features

- PRESET function
- Two references
- Automatic selection of measuring direction
- Constant setting for measurement with cylindrical or spherical anvils
- Interchangeable base
- Supplied with Ball Probe M2.5 (standard)

### SYLVAC S\_DEPTH PRO DEPTH GAUGE

| Code No     | Measuring Depth (mm) | Maximum Error (µm) | Repeatability (µm) | Output                             |
|-------------|----------------------|--------------------|--------------------|------------------------------------|
| 30-805-6005 | 300                  | 30                 | 10                 | USB / RS232 / Digimatic / Wireless |
| 30-805-6006 | 600                  | 40                 | 10                 | USB / RS232 / Digimatic / Wireless |

Accessories available on request



## Sylvac S\_Cal EVO ECO, Bridge and Double Depth Gauge

### Features

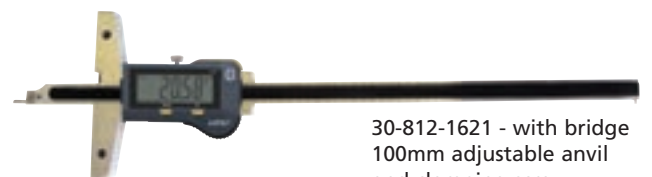
- Integrated Bluetooth® Smart data transmission
- Programmable button according to needs
- Water protected for heavy-duty work with coolants and lubricants, protection rating IP67 according to IEC 60529
- Automatic wake-up (Absolute System SIS)
- Sleeping mode after 20 min. of no use. (Absolute System SIS)
- Maximum speed of displacement: 2.5 m/sec
- Mechanical frame in stainless steel



30-812-1601 - with bridge 100mm and clamping screw



30-812-1611 - with bridge 100mm and clamping screw



30-812-1621 - with bridge 100mm adjustable anvil and clamping screw

### SYLVAC S\_CAL EVO ECO DEPTH GAUGE

| Code No     | Measuring Depth (mm) | Resolution (mm) | Output                 |
|-------------|----------------------|-----------------|------------------------|
| 30-812-1601 | 200                  | 0.01            | Built-in Bluetooth 4.0 |
| 30-812-1603 | 300                  | 0.01            | Built-in Bluetooth 4.0 |
| 30-812-1605 | 500                  | 0.01            | Built-in Bluetooth 4.0 |

Optional contacts available on request

### SYLVAC S\_CAL EVO BRIDGE DEPTH GAUGE

| Code No     | Measuring Depth (mm) | Resolution (mm) | Output                 |
|-------------|----------------------|-----------------|------------------------|
| 30-812-1611 | 200                  | 0.01            | Built-in Bluetooth 4.0 |
| 30-812-1613 | 300                  | 0.01            | Built-in Bluetooth 4.0 |
| 30-812-1615 | 500                  | 0.01            | Built-in Bluetooth 4.0 |

### SYLVAC S\_CAL EVO DOUBLE DEPTH GAUGE

| Code No     | Measuring Depth (mm) | Resolution (mm) | Output                 |
|-------------|----------------------|-----------------|------------------------|
| 30-812-1621 | 200                  | 0.01            | Built-in Bluetooth 4.0 |
| 30-812-1623 | 300                  | 0.01            | Built-in Bluetooth 4.0 |
| 30-812-1625 | 500                  | 0.01            | Built-in Bluetooth 4.0 |

Note: Additional bases for all depth gauges available on request

## Bowers Universal "Snap" Gauge

The Bowers SNAPMATIC snap gauge has been designed specifically for quick, reliable and accurate measurement of external cylindrical diameters. Particularly suitable for use in series production, the instrument is tough and solid enough to use on the machine in the workshop and flexible enough to be used in the measuring room for sample measurements (bench-stand available). The measuring surfaces are of top-quality tungsten carbide mounted on a no-maintenance spring-operated mechanism.

### Features

- Measuring ranges: 0-25mm (0-1"), 25-50mm (1-2"), 50-75mm (2-3"), 75-100mm (3-4"), 100-125mm (4-5"), 125-150mm (5-6")
- Gauging travel: 0.5mm
- Constant measuring pressure
- Adjustable depth-stop
- 8mm diameter indicator locking bush as standard (3/8" on request)
- Can be used with dial-gauges, digital indicators or measuring probes
- 16mm wide tungsten carbide measuring surfaces for positive-feel measurement (see table for flatness and parallelism)
- Measuring force: 13 N ± 3N
- Indicator protection
- Indicator can be swivelled through 360°
- Bench stand available
- Heat-resistant polymer grip



Indicator **not** included in price of gauge.



Option



Depending on Indicator option

### BOWERS 'SNAP' GAUGE

| Code No | Range (mm) | Range (inch) | Flatness (µm) | Flatness (inch) | Parallelism (µm) | Parallelism (inch) |
|---------|------------|--------------|---------------|-----------------|------------------|--------------------|
| SPM25X  | 0-25       | 0-1          | 0.3           | 0.000012        | 2                | 0.00008            |
| SPM50X  | 25-50      | 1-2          | 0.3           | 0.000012        | 2                | 0.00008            |
| SPM75X  | 50-75      | 2-3          | 0.3           | 0.000012        | 3                | 0.000012           |
| SPM100X | 75-100     | 3-4          | 0.3           | 0.000012        | 3                | 0.000012           |
| SPM125X | 100-125    | 4-5          | 0.3           | 0.000012        | 4                | 0.000016           |
| SPM150X | 125-150    | 5-6          | 0.3           | 0.000012        | 4                | 0.000016           |

### INDICATOR OPTIONS

| Code No   | Description                                      |
|-----------|--|
| SMA023    | Type 'C' digital indicator. Res. 0.001mm         |
| SMA023-BT | Type 'C' Bluetooth Digital Indicator Res.0.001mm |

Note: BT denotes Bluetooth

## Bowers Snapmic

The revolutionary Bowers Snapmic shares the best attributes of a high quality digital micrometer and a flexible snap gauge. Its wide application range, adjustable support platen and ingenious snap action enable the rapid and accurate measuring of a wide range of parts.

An adjustable support stand is available to aid the speed of batch part measurement.

As well as its many standard uses the flexible nature of the Bowers Snapmic allows it to be configured to suit a multitude of specialised external measuring applications, the gauge can be supplied with special anvils to facilitate the trouble-free measurement of threads, splines, grooves, etc. The optional sturdy Snapmic stand permits the rapid accurate measurement of batch parts.



### Features

- Measuring range 0-30mm & 30-60mm
- 2 preset memories
- Preset recall
- Zero set
- Max / min / Tolerance / Hold function
- Metric / inch conversion
- Switchable resolution 0.01 / 0.001mm 0.0005 / 0.00005"
- RS-232 output
- Half duplex transmission



- Bench stand available
- 8mm diameter anvils
- Special contact tips available for threads, gear tooth measurement, splines, grooves etc
- Adjustable backstop
- Repeatability: 1µm / 0.00005"

### STANDS

| Code No | Description            |
|---------|------------------------|
| EST0001 | MicroGauge Bench Stand |

### BOWERS SNAPMIC

| Code No | Range (mm) | Resolution (mm) | Flatness (µm) | Parallelism (µm) | Accuracy (µm) |
|---------|------------|-----------------|---------------|------------------|---------------|
| EIM030M | 0-30       | 0.001           | 0.3           | 1.0              | 4             |
| EIM060M | 30-60      | 0.001           | 0.6           | 2.0              | 5             |

## Moore & Wright Digital Absolute Snap Micrometer 202 Series

### Features

- Standard: Factory standard
- Absolute Measuring System
- RS232 Digimatic output
- Digital functions: mm/Inch conversion, on/off, data-output, 0...ABS
- Non rotating spindle
- Constant measuring force on thimble
- Quick & repeatable measurement
- CR2032 battery



### DIGITAL ABSOLUTE SNAP MICROMETER

| Code No      | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) |
|--------------|------------|--------------|-----------------|-------------------|---------------|-----------------|
| MW202-01DABS | 0-25       | 0-1          | 0.001           | 0.00005           | 0.003         | 0.00015         |
| MW202-02DABS | 25-50      | 1-2          | 0.001           | 0.00005           | 0.003         | 0.00015         |
| MW202-03DABS | 50-75      | 2-3          | 0.001           | 0.00005           | 0.004         | 0.0002          |
| MW202-04DABS | 75-100     | 3-4          | 0.001           | 0.00005           | 0.004         | 0.0002          |

### DATA CABLE

| Code No        | Description                              |
|----------------|--|
| MW-Y100/700USB | Data Cable-USB to suit all DABS products |

## APOLLO Measuring Frame

### Features

- Carbon fibre caliper
- Accessories in light alloy
- Interchangeable rods  $\varnothing$  3.5
- Supplied with dial gauge 0.01 and rods  $\varnothing$  3
- Range: 5mm
- Delivered in wooden case
- Digital indicator available on request



### ACCESSORIES

| Code No  | Description               |
|----------|---------------------------|
| 50-03020 | Cylindrical pin           |
| 50-03021 | Semi Spherical pin        |
| 50-03022 | Double diameter           |
| 50-03023 | Disc pin $\varnothing$ 12 |
| 50-03024 | Plane pin                 |
| 50-03025 | 60° conical pin           |
| 50-03026 | 60° wedge pin             |
| 50-03030 | Cylindrical pin           |
| 50-03031 | Plane pin                 |
| 50-03032 | Disc pin $\varnothing$ 20 |
| 50-03033 | Disc pin $\varnothing$ 25 |
| 50-03034 | Disc pin $\varnothing$ 30 |

Accessories are bought in pairs



APOLLO measuring frame with accessories

### APOLLO MEASURING FRAME

| Code No  | Dimn - A  | Dimn - B | Dimn - C | Dimn - D | Dimn - E | Repeatability (mm) | Weight  |
|----------|-----------|----------|----------|----------|----------|--------------------|---------|
| 50-00800 | 0-50mm    | 247mm    | 95mm     | 66mm     | 97mm     | 0.001              | 0.420kg |
| 50-00801 | 50-100mm  | 297mm    | 124mm    | 66mm     | 97mm     | 0.001              | 0.500kg |
| 50-00802 | 100-150mm | 347mm    | 150mm    | 66mm     | 97mm     | 0.001              | 0.620kg |
| 50-00803 | 150-200mm | 397mm    | 174mm    | 66mm     | 97mm     | 0.001              | 0.720kg |
| 50-00804 | 200-250mm | 447mm    | 210mm    | 66mm     | 97mm     | 0.001              | 0.920kg |
| 50-00805 | 250-300mm | 497mm    | 234mm    | 66mm     | 97mm     | 0.002              | 1.020kg |
| 50-00806 | 300-350mm | 547mm    | 260mm    | 66mm     | 97mm     | 0.002              | 1.120kg |
| 50-00807 | 350-400mm | 597mm    | 284mm    | 66mm     | 97mm     | 0.003              | 1.220kg |
| 50-00812 | 400-450mm | 647mm    | 310mm    | 66mm     | 97mm     | 0.003              | 1.320kg |
| 50-00808 | 450-500mm | 707mm    | 374mm    | 66mm     | 97mm     | 0.003              | 1.420kg |
| 50-00809 | 500-600mm | 960mm    | 437mm    | 95mm     | 230mm    | 0.005              | 2.100kg |
| 50-00810 | 600-700mm | 1010mm   | 487mm    | 95mm     | 230mm    | 0.005              | 2.400kg |
| 50-00811 | 700-800mm | 1060mm   | 537mm    | 95mm     | 230mm    | 0.005              | 2.700kg |

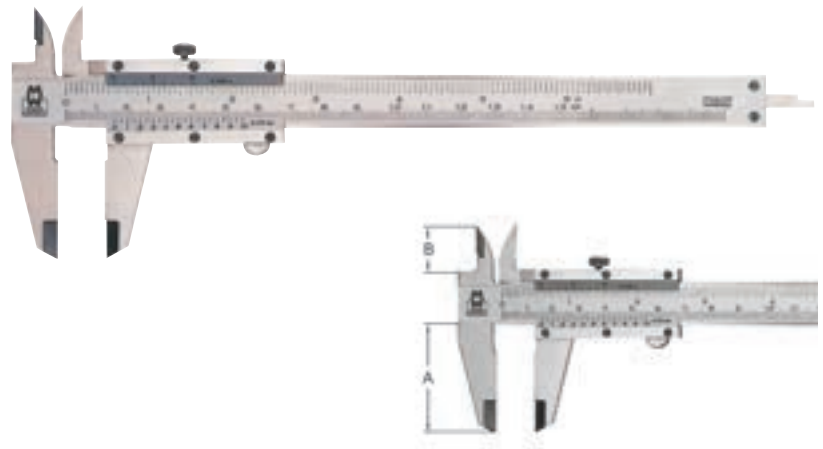
Accessories are bought in pairs



## Moore & Wright Workshop Vernier Caliper 100 Series

### Features

- Standard DIN 862
- Standard workshop model with locking screw
- 4-way measurement
- Made of hardened alloyed stainless steel
- Chromed scale with engraved graduations
- Measuring surface is micro-lapped
- Supplied in case



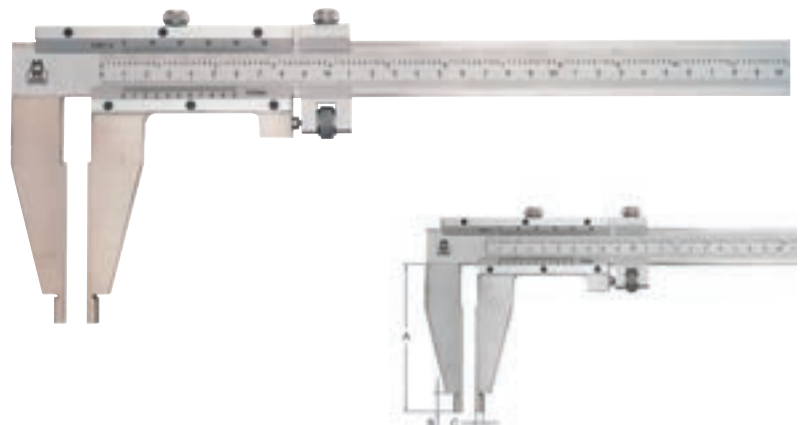
### WORKSHOP VERNIER CALIPER

| Code No    | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Dimn - A | Dimn - B |
|------------|------------|--------------|-----------------|-------------------|---------------|----------|----------|
| MW100-15B  | 0-150      | 0-6          | 0.05            | 1/128             | ±0.05         | 40       | 16       |
| MW100-20B  | 0-200      | 0-8          | 0.05            | 1/128             | ±0.05         | 50       | 20       |
| MW100-30B  | 0-300      | 0-12         | 0.05            | 1/128             | ±0.08         | 55       | 20       |
| MW100-15BI | 0-150      | 0-6          | 0.02            | 0.001             | ±0.02         | 40       | 16       |
| MW100-20BI | 0-200      | 0-8          | 0.02            | 0.001             | ±0.03         | 50       | 20       |
| MW100-30BI | 0-300      | 0-12         | 0.02            | 0.001             | ±0.04         | 55       | 20       |

## Moore & Wright Large Workshop Vernier Caliper 150 Series

### Features

- Standard: Factory Standard
- Standard workshop model with locking screw
- Jaws for internal and external measurement
- Mono block solid slider
- Made of hardened alloyed stainless steel
- Chromed scale with laser engraved graduations
- Measuring surface is micro-lapped
- With fine adjustment
- Supplied in wooden box



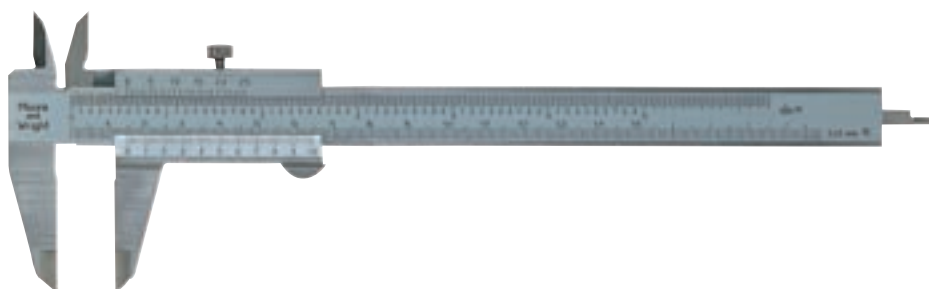
### LARGE WORKSHOP VERNIER CALIPER

| Code No  | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Dimn - A | Dimn - B | Dimn - C |
|----------|------------|--------------|-----------------|-------------------|---------------|----------|----------|----------|
| MW150-52 | 0-500      | 0-20         | 0.02            | 0.001             | ±0.05         | 100      | 12       | 5        |
| MW150-55 | 0-500      | 0-20         | 0.05            | 1/128             | ±0.07         | 100      | 12       | 5        |
| MW150-62 | 0-600      | 0-24         | 0.02            | 0.001             | ±0.05         | 100      | 12       | 5        |
| MW150-65 | 0-600      | 0-24         | 0.05            | 1/128             | ±0.08         | 100      | 12       | 5        |
| MW150-72 | 0-1000     | 0-40         | 0.02            | 0.001             | ±0.07         | 125      | 18       | 10       |
| MW150-75 | 0-1000     | 0-40         | 0.05            | 1/128             | ±0.10         | 125      | 18       | 10       |
| MW150-82 | 0-1500     | 0-60         | 0.02            | 0.001             | ±0.11         | 150      | 18       | 10       |
| MW150-85 | 0-1500     | 0-60         | 0.05            | 1/128             | ±0.16         | 150      | 18       | 10       |

## Moore & Wright Vernier Calipers

### Features

- Standard: DIN 862
- 4-way measurement
- Made of hardened alloyed stainless steel
- Mono block solid slider
- Satin chrome finish with laser engraved graduations
- Knife edge internal jaws
- Knife edge tips on external jaws
- Economical design for general workshop use



### VERNIER CALIPER

| Code No  | Resolution (mm) | Resolution (inch) | Range (mm) | Range (inch) | Jaws |
|----------|-----------------|-------------------|------------|--------------|------|
| VCL-015D | 0.05            | 0.001             | 150        | 6            | 40mm |
| VCT-015D | 0.02            | 0.001             | 150        | 6            | 40mm |

## Moore & Wright Dial Caliper 140 Series

### Features

- Standard: Factory Standard
- Black indicator plate with clear red pointer
- 4-way measurement
- Made of alloyed hardened stainless steel
- High precision model with mono block solid slider
- Chromed scale with engraved graduations
- Rack cover prevents dust or grit fouling teeth of rack
- Measuring surface is micro-lapped
- Thumb wheel for fine adjustment
- Supplied in case



### DIAL CALIPER

| Code No  | Range (mm) | Resolution (mm) | Accuracy (mm) | Jaws |
|----------|------------|-----------------|---------------|------|
| MW140-15 | 0-150      | 0.02            | ±0.03         | 40mm |
| MW140-20 | 0-200      | 0.02            | ±0.03         | 55mm |
| MW140-30 | 0-300      | 0.02            | ±0.04         | 55mm |

## Moore & Wright Dial Caliper 141 Series

### Features

- Standard: DIN 862
- 4-way measurement
- Made of alloyed hardened stainless steel
- Measuring surface is micro-lapped
- Thumb wheel for fine adjustment
- Covered rack
- Supplied in case



### DIAL CALIPER

| Code No  | Range (mm) | Resolution (mm) | Accuracy (mm) | Code No   | Range (inch) | Resolution (inch) | Accuracy (inch) |
|----------|------------|-----------------|---------------|-----------|--------------|-------------------|-----------------|
| MW141-15 | 0-150      | 0.02            | ±0.03         | MW141-15I | 0-6          | 0.001             | ±0.001          |

## Moore & Wright Dial Caliper 142 Series

### Features

- Standard: DIN 862
- Shockproof dial caliper
- Yellow indicator plate with black pointer
- 4-way measurement
- Made of alloyed hardened stainless steel
- Measuring surface is micro-lapped
- Thumb wheel for fine adjustment
- Covered rack
- Supplied in case



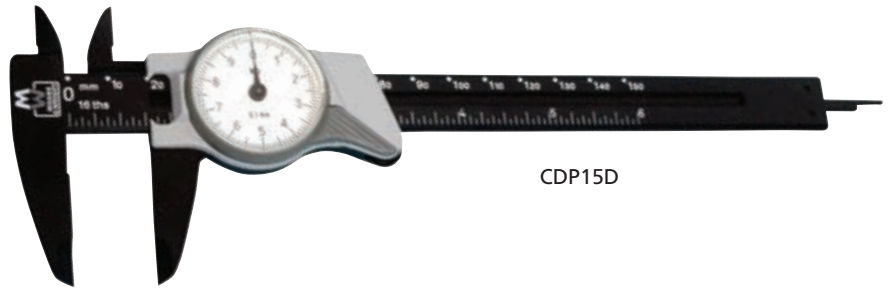
### DIAL CALIPER

| Code No  | Range (mm) | Resolution (mm) | Accuracy (mm) |
|----------|------------|-----------------|---------------|
| MW142-15 | 0-150      | 0.02            | ±0.03         |
| MW142-20 | 0-200      | 0.02            | ±0.03         |
| MW142-30 | 0-300      | 0.02            | ±0.04         |

## Moore & Wright Plastic Dial Caliper

### Features

- Standard: Factory Standard
- 4-way measurement
- Manufactured from glass reinforced nylon material
- Highly durable design
- Plastic depth rod



CDP15D

### METRIC: DIAL CALIPER

| Code No | Range (mm) | Resolution (mm) | Accuracy (mm) | Jaws |
|---------|------------|-----------------|---------------|------|
| CDP150M | 0-150      | 0.1             | ± 0.1         | 40mm |

### IMPERIAL: DIAL CALIPER

| Code No | Range (inch) | Resolution (inch) | Accuracy (inch) | Jaws  |
|---------|--------------|-------------------|-----------------|-------|
| CDP006E | 0-6          | 0.01              | ± 0.004         | 1.57" |

## Moore & Wright Plastic Digital Caliper

### Features

- Standard: Factory standard
- Digital functions: mm/inch, zero setting, auto off
- 4-way measurement
- Manufactured from glass reinforced nylon material
- Highly durable design
- Plastic depth rod



### METRIC / IMPERIAL: DIGITAL CALIPER

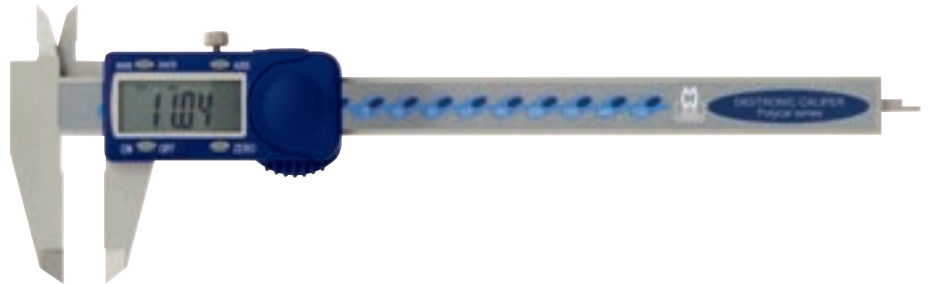
| Code No | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) | Jaws |
|---------|------------|--------------|-----------------|-------------------|---------------|-----------------|------|
| ECP015D | 0-150      | 0-6          | 0.01            | 0.0005            | ±0.05         | ±0.002          | 40mm |



## Moore & Wright Plastic Digital Caliper

### Features

- Standard: Factory Standard
- Digital functions: mm / inch conversion, ABS/INC, on / off, zero-setting
- 4-way measurement
- Polycarbonate frame
- CR2032 battery
- Supplied retail packed with vinyl pouch



### POLYCARBONATE DIGITAL CALIPER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) | Jaws |
|-------------|------------|--------------|-----------------|-------------------|---------------|-----------------|------|
| MW110-15DPC | 0-150      | 0-6          | 0.01            | 0.0005            | 0.2           | 0.008           | 40mm |

## Moore & Wright Workshop Digital Caliper 110-DBL Series

### Features

- Standard: DIN 862
- Digital functions: mm/inch conversion, on/off, zero-setting, ABS/INC, Auto off
- 4-way measurement
- All metal parts made of hardened stainless steel
- Thumb wheel for fine adjustment
- CR2032 battery
- Supplied in case



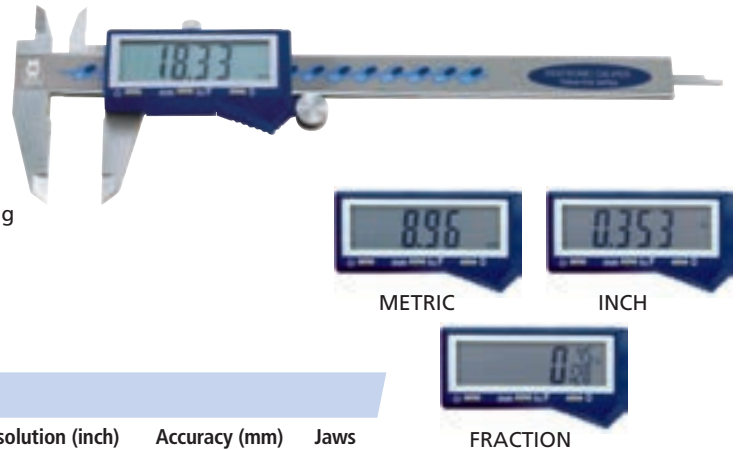
### WORKSHOP DIGITAL CALIPER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Jaws |
|-------------|------------|--------------|-----------------|-------------------|---------------|------|
| MW110-15DBL | 0-150      | 0-6          | 0.01            | 0.0005            | 0.03          | 40mm |
| MW110-20DBL | 0-200      | 0-8          | 0.01            | 0.0005            | 0.03          | 50mm |
| MW110-30DBL | 0-300      | 0-12         | 0.01            | 0.0005            | 0.04          | 60mm |

## Moore & Wright Three Reading Digital Caliper DFC Series

### Features

- Standard: Factory standard
- Extra large, easy-to-read LCD display
- High measuring speed: 120" per second
- Digital Functions: mm / inch / fraction conversion, on / off, zero-setting
- 4-way measurement
- Stainless steel frame with extra smooth movements
- Thumb wheel for fine adjustment
- CR2032 battery



### THREE READING DIGITAL CALIPER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Jaws |
|-------------|------------|--------------|-----------------|-------------------|---------------|------|
| MW110-15DFC | 0-150      | 0-6          | 0.01            | 0.0005 / 1/128    | 0.03          | 40mm |
| MW110-20DFC | 0-200      | 0-8          | 0.01            | 0.0005 / 1/128    | 0.03          | 50mm |
| MW110-30DFC | 0-300      | 0-12         | 0.01            | 0.0005 / 1/128    | 0.03          | 60mm |

## Moore & Wright Water Resistant Caliper IP54 Series

### Features

- Standard: DIN 862
- Water and dust resistant to IP54 specification
- Digital functions: mm/inch conversion, on/off, zero setting, ABS/INC,
- Patented ceramic capacitive sensor
- 4-way measurement
- Thumb wheel for fine adjustment
- CR2032 battery



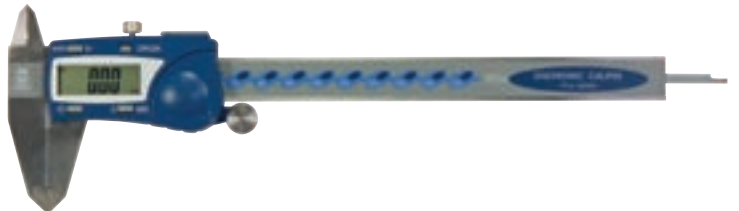
### WATER RESISTANT CALIPER

| Code No    | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Jaws |
|------------|------------|--------------|-----------------|-------------------|---------------|------|
| MW110-15WR | 0-150      | 0-6          | 0.01            | 0.0005            | 0.03          | 40mm |
| MW110-20WR | 0-200      | 0-8          | 0.01            | 0.0005            | 0.03          | 50mm |
| MW110-30WR | 0-300      | 0-12         | 0.01            | 0.0005            | 0.04          | 60mm |

## Moore & Wright Digital Absolute Caliper 110-DABS Series

### Features

- Standard: Factory standard
- Absolute Measuring System
- RS232 Digimatic output
- Digital functions: mm/Inch conversion, on/off, data-output, 0...ABS
- 4-way measurement
- Thumb wheel for fine adjustment



### DIGITAL ABSOLUTE CALIPER

| Code No      | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) |
|--------------|------------|--------------|-----------------|-------------------|---------------|-----------------|
| MW110-15DABS | 0-150      | 0-6          | 0.01            | 0.0005            | 0.02          | 0.001           |
| MW110-20DABS | 0-200      | 0-8          | 0.01            | 0.0005            | 0.03          | 0.0015          |
| MW110-30DABS | 0-300      | 0-12         | 0.01            | 0.0005            | 0.03          | 0.0015          |

### DATA CABLE

| Code No        | Description                              |
|----------------|--|
| MW-Y100/700USB | Data Cable-USB to suit all DABS products |

## Sylvac S\_Cal EVO Bluetooth Caliper

### Features

- Standard: DIN 862
- Max. error 20 µm
- IP67 protected
- Built-in Bluetooth® 4.0 transmitter
- Transmission distance up to 15m
- Absolute system
- Automatic wake-up
- Powered by standard CR2032 battery
- Battery life up to 3 years
- Mechanical frame in stainless steel



### SYLVAC S\_CAL EVO BLUETOOTH CALIPER

| Code No     | Description                | Range (mm) | Note                 |
|-------------|----------------------------|------------|----------------------|
| 30-810-1506 | Sylvac S_Cal EVO Bluetooth | 0-150      | With flat depth rod  |
| 30-810-1516 | Sylvac S_Cal EVO Bluetooth | 0-150      | With round depth rod |
| 30-810-1526 | Sylvac S_Cal EVO Bluetooth | 0-200      | With flat depth rod  |
| 30-810-1536 | Sylvac S_Cal EVO Bluetooth | 0-300      | Without depth rod    |

## Sylvac S\_Cal EVO Carbide and EVO µm Calipers

### Features

- Standard: DIN 862
- Integrated Bluetooth® Smart data transmission (depending on model)
- Carbide jaws
- New extra-large display
- Programmable button according to needs (depending on model)
- Water protected for heavy-duty work with coolants and lubricants, protection rating IP67 according to IEC 60529,
- Automatic wake-up by moving the electronic on his frame (Absolute System SIS)
- Sleeping mode after 20 min. of no use. (Absolute System SIS)
- Maximum speed of displacement: 2.5 m/sec
- Mechanical frame in stainless steel



### SYLVAC S\_CAL EVO CARBIDE CALIPER

| Code No     | Description                      | Range (mm) | Note                |
|-------------|----------------------------------|------------|---------------------|
| 30-810-1509 | Sylvac S_Cal EVO Carbide Caliper | 0-150      | With flat depth rod |

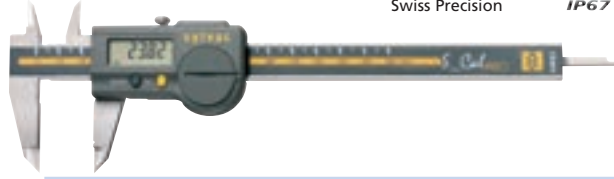
### SYLVAC S\_CAL EVO µM CALIPER

| Code No     | Description                 | Range (mm) | Note                 |
|-------------|-----------------------------|------------|----------------------|
| 30-810-9506 | Sylvac S_Cal EVO µm Caliper | 0-150      | With flat depth rod  |
| 30-810-9516 | Sylvac S_Cal EVO µm Caliper | 0-150      | With round depth rod |

## Sylvac S\_Cal PRO Caliper

### Features

- Water and coolant resistant, IP67 (according to IEC 60529)
- Comfortable to use thanks to its ergonomic beam
- Automatic stand-by mode
- Origin saved
- Automatic wake-up by motion of the slider
- LCD digital display, height of the digits 7mm
- Increased self-contained use (12,000 working hours)
- Mechanical frame in stainless steel, hardened and ground
- Automatic switch off mode
- Thumb wheel available on request



### SYLVAC S\_CAL PRO CALIPER

| Code No     | Description            | Range (mm) | Note                      |
|-------------|------------------------|------------|---------------------------|
| 30-910-1502 | S_Cal PRO IP67 caliper | 0-150      | Flat depth rod (4 x 1.4)  |
| 30-910-1507 | S_Cal PRO IP67 caliper | 0-150      | Round depth rod (Ø 1.5mm) |
| 30-910-1522 | S_Cal PRO IP67 caliper | 0-200      | Flat depth rod (4 x 1.4)  |
| 30-910-1532 | S_Cal PRO IP67 caliper | 0-300      | No depth rod              |

## Sylvac S\_Cal PRO Micron Caliper

### Features

- Automatic wake-up
- Sleeping mode after 20 min. of no use
- Mechanical frame in stainless steel
- Improved parallelism of internal jaws
- Resolution 0.001 or 0.00005" • Thumb wheel available on request
- 4µm repeatability



### SYLVAC S\_CAL PRO MICRON CALIPER

| Code No     | Description              | Range (mm) | Note                     |
|-------------|--------------------------|------------|--------------------------|
| 30-910-9502 | S_Cal PRO Micron Caliper | 0-150      | Flat depth rod (4 x 1.4) |
| 30-910-9507 | S_Cal PRO Micron Caliper | 0-150      | Round depth rod (Ø 1.5)  |

### ACCESSORIES

| Code No     | Description                               | Code No     | Description                            | Note   | Code No     | Description                 |
|-------------|---|-------------|--|--|-------------|-----------------------------|
| 30-910-2201 | Thumbwheel for S_Cal PRO and S_Cal PRO µm | 30-810-2201 | Thumbwheel for S_Cal WORK              | Suits: S_Cal WORK                                  | 30-926-6721 | Sylvac Proximity USB Cable* |
|             |   | 30-910-2205 | Base for depth measurement - 76mm / 3" | Suits: S_Cal PRO, S_Cal WORK, S_Cal ONE, S_Cal EVO | 25-604-064  | Wireless Proximity Module   |

\*Other data cable options available.

## S Cal EVO Form B and Form E



30-810-1556



30-810-1546



### Features

- Intergrated Bluetooth technology
- Mid size caliper r5 for internal/external measurement
- Programmable button according to your needs
- Water protected for heavy-duty work with coolants and lubricants, protection rating IP67 according to IEC 60529
- Automatic wake-up (Absolute System S.I.S)
- Last position memorised in sleeping mode (S.I.S)
- Maximum speed of displacement 2.5m/sec
- Mechanical frame in stainless steel
- Ergonomic frame

### SYLVAC S\_CAL EVO FORM B

| Code No     | Range (mm) | Resolution (mm) | Accuracy (mm) | Functions  | Note |
|-------------|------------|-----------------|---------------|--|------|
| 30-810-1556 | 0-300      | 0.01            | 0.03          | Zero setting, Preset (max999.99) mm/inch, Hold, Data | IP67 |
| 30-810-1558 | 0-500      | 0.01            | 0.03          | Zero setting, Preset (max999.99) mm/inch, Hold, Data | IP67 |

### SYLVAC S\_CAL EVO FORM E

| Code No     | Range (mm) | Resolution (mm) | Accuracy (mm) | Functions                                  | Note |
|-------------|------------|-----------------|---------------|--|------|
| 30-810-1546 | 0-300      | 0.01            | 0.03          | Zero setting, preset (max 999.99), mm/inch | IP67 |

## Sylvac S\_Cal EVO SVE Special Caliper

### Features

- Special jaws for measuring grooves and external seatings



### SYLVAC S\_CAL EVO SVE SPECIAL CALIPER

| Code No     | Description                          | Range (mm) | Note                |
|-------------|--------------------------------------|------------|---------------------|
| 30-810-1602 | Sylvac S_Cal EVO SVE Special Caliper | 0-150      | With flat depth rod |

## Sylvac S\_Cal EVO SVI Special Caliper

### Features

- Special jaws for measuring grooves and internal seatings



### SYLVAC S\_CAL EVO SVI SPECIAL CALIPER

| Code No     | Description                          | Range (mm) | Note                |
|-------------|--------------------------------------|------------|---------------------|
| 30-810-1600 | Sylvac S_Cal EVO SVI Special Caliper | 0-150      | With flat depth rod |

## Sylvac S\_Cal EVO SVL Special Caliper

### Features

- Special long internal jaws for deep measurement



### SYLVAC S\_CAL EVO SVL SPECIAL CALIPER

| Code No     | Description                          | Range (mm) | Note                |
|-------------|--------------------------------------|------------|---------------------|
| 30-810-1603 | Sylvac S_Cal EVO SVL Special Caliper | 0-150      | With flat depth rod |

## Sylvac S\_Cal EVO SVR Special Caliper

### Features

- Special jaws for measuring grooves and internal seatings, with interchangeable, lapped, round-tipped anvils (M2.5 thread)
- Other accessories available on request



### SYLVAC S\_CAL EVO SVR SPECIAL CALIPER

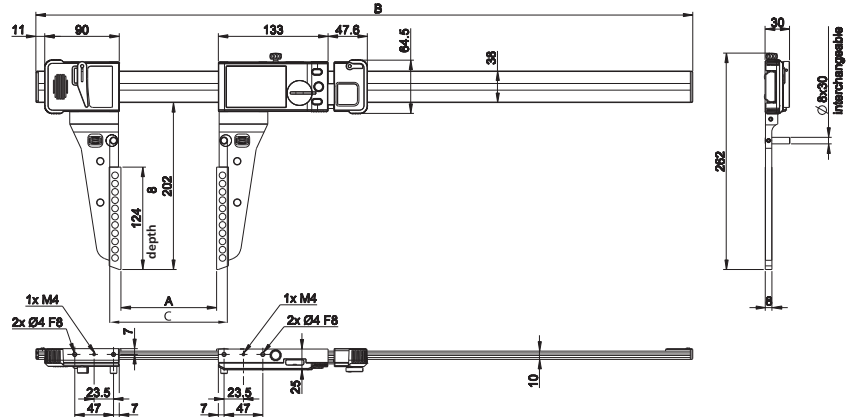
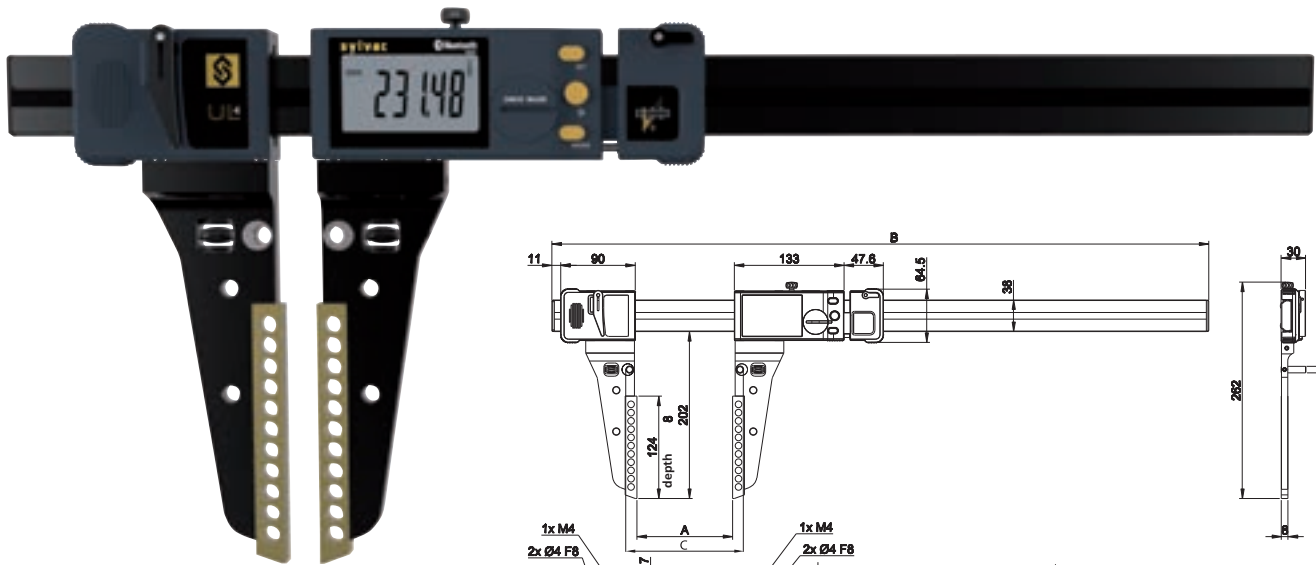
| Code No     | Description                          | Range (mm) | Note                |
|-------------|--------------------------------------|------------|---------------------|
| 30-810-1601 | Sylvac S_Cal EVO SVR Special Caliper | 0-150      | With flat depth rod |



## Sylvac Ultra Light Caliper Mark 4

### Features

- Integrated Bluetooth Smart data transmission
- Adjustable jaws
- Maximum speed of displacement: 2 m/sec
- Internal and external measurement
- This system ensures a perfect guidance and protects the beam against shocks
- Displays the upper and lower tolerances
- Extremely light instrument
- IP67 protection



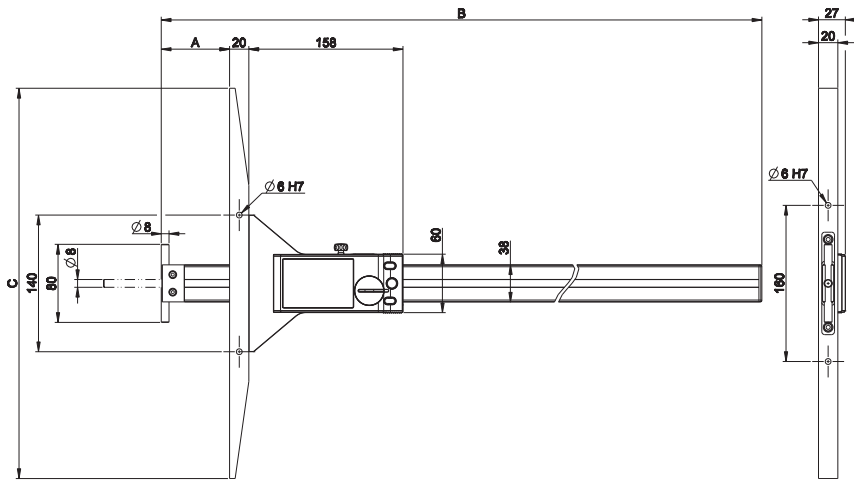
### DIMENSIONS

|        | 30-811-1404 | 30-811-1406 | 30-811-1410 | 30-811-1415 | 30-811-1420 | 30-811-1425 | 30-811-1430 |
|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| A (mm) | 0-478       | 0-683       | 0-1093      | 0-1608      | 0-2123      | 0-2638      | 0-3153      |
| C (mm) | 27-505      | 27-710      | 27-1110     | 27-1635     | 27-2150     | 27-2665     | 27-3180     |
| B (mm) | 796         | 1001        | 1411        | 1926        | 2441        | 2956        | 3471        |

### SYLVAC ULTRA LIGHT CALIPER MARK 4

| Code No     | Range (mm) | Maximum Error (µm) | Repeatability (µm) | Force | Weight |
|-------------|------------|--------------------|--------------------|-------|--------|
| 30-811-1404 | 0-400      | 30                 | 20                 | 5-10N | 1.5kg  |
| 30-811-1406 | 0-600      | 40                 | 20                 | 5-10N | 1.6kg  |
| 30-811-1410 | 0-1000     | 50                 | 20                 | 5-10N | 1.9kg  |
| 30-811-1415 | 0-1500     | 90                 | 20                 | 5-10N | 2.3kg  |
| 30-811-1420 | 0-2000     | 120                | 20                 | 5-10N | 2.6kg  |
| 30-811-1425 | 0-2500     | 150                | 30                 | 5-10N | 2.9kg  |
| 30-811-1430 | 0-3000     | 200                | 30                 | 5-10N | 3.3kg  |

## Sylvac Ultra Light Depth Gauge



Swiss Precision



WiFi

Option



Bluetooth SMART



RS232



IoT READY

### TECHNICAL SPECIFICATION

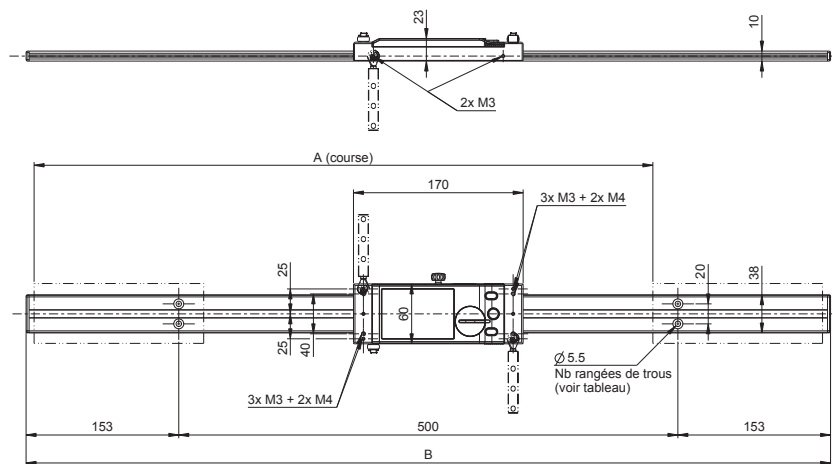
#### SYLVAC ULTRA LIGHT DEPTH GAUGE

| Code No     | Range (mm) | Maximum Error (µm) | Repeatability (µm) |
|-------------|------------|--------------------|--------------------|
| 30-811-6100 | 0-1000     | 100                | 20                 |
| 30-811-6150 | 0-1500     | 130                | 20                 |

#### Dimensions

|        | 30-811-6100 | 30-811-6150 |
|--------|-------------|-------------|
| A (mm) | 0-1030      | 0-1545      |
| C (mm) | 400         | 600         |
| B (mm) | 1242        | 1757        |

## Sylvac Ultra Light Digital Scale



Swiss Precision



WiFi

Option



Bluetooth SMART



RS232



IoT READY

### TECHNICAL SPECIFICATION

#### Dimensions

|        | 30-814-1510 | 30-814-1515 | 30-814-1520 | 30-814-1525 | 30-814-1530 |
|--------|-------------|-------------|-------------|-------------|-------------|
| A (mm) | 0-1120      | 0-1620      | 0-2120      | 0-2620      | 0-3120      |
| B (mm) | 1306        | 1806        | 2306        | 2806        | 3306        |

#### SYLVAC ULTRA LIGHT DIGITAL SCALE

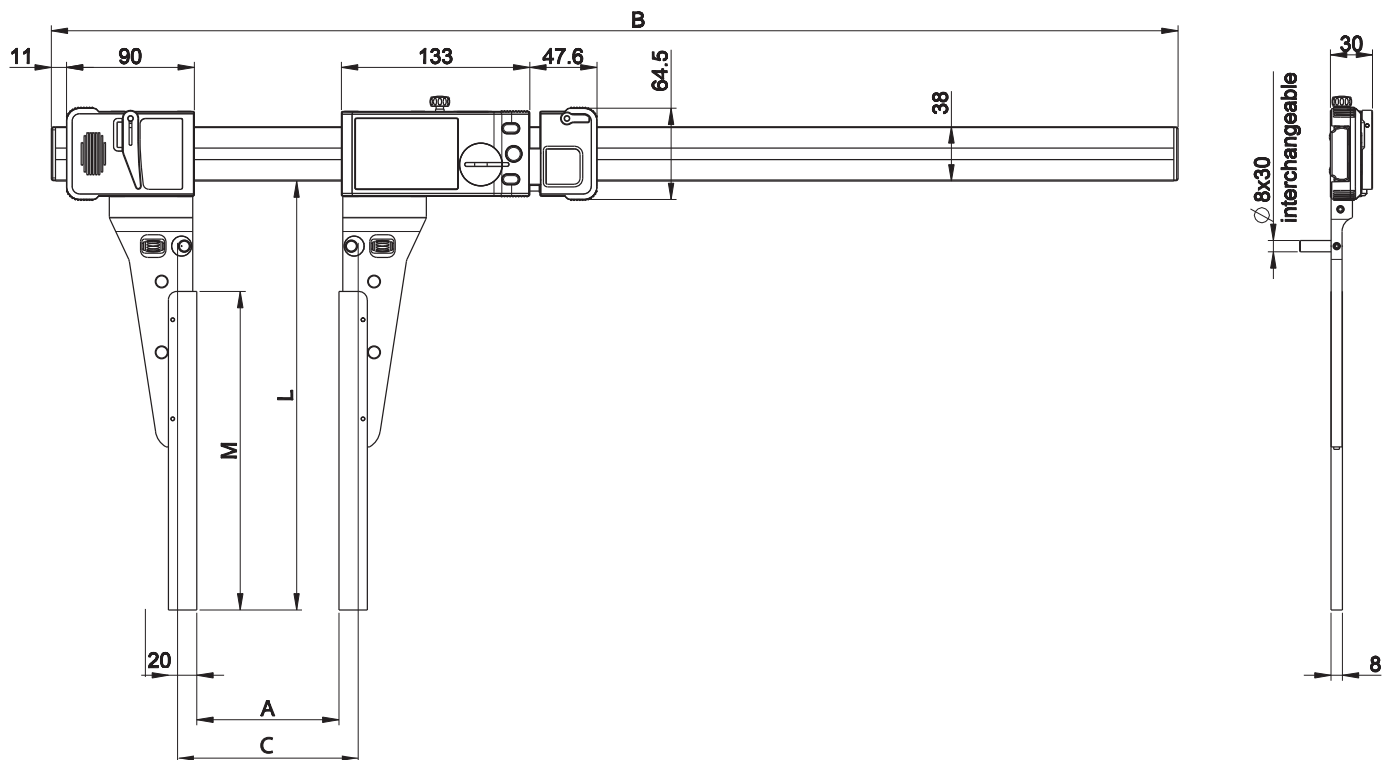
| Code No     | Range (mm) | Maximum Error (µm) | Repeatability (µm) | Weight |
|-------------|------------|--------------------|--------------------|--------|
| 30-814-1510 | 0-1000     | 60                 | 20                 | 1.2kg  |
| 30-814-1515 | 0-1500     | 90                 | 20                 | 1.5kg  |
| 30-814-1520 | 0-2000     | 120                | 20                 | 1.8kg  |
| 30-814-1525 | 0-2500     | 150                | 20                 | 2.2kg  |
| 30-814-1530 | 0-3000     | 200                | 20                 | 2.5kg  |



## Sylvac Ultra Light Caliper Mark 4 - Special Application - Jaw Type A

### Features

- Integrated Bluetooth Smart data transmission
- Mobile jaws
- Maximum speed of displacement: 2 m/sec
- Internal and external measurement
- This system ensures a perfect guidance and protects the beam against shocks
- Displays the upper and lower tolerances
- Extremely light instrument
- IP67 protection



### SPECIAL APPLICATION - JAWS TYPE A

| Code No        | Jaws                         |
|----------------|------------------------------|
| 30-811-2316-99 | L = ≤ 300mm,<br>M = L - 75mm |
| 30-811-2317-99 | L = ≤ 400mm,<br>M = L - 75mm |

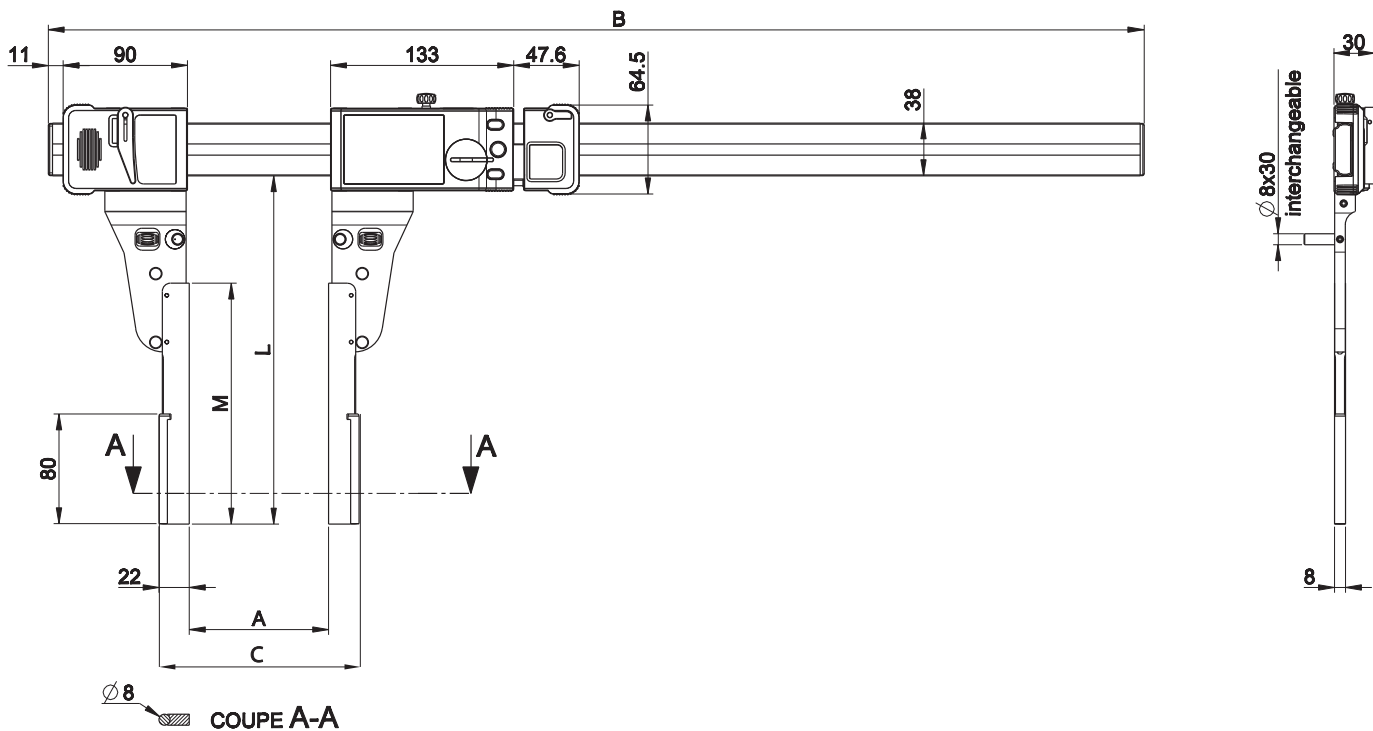
### TECHNICAL SPECIFICATION

| Max error (um) / Repeatability (um) |  |
|-------------------------------------|--|
| UL Specification                    | UL400    UL600    UL1000    UL1500    UL2000    UL2500    UL3000 |
| With jaws 30-811-2316-99            | 40/20    50/20    70/20    130/30    180/40    220/40    320/40  |
| With jaws 30-811-2317-99            | 70/40    80/40    120/40    200/50    300/60    400/70    500/80 |
| Measuring range (mm)                | 400    600    1000    1500    2000    2500    3000               |
| B (mm)                              | 796    1001    1411    1926    2441    2956    3471              |

## Sylvac Ultra Light Caliper Mark 4 - Special Application - Jaws Type C

### Features

- Integrated Bluetooth Smart data transmission
- Mobile jaws
- Maximum speed of displacement: 2 m/sec
- Internal and external measurement
- This system ensures a perfect guidance and protects the beam against shocks
- Displays the upper and lower tolerances
- Extremely light instrument
- IP67 protection



### SPECIAL APPLICATION - Jaws Type C

| Code No        | Jaws                         |
|----------------|------------------------------|
| 30-811-2319-99 | L = ≤ 300mm,<br>M = L - 75mm |

### TECHNICAL SPECIFICATION

| Max error (um) / Repeatability (um) |       |       |        |        |        |        |        |
|-------------------------------------|-------|-------|--------|--------|--------|--------|--------|
| UL Specification                    | UL400 | UL600 | UL1000 | UL1500 | UL2000 | UL2500 | UL3000 |
| With jaws ≤ 200                     | 40/20 | 50/20 | 70/30  | 120/30 | 170/30 | 210/30 | 300/40 |
| With jaws ≤ 300                     | 50/30 | 60/30 | 90/30  | 150/30 | 200/40 | 300/40 | 400/50 |
| Measuring range (mm)                | 400   | 600   | 1000   | 1500   | 2000   | 2500   | 3000   |
| B (mm)                              | 796   | 1001  | 1411   | 1926   | 2441   | 2956   | 3471   |

## Moore & Wright Digital Long Jaw Caliper 110-DLJ Series

### Features

- Standard: Factory Standard
- Digital functions: mm / inch conversion, on/off, zero-setting, ABS / zero, battery low indication
- Heavy duty design
- Long jaws with internal measuring nibs
- Ground micro-lapped measuring surfaces
- Thumb wheel for fine adjustment



### DIGITAL LONG JAW CALIPER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Jaws | Internal Nibs |
|-------------|------------|--------------|-----------------|-------------------|---------------|------|---------------|
| MW110-15DLJ | 0-150      | 0-6          | 0.01            | 0.0005            | ±0.03         | 60mm | 10 x 5mm      |

## Moore & Wright Large Digital Workshop Caliper 150 Series

### Features

- Standard: Factory Standard
- Digital functions: mm / inch conversion, on/off, data-output, zero-setting, ABS / zero, battery low indication
- Long jaws with internal measuring nibs
- Ground micro-lapped measuring surfaces
- Thumb wheel for fine adjustment



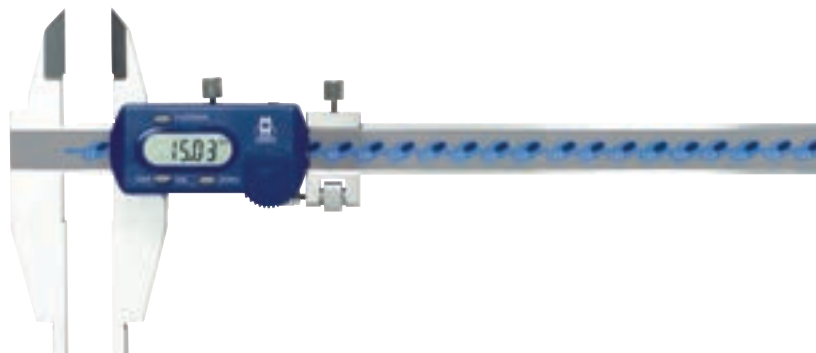
### LARGE DIGITAL WORKSHOP CALIPER

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Jaws  | Internal Nibs |
|-------------|------------|--------------|-----------------|-------------------|---------------|-------|---------------|
| MW150-50DDL | 0-500      | 0-20         | 0.01            | 0.0005            | ±0.05         | 100mm | 18 x 10mm     |
| MW150-60DDL | 0-600      | 0-24         | 0.01            | 0.0005            | ±0.05         | 100mm | 24 x 10mm     |
| MW150-75DDL | 0-1000     | 0-40         | 0.01            | 0.0005            | ±0.07         | 125mm | 24 x 10mm     |

## Moore & Wright Heavy Duty Digital Workshop Caliper 160-D Series

### Features

- Standard: Factory standard
- Heavy duty design
- Digital functions: mm / inch conversion, on/off, zero-setting, ABS / zero, battery low indication
- Internal measuring nibs on external jaws and knife edge external jaws
- Ground micro-lapped measuring surfaces
- Thumb wheel for fine adjustment



### HEAVY DUTY DIGITAL WORKSHOP CALIPER

| Code No   | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Jaws | External Knife Edge | Internal Nibs |
|-----------|------------|--------------|-----------------|-------------------|---------------|------|---------------------|---------------|
| MW160-20D | 0-200      | 0-8          | 0.01            | 0.0005            | ±0.03         | 60mm | 12mm                | 33.5 x 5mm    |
| MW160-30D | 0-300      | 0-12         | 0.01            | 0.0005            | ±0.04         | 60mm | 12mm                | 38 x 5mm      |

## Moore & Wright Long Jaw Heavy Duty Digital Workshop Caliper 160-D Series

### Features

- Standard: Factory standard
- Heavy duty design
- Internal measuring nibs on external jaws and knife edge external jaws
- Digital functions: mm / inch conversion, on/off, zero-setting, ABS / zero, battery low indication
- 'Soft keys' for maximum operating comfort
- Ground micro-lapped measuring surfaces
- Thumb wheel for fine adjustment



### LONG JAW HEAVY DUTY DIGITAL WORKSHOP CALIPER

| Code No   | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Jaws  | External Knife Edge | Internal Nibs |
|-----------|------------|--------------|-----------------|-------------------|-------|---------------------|---------------|
| MW160-50D | 0-500      | 0-20         | 0.01            | 0.0005            | 150mm | 18mm                | 50 x 10mm     |

## Internal / External Calipers

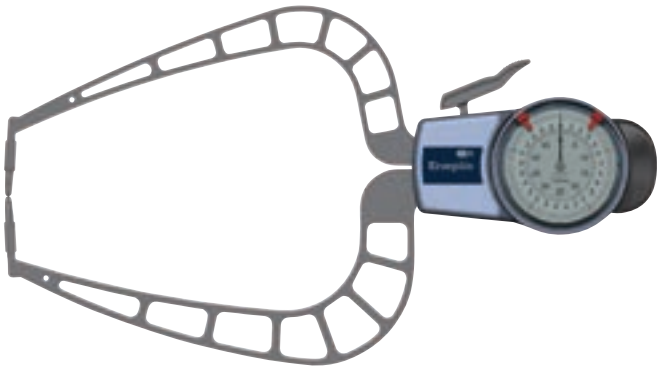
### External



12-D110



12-D220



12-D450



12-C220

### Internal



12-G010

#### METRIC - EXTERNAL CALIPERS

| Code No | Range (mm) | Resolution (mm) | Leg Length (mm) | Groove Depth (mm) |
|---------|------------|-----------------|-----------------|-------------------|
| 12-D110 | 0-10       | 0.005           | 35              | 12                |
| 12-D220 | 0-20       | 0.01            | 81              | 12                |
| 12-D450 | 0.50       | 0.05            | 167             | 12                |

#### IMPERIAL - EXTERNAL CALIPERS

| Code No | Range (inch) | Resolution (inch) | Leg Length (inch) | Groove Depth (inch) |
|---------|--------------|-------------------|-------------------|---------------------|
| 12-D610 | 0-0.4        | 0.0002            | 1.37              | 0.47                |
| 12-D720 | 0-0.8        | 0.0005            | 3.2               | 0.47                |
| 12-D950 | 0-2          | 0.001             | 6.57              | 0.47                |

\* See Data sheet for full detail

Special application or other ranges available upon request.

Data Transmission cables available on request.

These calipers are supplied as standard in cardboard cartons.

Wooden cases are available upon request at extra cost.

#### INTERNAL CALIPERS

| Code No    | Description  | Range (mm) | Resolution (mm) |
|------------|--|------------|-----------------|
| 12-G005    | Digital Internal Caliper Inductive (supplied with 12-8006-20 charging station) | 5-20       | 0.001           |
| 12-G010    | Digital Internal Caliper Inductive (supplied with 12-8006-20 charging station) | 10-25      | 0.001           |
| 12-0682-60 | USB Bluetooth V4.0 Dongle  |            |                 |
| 12-8006-16 | Bluetooth Interface Adapter for 12-G005 + 12-G010                              |            |                 |
| 12-8006-20 | Charging Station with Power Supply   |            |                 |

Digital models have rechargeable lithium polymer batteries, recharged using the inductive charging station supplied.

## Internal / External Calipers

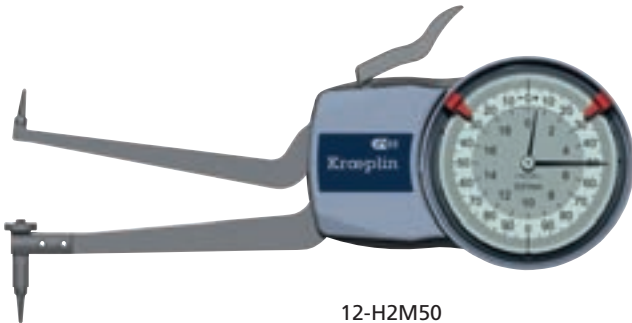
### Internal



12-H105



12-H210



12-H2M50



12-G220

### INTERNAL CALIPERS

| Code No    | Description  | Range (mm) | Resolution (mm) |
|------------|--|------------|-----------------|
| 12-G005    | Digital Internal Caliper Inductive (supplied with 12-8006-20 charging station) | 5-20       | 0.001           |
| 12-G010    | Digital Internal Caliper Inductive (supplied with 12-8006-20 charging station) | 10-25      | 0.001           |
| 12-0682-60 | USB Bluetooth V4.0 Dongle  |            |                 |

Digital models have rechargeable lithium polymer batteries, recharged using the inductive charging station supplied.

### METRIC - INTERNAL CALIPERS

| Code No   | Range (mm) | Resolution (mm) | Leg Length (mm) | Groove Depth (mm) |
|-----------|------------|-----------------|-----------------|-------------------|
| 12-H105   | 5-15       | 0.005           | 35              | 2.5               |
| 12-H210   | 10-30      | 0.01            | 85              | 5.4               |
| 12-H220   | 20-40      | 0.01            | 85              | 7.3               |
| 12-H230   | 30-50      | 0.01            | 85              | 7.3               |
| 12-H240   | 40-60      | 0.01            | 85              | 8.5               |
| 12-H250   | 50-70      | 0.01            | 85              | 8.5               |
| 12-H2M50  | 50-100**   | 0.01            | 85              | 8.5               |
| 12-H2M90  | 90-140**   | 0.01            | 85              | 8.5               |
| 12-H2M130 | 130-180**  | 0.01            | 85              | 8.5               |

Notes: Digital models have rechargeable lithium polymer batteries, recharged using the inductive charging station supplied

\* See Data sheet for full detail

\*\* Using interchangeable anvils

Digital versions available upon request

These calipers are supplied as standard in cardboard cartons.

Wooden cases are available upon request at extra cost

### IMPERIAL - INTERNAL CALIPERS

| Code No   | Range (inch) | Resolution (inch) | Leg Length (inch) | Groove Depth (inch) |
|-----------|--------------|-------------------|-------------------|---------------------|
| 12-H602   | 0.1-0.5      | 0.0002            | 1.37              | 0.04                |
| 12-H710   | 0.4-1.2      | 0.0005            | 3.3               | 0.21                |
| 12-H720   | 0.8-1.6      | 0.0005            | 3.3               | 0.29                |
| 12-H730   | 1.2-2.0      | 0.0005            | 3.3               | 0.29                |
| 12-H740   | 1.6-2.4      | 0.0005            | 3.3               | 0.33                |
| 12-H750   | 2.0-2.8      | 0.0005            | 3.3               | 0.33                |
| 12-H7M50  | 2.0-4.0**    | 0.0005            | 3.3               | 0.33                |
| 12-H7M90  | 3.6-5.6**    | 0.0005            | 3.3               | 0.33                |
| 12-H7M130 | 5.2-7.2**    | 0.0005            | 3.3               | 0.33                |

\* See Data sheet for full detail

\*\* Using interchangeable anvils

Digital versions available upon request

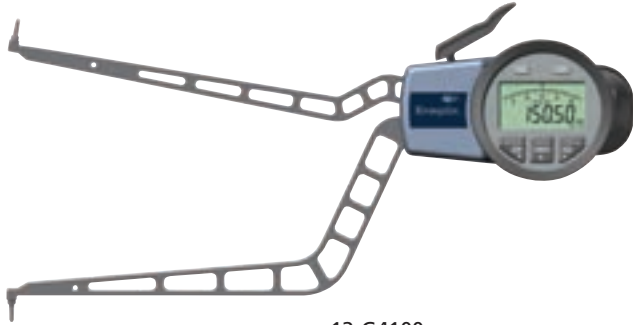
These calipers are supplied as standard in cardboard cartons.

Wooden cases are available upon request at extra cost



## Internal / External Calipers - Applications

Kroeplin internal and external calipers can be used for many special applications. Below are just a few examples; contact our Sales Team for further options.



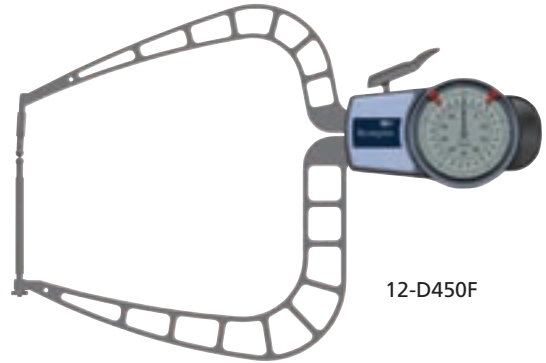
12-G4100



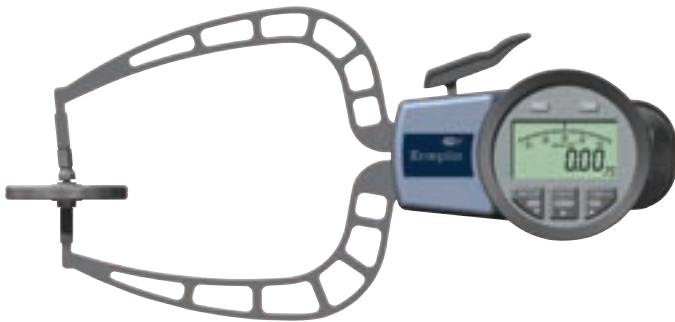
12-H870



12-C8100



12-D450F



12-C330T



12-POCO2T

### CALIPER APPLICATIONS

| Code No    | Description          | Range       | Code No      | Description                            | Range       |
|------------|----------------------|-------------|--------------|--|-------------|
| 12-G4100   | Internal Measurement | up to 120mm | 12-D450F     | External Measurement                   | up to 200mm |
| 12-G850    | Internal Measurement | up to 120mm | 12-OD60100BJ | External Measurement                   | up to 200mm |
| 12-H4100   | Internal Measurement | up to 120mm | 12-C110T     | Foamed Materials and Foils Measurement | up to 100mm |
| 12-H870    | Internal Measurement | up to 120mm | 12-C330T     | Foamed Materials and Foils Measurement | up to 100mm |
| 12-ID80200 | Internal Measurement | up to 120mm | 12-D220T     | Foamed Materials and Foils Measurement | up to 100mm |
| 12-C450    | External Measurement | up to 200mm | 12-D450T     | Foamed Materials and Foils Measurement | up to 100mm |
| 12-C8100   | External Measurement | up to 200mm | 12-POCO2T    | Foamed Materials and Foils Measurement | up to 100mm |

## Moore & Wright Internal Digital Caliper

Incorporating advanced electronics, these advanced gauges have the benefit of a large digital readout and an auto adjusting analogue display. These gauges are ideally suited for measuring bores, internal grooves and other hard to reach inside dimensions.



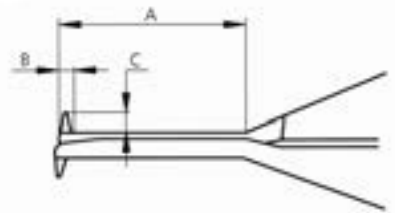
### Features

- Standard: Factory
- For measuring bores, internal grooves and other hard to reach inside dimensions
- Large LCD display
- Digital functions: mm / inch conversion, on/off, zero-setting, ABS / INC, preset capability
- Auto adjusting analogue display
- 0.005mm or 0.0002" resolution



### INTERNAL DIGITAL CALIPER SPECIFICATION

| Code No    | Range (mm) | Range (inch) | Accuracy |          |          | Contact Radius |          |
|------------|------------|--------------|----------|----------|----------|----------------|----------|
|            |            |              | (mm)     | Dimn - A | Dimn - B |                | Dimn - C |
| MW432-01DC | 5-15       | 0.2-0.6      | ±0.02    | 20.0     | 1.0      | 1.5            | 0.3mm    |
| MW432-02DC | 10-20      | 0.4-0.8      | ±0.02    | 25.0     | 1.5      | 3.0            | 0.3mm    |
| MW432-03DC | 20-30      | 0.8-1.2      | ±0.02    | 30.0     | 2.0      | 6.5            | 0.5mm    |
| MW432-04DC | 30-40      | 1.2-1.6      | ±0.02    | 30.0     | 2.5      | 9.0            | 0.5mm    |
| MW432-05DC | 40-50      | 1.6-2.0      | ±0.02    | 30.0     | 2.5      | 9.0            | 0.5mm    |



## Moore & Wright External Digital Caliper

Incorporating advanced electronics, these advanced gauges have the benefit of a large digital readout and an auto adjusting analogue display. These gauges are ideally suited for measuring external grooves and other hard to reach outside dimensions.



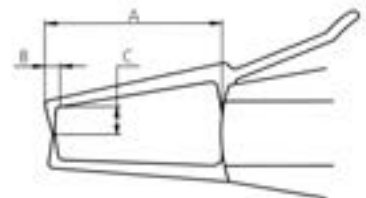
### Features

- Standard: Factory
- For measuring bores, internal grooves and other hard to reach inside dimensions
- Large LCD display
- Digital functions: mm / inch conversion, on/off, zero-setting, ABS / INC, preset capability
- Auto adjusting analogue display
- 0.005mm or 0.0002" resolution



### EXTERNAL DIGITAL CALIPER SPECIFICATION

| Code No    | Range (mm) | Range (inch) | Accuracy |          |          | Contact Radius |          |
|------------|------------|--------------|----------|----------|----------|----------------|----------|
|            |            |              | (mm)     | Dimn - A | Dimn - B |                | Dimn - C |
| MW442-01DC | 0-10       | 0.2-0.4      | ±0.02    | 40.0     | 3.0      | 8.0            | 0.5mm    |
| MW442-02DC | 10-20      | 0.4-0.8      | ±0.02    | 40.0     | 3.0      | 8.0            | 0.5mm    |
| MW442-03DC | 20-30      | 0.8-1.2      | ±0.02    | 40.0     | 3.0      | 8.0            | 0.5mm    |
| MW442-04DC | 30-40      | 1.2-1.6      | ±0.02    | 40.0     | 3.0      | 8.0            | 0.5mm    |
| MW442-05DC | 40-50      | 1.6-2.0      | ±0.02    | 40.0     | 3.0      | 8.0            | 0.5mm    |





## Baty Major Calipers

An extensive range of dial caliper gauges for measuring external dimensions.

These instruments can be used as direct reading instruments for quick checking of components such as castings prior to machining or for the checking of wall thickness in difficult to measure components such as valve or pump bodies.

Alternatively they can be used as a comparative gauge when set to a measuring standard and the indicator zeroed. When used as a comparative gauge it is generally recognised that a higher standard of accuracy is achieved.

Every major caliper comes fitted with an indicator. These indicators are specially adapted for use on major calipers and are calibrated along with the instrument. Under no circumstances should indicators be interchanged between instruments.

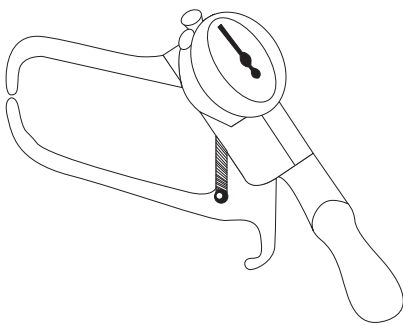
For finer reading options, please contact our sales team.



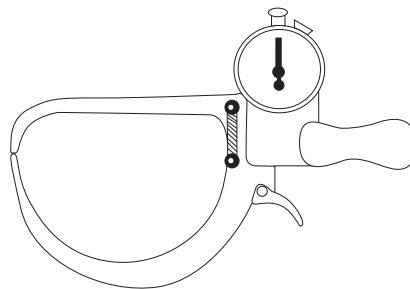
725-M

### Features

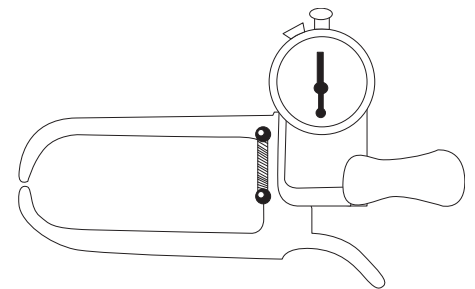
Custom frame designs available for specific applications



Series 705-710



Series 725-730



Series 800-802

### BATY MAJOR CALIPERS

| Code No | Application Range (mm) | Application Range (inch) | Range (mm) | Range (inch) | Length (mm) | Length (inch) |
|---------|------------------------|--------------------------|------------|--------------|-------------|---------------|
| 705-I   |                        | 0.010                    |            | 0-2          |             | 6             |
| 710-M   | 0.1                    |                          | 0-50       |              | 254         |               |
| 710-I   |                        | 0.010                    |            | 0-2          |             | 10            |
| 725-M   | 0.1                    |                          | 0-50       |              | 150         |               |
| 725-I   |                        | 0.010                    |            | 0-2          |             | 6             |
| 730-M   | 0.1                    |                          | 0-50       |              | 254         |               |
| 730-I   |                        | 0.010                    |            | 0-2          |             | 10            |
| 800-M   | 0.1                    |                          | 0-50       |              | 150         |               |
| 800-I   |                        | 0.010                    |            | 0-2          |             | 6             |
| 802-M   | 0.1                    |                          | 0-50       |              | 254         |               |

## Baty Dial Thickness Gauges

Baty dial thickness gauges are direct reading instruments for quick and accurate measurement of rod, strip or sheet material.

### Features

- All standard instruments are supplied with 10mm (0.39") diameter flat contacts
- The well balanced frame and handgrip make these thickness gauges very easy to use for the measurement of sheet materials
- The range of throat depths permit measurements to be made across the sheet.  
The lifting lever and springloaded spindle ensures controlled contact pressure on the work
- Larger anvils available (price on application)
- Range per revolution: 1mm / 0.1"



FPMP-1



FTM-1

### BATY DIAL THICKNESS GAUGES

| Code No | Indicator Range (mm) | Indicator Range (inch) | Capacity (mm) | Capacity (inch) | Graduation   | Depth (mm) | Depth (inch) |
|---------|----------------------|------------------------|---------------|-----------------|--------------|------------|--------------|
| 1353    | 0.01                 |                        | 10            |                 | Dial - 0-100 | 100        |              |
| 1356    | 0.01                 |                        | 25            |                 | Dial - 0-100 | 100        |              |
| 1359    | 0.01                 |                        | 25            |                 | Dial - 0-100 | 200        |              |
| 13512   | 0.01                 |                        | 25            |                 | Dial - 0-100 | 300        |              |
| 1351    |                      | 0.001                  |               | 0.5             | Dial - 0-10  |            | 4            |
| 1354    |                      | 0.001                  |               | 1               | Dial - 0-10  |            | 4            |
| 1357    |                      | 0.001                  |               | 1               | Dial - 0-10  |            | 8            |
| 13510   |                      | 0.001                  |               | 1               | Dial - 0-10  |            | 12           |

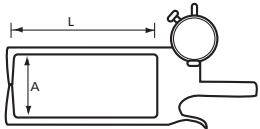
### BATY DIAL THICKNESS GAUGES

| Code No | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Capacity (mm) | Capacity (inch) | Graduation   | Depth (mm) | Depth (inch) |
|---------|------------|--------------|-----------------|-------------------|---------------|-----------------|--------------|------------|--------------|
| FTM-1   | 10         |              | 0.01            |                   | 10            |                 | Dial - 0-100 | 30         |              |
| FTM-5   | 10         |              | 0.01            |                   | 25            |                 | Dial - 0-100 | 50         |              |
| FPMP-1  | 10         |              | 0.1             |                   | 25            |                 | Dial - 0-10  | 50         |              |
| FTI-1   |            | 0.1          |                 | 0.001             |               | 0.5             | Dial - 0-100 |            | 1.2          |
| FTI-5   |            | 0.1          |                 | 0.001             |               | 1               | Dial - 0-100 |            | 2            |



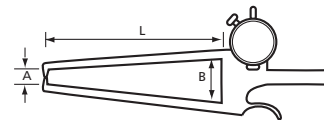
## Bowers TGM Analogue Major Calipers

The major versions of Bowers TGM calipers include hard wearing carbide contact points as standard. As with other Bowers TGM products, non-standard applications can be quoted against a component drawing.



### Model TGIC

External caliper allowing clearance over such obstructions as flanges, pipes etc.



### Model TGEC

External caliper for use where access is limited.

#### EXTERNAL CALIPERS - METRIC

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

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

#### EXTERNAL CALIPERS - IMPERIAL

| Code No | Dimn - A | Dimn - B | Length (inch) | Resolution (inch) | Range (inch) |
|---------|----------|----------|---------------|-------------------|--------------|
| TGIC061 | 55       | -        | 6             | 0.001             | 0-2          |
| TGEC061 | 25       | 55       | 6             | 0.001             | 0-2          |
| TGIC062 | 55       | -        | 6             | 0.01              | 0-2          |
| TGEC062 | 25       | 55       | 6             | 0.01              | 0-2          |
| TGIC101 | 55       | -        | 10            | 0.001             | 0-2          |
| TGEC101 | 25       | 55       | 10            | 0.001             | 0-2          |
| TGIC102 | 55       | -        | 10            | 0.01              | 0-2          |
| TGEC102 | 25       | 55       | 10            | 0.01              | 0-2          |

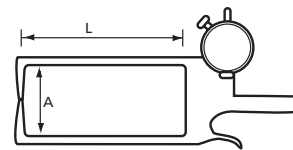
Accuracy: Linear accuracy +/- 3 division over the full range.  
Repeatability = +/- 1 division

## Bowers TGM Digital Major Calipers

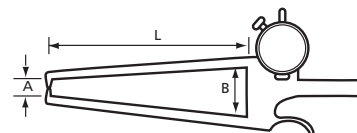
Digital Major Calipers have a direct Inch/Metric indicator with switchable resolution 0.01mm / 0.0005". They have zero and preset facility for both absolute and comparative measurement.

### 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



### Model TGIC



### Model TGEC

#### EXTERNAL SPECIFICATION

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

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

## Baty Plunger Dial Indicators - FM Series

The Baty range of Plunger Dial Indicators includes a model for all applications. Building on decades of experience we offer standard indicators in most popular sizes.

### Features

All units are supplied with:

- 8mm stems
- M2.5 threads
- Offset lug backs as standard



D5



FM-1



FM-3



FM-302

### GROUP 1 - 42MM NOMINAL DIAMETER

| Code No | Dial Reading (mm) | Range (mm) | Description           | Graduation | Note              |
|---------|-------------------|------------|-----------------------|------------|-------------------|
| D5      | 0.01              | 8          | Range Per Rev - 1.0mm | 0-100      | Standard: Factory |

### GROUP 2 - 57MM NOMINAL DIAMETER

| Code No | Dial Reading (mm) | Range (mm) | Description            | Graduation    | Note                 |
|---------|-------------------|------------|------------------------|---------------|----------------------|
| FM-1    | 0.01              | 10         | Range Per Rev - 1.0mm  | 0-50-0        | Standard: DIN 878    |
| FM-2    | 0.01              | 10         | Range Per Rev - 1.0mm  | 0-50-0        | Standard: DIN 878    |
| FM-3    | 0.01              | 25         | Range Per Rev - 1.0mm  | 0-100         | Standard: Factory    |
| FM-4    | 0.002             | 5          | Range Per Rev - 0.2mm  | 0-20/0-10-0   | Standard: Factory    |
| FM-8    | 0.002             | 12         | Range Per Rev - 0.2mm  | 0-10-0/0-20   | Standard: Factory    |
| FM-5    | 0.001             | 1          | Range Per Rev - 0.2mm  | 0-200/0-100-0 | Standard: JIS B 7503 |
| FM-6    | 0.1               | 10         | Range Per Rev - 10.0mm | 0-10          | Standard: Factory    |
| FM-7    | 0.1               | 25         | Range Per Rev - 10.0mm | 0-10          | Standard: Factory    |
| FM-CSR  | 0.01              | 0.8        | Range Per Rev - 0.8mm  | 40-0-40       | Standard: DIN 878    |

### GROUP 3 - 76MM NOMINAL DIAMETER

| Code No | Dial Reading (mm) | Range (mm) | Description           | Graduation | Note              |
|---------|-------------------|------------|-----------------------|------------|-------------------|
| FM-302  | 0.01              | 50         | Range Per Rev - 1.0mm | 0-100      | Standard: Factory |

See p116 for alternative contact points and accessories

## Plunger Dial Indicators - FI Series

The Baty range of Plunger Dial Indicators includes a model for all applications. Building on decades of experience we offer standard indicators in most popular sizes.

Non-standard configurations are also available on request.

### Features

All units are supplied with:

- 8mm stems
- M2.5 threads
- Offset lug backs as standard



D1



FI-3



FI-6



FI-301

### GROUP 1 - 42MM NOMINAL DIAMETER

| Code No | Dial Reading (inch) | Range (inch) | Description          | Graduation | Note              |
|---------|---------------------|--------------|----------------------|------------|-------------------|
| D1      | 0.001               | 0.25         | Range Per Rev - 0.1" | 0-100      | Standard: Factory |

### GROUP 2 - 2 1/4" NOMINAL DIAMETER

| Code No | Dial Reading (inch) | Range (inch) | Description           | Graduation   | Note                     |
|---------|---------------------|--------------|-----------------------|--------------|--------------------------|
| FI-1    | 0.001               | 0.5          | Range Per Rev - 0.1"  | 0-50-0       | Standard: ASME B89.1.10M |
| FI-2    | 0.001               | 0.5          | Range Per Rev - 0.1"  | 0-100        | Standard: ASME B89.1.10M |
| FI-3    | 0.001               | 1            | Range Per Rev - 0.1"  | 0-100        | Standard: ASME B89.1.10M |
| FI-4    | 0.0005              | 0.5          | Range Per Rev - 0.05" | 0-50/0-25-0  | Standard: ASME B89.1.10M |
| FI-5    | 0.0001              | 0.2          | Range Per Rev - 0.1"  | 0-100/0-50-0 | Standard: ASME B89.1.10M |
| FI-6    | 0.0001              | 0.5          | Range Per Rev - 0.1"  | 0-100/0-50-0 | Standard: Factory        |

### GROUP 3 - 3" NOMINAL DIAMETER

| Code No | Dial Reading (inch) | Range (inch) | Description          | Graduation | Note                     |
|---------|---------------------|--------------|----------------------|------------|--------------------------|
| FI-301  | 0.001               | 2            | Range per Rev - 0.1" | 0-100      | Standard: ASME B89.1.10M |

Linear accuracy +/- 3 divisions over full range. Repeatability is +/- 1 division. See p116 for alternative contact points and accessories

## Moore & Wright Dial Indicator 400 Series

MW400-02



MW400-03



MW400-04



MW400-05



MW400-06



MW400-06B



MW400-08



MW400-09



DIP223M



### Features

- Standard: DIN 878
- Satin-chromed body
- With tungsten carbide measuring contact
- With double dial indicator for measuring mm stroke
- Shockproof
- Micron versions are jewelled
- Adjustable bezel with stop screw
- Packed in foam box

### DIAL INDICATOR

| Code No   | Range (mm) | Resolution (mm) | Accuracy (mm) | Dial Diameter | Description            |
|-----------|------------|-----------------|---------------|---------------|------------------------|
| MW400-01  | 0-1.0      | 0.001           | ±0.004        | 58mm          | Flat back              |
| MW400-02  | 0-1.0      | 0.001           | ±0.004        | 58mm          | Lug back               |
| MW400-03  | 0-3.0      | 0.01            | ±0.012        | 42mm          | Lug back and flat back |
| MW400-04  | 0-5.0      | 0.01            | ±0.014        | 42mm          | Lug back               |
| MW400-05  | 0-10.0     | 0.01            | ±0.016        | 58mm          | Flat back              |
| MW400-06  | 0-10.0     | 0.01            | ±0.016        | 58mm          | Lug back               |
| MW400-06B | 0-10.0     | 0.01            | ±0.02         | 54mm          | Waterproof             |
| MW400-08  | 0-30.0     | 0.01            | ±0.035        | 58mm          | Lug back               |
| MW400-09  | 0-50.0     | 0.01            | ±0.04         | 58mm          | Lug back               |

### METRIC: DIAL INDICATORS, PLUNGER

| Code No  | Range | Graduation | One Revolution of Pointer | Scale Reading | Bezel Diameter | Stem Diameter | Lug Back No. |
|----------|-------|------------|---------------------------|---------------|----------------|---------------|--------------|
| DIP223M† | 10    | 0.01       | 1mm                       | 0-100         | 58mm           | 8mm h6        | DIS848X      |

\* Waterproof † Shockproof

See p116 for alternative contact points and accessories

## Moore & Wright Dial Indicator 401 Series

### Features

- Standard: ANSI B89.1.10
- Aluminium body
- With Tungsten carbide measuring tip
- Adjustable bezel with stop screw
- Tolerance indicators
- Lug back (flat back is optional)



MW401-01



MW401-02



MW401-05

### DIAL INDICATOR

| Code No  | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Bezel Diameter | Stem Diameter | Description |
|----------|------------|--------------|-----------------|-------------------|---------------|----------------|---------------|-------------|
| MW401-01 | -          | 0-0.5        | -               | 0.001             | ±0.02         | 58mm           | 3/8"          | Lug back    |
| MW401-02 | -          | 0-1.0        | -               | 0.001             | ±0.035        | 58mm           | 3/8"          | Lug back    |
| MW401-05 | 0-25.0     |              | 0.01            | 0.001             | ±0.035        | 60mm           | 8mm           | Lug back    |

## Moore & Wright Dial Test Indicator 420 Series

### Features

- Standard: ANSI B89.1.10, DIN2270
- Automatic reversal of measuring direction
- High precision fully jewelled bearings
- Rotating dial
- Two dovetail clamps
- Carbide points
- Styli length: 12mm / 1/2", M1.4 thread



### METRIC: DIAL TEST INDICATOR 420 SERIES

| Code No  | Range (mm) | Graduation (mm) | Dial Reading | Dial Diameter (mm) | Accuracy (mm) |
|----------|------------|-----------------|--------------|--------------------|---------------|
| MW420-03 | 0.8        | 0.01            | 0-40-0       | 25                 | 0.013         |
| MW420-04 | 0.8        | 0.01            | 0-40-0       | 37                 | 0.013         |

### IMPERIAL: DIAL TEST INDICATOR 420 SERIES

| Code No   | Range (inch) | Graduation (inch) | Dial Reading | Dial Diameter (inch) | Accuracy (inch) |
|-----------|--------------|-------------------|--------------|----------------------|-----------------|
| MW420-03I | 0.030        | 0.0005            | 0-15-0       | 1                    | 0.0005          |
| MW420-04I | 0.030        | 0.0005            | 0-15-0       | 1 1/2                | 0.0005          |

See p116 for alternative contact points and accessories

## Moore & Wright Dial Test Indicator 421 Series

### Features

- Standard: ANSI B89.1.10, DIN2270
- Automatic reversal of measuring direction
- High precision fully jewelled bearings
- Rotating dial
- Two dovetail clamps
- Carbide points
- Styli length: 12mm / 1/2"



### METRIC: DIAL TEST INDICATOR 421 SERIES

| Code No  | Range (mm) | Accuracy (mm) | Graduation (mm) | Dial Reading | Dial Diameter (mm) |
|----------|------------|---------------|-----------------|--------------|--------------------|
| MW421-01 | 0.2        | 0.004         | 0.002           | 0-100-0      | 25                 |
| MW421-02 | 0.2        | 0.004         | 0.002           | 0-100-0      | 37                 |

### IMPERIAL: DIAL TEST INDICATOR 421 SERIES

| Code No   | Range (inch) | Accuracy (inch) | Graduation (inch) | Dial Reading | Dial Diameter (inch) |
|-----------|--------------|-----------------|-------------------|--------------|----------------------|
| MW421-011 | 0.008        | 0.0002          | 0.0001            | 0-4-0        | 1                    |
| MW421-021 | 0.008        | 0.0002          | 0.0001            | 0-4-0        | 1 1/2                |

See p116 for alternative contact points and accessories

## Moore & Wright Dial Test Indicator 422 Series

### Features

- Standard: ANSI B89.1.10, DIN2270
- Long range - twice the range of most indicators
- Automatic reversal of measuring direction
- High precision fully jewelled bearings
- Rotating dial
- Two dovetail clamps
- Carbide points
- Styli length: 12mm / 1/2"



### METRIC: DIAL TEST INDICATOR 422 SERIES

| Code No  | Range (mm) | Accuracy (mm) | Graduation (mm) | Dial Reading | Dial Diameter (mm) |
|----------|------------|---------------|-----------------|--------------|--------------------|
| MW422-01 | 1.6        | 0.013         | 0.01            | 0-40-0       | 37                 |

### IMPERIAL: DIAL TEST INDICATOR 422 SERIES

| Code No   | Range (inch) | Accuracy (inch) | Graduation (inch) | Dial Reading | Dial Diameter (inch) |
|-----------|--------------|-----------------|-------------------|--------------|----------------------|
| MW422-011 | 0.060        | 0.0005          | 0.0005            | 0-15-0       | 1 1/2                |

See p116 for alternative contact points and accessories





## Baty Lever Type Dial Test Indicators

The Baty HL series of lever-type dial test indicators are top quality, Swiss-made precision instruments. Low inertia jewelled movements and rugged construction make them suitable for universal applications in the workshop and inspection departments.

### Features

- High sensitivity, repeatability and accuracy
- Conforms to DIN 2270
- Anti-magnetic
- Automatic reverse action stylus – hand always rotates clockwise
- Adjustable bezel for zeroing
- Precision ball bearing mounted, interchangeable carbide point swivels through 240°
- M1.4 thread

### Baty HL indicators are supplied with:

- 2mm diameter contact point – fitted
- Contact point key
- Dovetail stem 8mm/H7
- Tough plastic case

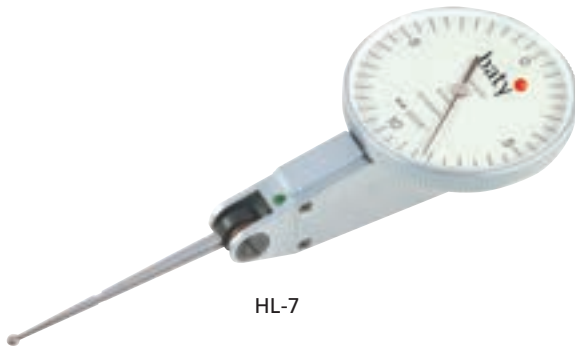
Note: Models HL3 and HL7 are not supplied with additional contact points.



HL-3



HL-4



HL-7



HL-9

### BATY LEVER TYPE DIAL TEST INDICATORS - METRIC

| Code No | Resolution (mm) | Range (mm) | Dial Diameter (mm) | Length (mm) | Dial Reading (mm) |
|---------|-----------------|------------|--------------------|-------------|-------------------|
| HL-1    | 0.01            | 0.8        | 27                 | 12          | 0-40-0            |
| HL-2    | 0.01            | 0.8        | 37                 | 12          | 0-40-0            |
| HL-3    | 0.01            | 0.5        | 37                 | 36          | 0-25-0            |
| HL-4    | 0.002           | 0.2        | 37                 | 12          | 0-100-0           |

### BATY LEVER TYPE DIAL TEST INDICATOR - IMPERIAL

| Code No | Resolution (inch) | Range (inch) | Dial Diameter (inch) | Length (inch) | Dial Reading (inch) |
|---------|-------------------|--------------|----------------------|---------------|---------------------|
| HL-5    | 0.0005            | 0.03         | 1                    | 0.5           | 0-15-0              |
| HL-6    | 0.0005            | 0.03         | 1 1/2                | 0.5           | 0-15-0              |
| HL-7    | 0.0005            | 0.02         | 1 1/2                | 1.437         | 0-10-0              |
| HL-8    | 0.0001            | 0.008        | 1 1/2                | 0.5           | 0-4-0               |
| HL-9    | 0.0001            | 0.008        | 1                    | 0.5           | 0-4-0               |

See p116 for alternative contact points and accessories

## Moore & Wright Dial Test Indicator MW420 Series Accessories



Universal Holder



Contact Points



Dovetail Stem

### DIAL TEST INDICATOR ACCESSORIES

| Code No   | Description                                 |
|-----------|---|
| MW-Z40010 | Universal Holder                            |
| MW-Z40012 | Contact point 12mm length, 1mm steel ball   |
| MW-Z40013 | Contact point 12mm length, 2mm carbide ball |
| MW-Z40014 | Contact point 12mm length, 3mm carbide ball |

| Code No   | Description                                    |
|-----------|--|
| MW-Z40016 | Contact point 1/2" length, 0.040" steel ball   |
| MW-Z40018 | Contact point 1/2" length, 0.120" carbide ball |
| MW-Z40020 | Dovetail stem 4mm clamping diameter            |
| MW-Z40022 | Dovetail stem 8mm clamping diameter            |

## Baty Lever Type Dial Test Indicator Accessories



945-LI



944



323

### BATY LEVER TYPE DIAL TEST INDICATOR ACCESSORIES

| Code No | Description  |
|---------|--|
| 911-G   | Dovetail Stem 1/4"   |
| 912-G   | Dovetail Stem 5.5mm  |
| 913     | Dovetail Stem 8mm  |
| 914     | Dovetail Stem 4mm  |
| 915     | Holding Bar 76 x 12 x 6mm x Ø 5.5mm                              |
| 916     | Holding Bar Round 8mm x 100mm long x Ø 5.5mm                     |
| 917     | Dovetail Swivel Clamp Ø 5.5mm and Ø 9.5mm                        |
| 927     | Dovetail Swivel Clamp 90mm long x Ø 9.5mm                        |
| 928     | Dovetail Swivel Clamp 25mm long x Ø 9.5mm                        |
| 930     | Angular Support Ø 9.5mm and Ø 9.5mm I/D                          |
| 934     | Centering Holder Ø 8mm and 4mm I/D                               |
| 943     | Dovetail Swivel Support with fine adjustment<br>8mm x 120mm long |

| Code No | Description  |
|---------|--|
| 944     | Dovetail Swivel Support with fine adjustment<br>8mm x 15mm long  |
| 332-1.4 | Stylus 37mm long x Ø 2mm (M1.4 thread)   |
| 331-1.4 | Stylus 37mm long x Ø 1mm (M1.4 thread)   |
| 945-LI  | Magnetic stand, fully adjustable, suits plunger and lever type indicators. Max height to knuckle joint 100mm, max reach 120mm with fine adjust |
| 321-1.4 | Stylus 12mm long x Ø 1mm (M1.4 thread)   |
| 322-1.4 | Stylus 12mm long x Ø 2mm (M1.4 thread)   |
| 323-1.4 | Stylus 12mm long x Ø 3mm (M1.4 thread)   |
| 333-1.4 | Stylus 37mm long x Ø 3mm (M1.4 thread)   |
| 323     | Stylus 12mm long x Ø 3mm   |

## Baty Crankshaft Alignment Gauge Set

If an engine crankshaft is not correctly aligned in its bearings, it distorts and becomes subject to damaging stresses. Any misalignment causes a change in the distance between webs when the shaft revolves and can be detected by placing an indicating device between the webs.

The Baty crankshaft alignment gauge is designed for this purpose. Its contacts are pointed and fit into dimples in the webs. A heavy spring pressure ensures that the gauge is retained but is free to turn in relation to the crankshaft and an adjustable balance weight restrains the gauge against rotation of the crankshaft so that the dial always faces the inspector.

### Features

- The gauge covers web-to-web distances of 57-500mm (2 1/4"-20")
- Set supplied in a wooden case
- The special dial indicators may be purchased separately



### BATY CRANKSHAFT ALIGNMENT GAUGE SET

| Code No    | Resolution | Description                      |
|------------|------------|----------------------------------|
| 2553-D-SET | 0.01mm     | 57-500mm web-to-web distance     |
| 2552-D-SET | 0.0005"    | 2 1/4" - 20" web-to-web distance |
| 2553-D/CG  | 0.01mm     | Indicator Only                   |
| 2552-D/CG  | 0.0005"    | Indicator Only                   |

## Baty Indicator Test Sets

These are versatile instruments with countless uses in workshops and inspection departments; for example, concentricity checks, marking-out table and surface plate work, alignment of machine tools, testing, parallelism, etc.

### Back Plunger Type Features

- 35mm diameter, back plunger dial indicator with holding rod
- Lever attachment
- Universal clamp
- G-clamp
- Tool post holder
- Domed anvil
- All supplied in wooden case



FTSM-1

### Plunger Type Features

- 57mm diameter plunger dial indicator
- Lever attachment
- Universal clamp
- G-clamp
- Tool post holder
- All supplied in wooden case
- Spigot back



FTSU-M

### BATY INDICATOR TEST SETS - BACK PLUNGER

| Code No | Range | Indicator Range | Graduation |
|---------|-------|-----------------|------------|
| FTSM-1  | 2mm   | 0.01mm          | 0-100      |
| FTSI-1  | 0.1"  | 0.001"          | 0-100      |

### BATY INDICATOR TEST SETS - PLUNGER

| Code No | Range | Indicator Range | Graduation |
|---------|-------|-----------------|------------|
| FTSU-M  | 10mm  | 0.01mm          | 0-100      |
| FTSU-I  | 0.5"  | 0.001"          | 0-100      |

## Bowers Aerospace Specials - Rivet Height Gauge

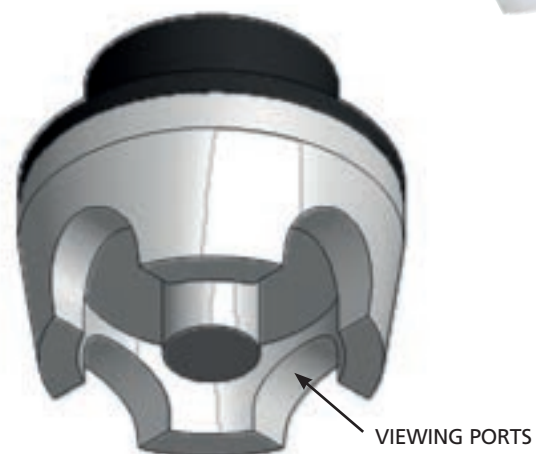
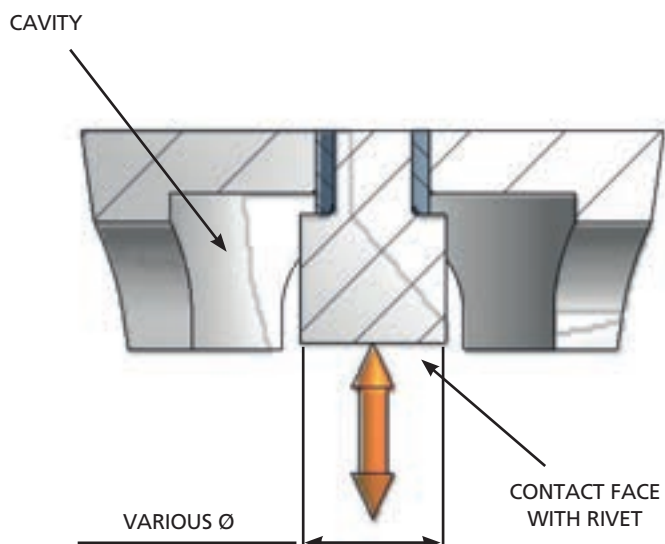
The Bowers Rivet Height Gauge has been specially designed to measure the height of rivets used on aircraft outer skin. If the top of the rivet is too high above or too low below the level of the rivet-hole, the streamlining of the aircraft will be affected. This wind-resistance will be magnified many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



### 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

Different diameter and contact point options are available on request.



Bowers can deliver innovative and cost-effective solutions to the most demanding measurement challenge. If you have a specific requirement that you would like Bowers to assist with, please contact the Sales Team direct.

## Bowers Aerospace Specials - Digital 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.



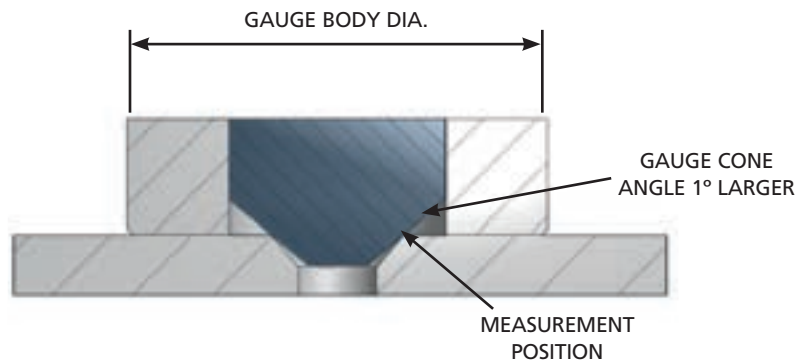
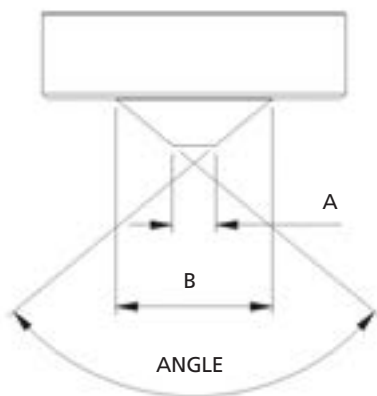
### Features

- Standard range diameter 6-16mm / 1/4-5/8"
- 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 measure 90°, 100° and 110°
- Other angles available on request
- Setting master supplied as standard
- Bluetooth option available



Alternative size ranges can be manufactured to order.

Also available with MicroGauge\* readout for small sizes.  
BT Not currently available



### DIGITAL COUNTERSINK GAUGE

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

\*Code No 10-CSG - Case for items highlighted (available at extra cost)

### SYLVAC S\_DIAL WORK ADVANCED DIGITAL INDICATOR - SUPPLIED AS STANDARD

| Code No            | Description          | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Maximum Error (µm) |
|--------------------|----------------------|------------|--------------|-----------------|-------------------|--------------------|
| <b>30-805-5301</b> | Advanced, IP54 rated | 12.5       | 0.5          | 0.001           | 0.00005           | 3                  |

Other Indicators or Indicating Units available, ask for details

## Moore & Wright Digital Indicator 405 Series

### Features

- Standard: Factory Standard
- Digital functions: Direct mm / inch conversion, ABS/ INC, zero-setting
- 58mm dial face
- Lugback and 8mm stem mountings
- Also supplied with flatback



### DIGITAL INDICATOR

| Code No    | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) |
|------------|------------|--------------|-----------------|-------------------|---------------|-----------------|
| MW405-04DB | 0-12.7     | 0-0.5        | 0.01            | 0.0005            | ±0.02         | ±0.0008         |
| MW405-06DB | 0-25.0     | 0-1.0        | 0.01            | 0.0005            | ±0.03         | ±0.0012         |

## Moore & Wright Digital Absolute Indicator 430-DABS Series

### Features

- Standard: Factory standard
- Absolute Measuring System
- RS232 Digimatic output
- Digital functions: tolerances, mm/inch conversion, preset capability, data-output, zero-setting, on/off
- 8mm/H7 clamping diameter
- IP54 protection
- CR2032 battery
- Supplied with lugback and flat back



### DIGITAL ABSOLUTE INDICATOR

| Code No      | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) |
|--------------|------------|--------------|-----------------|-------------------|---------------|-----------------|
| MW430-01DABS | 0-12.5     | 0-0.5        | 0.001           | 0.00005           | ±0.004        | ±0.0002         |
| MW430-02DABS | 0-25.4     | 0-1.0        | 0.001           | 0.00005           | ±0.005        | ±0.00025        |
| MW430-03DABS | 0-50.8     | 0-2.0        | 0.001           | 0.00005           | ±0.006        | ±0.0003         |

### DATA CABLE

| Code No        | Description                              |
|----------------|--|
| MW-Y100/700USB | Data Cable-USB to suit all DABS products |

## Sylvac IP65 Digital Mini Indicator

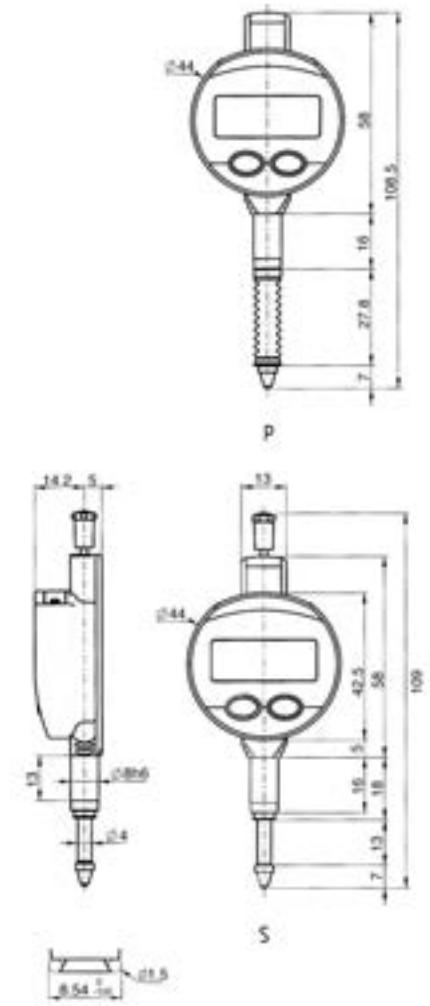
The Sylvac Digital Mini indicator boasts a remarkable rating of IP65 making it ideal for use in harsh environments. The simple to operate instrument has an impressive list of advanced features including a large easy to read display, relative/absolute modes, preset function, metric/inch modes.



### Features

- Relative / absolute modes
- mm / inch conversion
- Accuracy: 20µ / 0.008" or 5µ / 0.0002"
- Preset function (max 130mm)
- Repeatability (+/-2s): 5µm / 0.0.0002"
- Max displacement speed: 2m / sec
- Measuring force: 0.5-0.9N
- Weight: 70g
- Battery: Lithium, 3V, CR2032
- Protection of the module according to IEC529: IP65 even with data output
- Autonomy: minimum 5000 hours in continuous use (corresponds to 2 years in output normal use/auto-off)
- Clamping: diameter 8h6 and dove-tail back
- Anvil with TC ball

BT available mid 2019



### SYLVAC IP65 DIGITAL MINI INDICATOR

| Code No     | Description                                     | Resolution (mm) | Resolution (inch) | Maximum Error (µm) | Repeatability (µm) |
|-------------|---|-----------------|-------------------|--------------------|--------------------|
| 30-905-4121 | Mini indicator 12.5mm Top Lifter                | 0.01            | 0.0005            | 10                 | 2                  |
| 30-905-4125 | Mini indicator 12.5mm with bellows              | 0.01            | 0.0005            | 10                 | 2                  |
| 30-905-4521 | Mini indicator 12.5mm Top Lifter                | 0.001           | 0.00005           | 5                  | 2                  |
| 30-905-4525 | Mini indicator 12.5mm with bellows              | 0.001           | 0.00005           | 5                  | 2                  |
| 30-905-4527 | Mini indicator 12.5mm Top Lifter "Factor"       | 0.001           | 0.00005           | 5                  | 2                  |
| 30-905-4511 | Mini Indicator 5mm Travel Analogue              | 0.001           | 0.00005           | 4                  | 2                  |
| 30-905-4515 | Mini indicator 5mm travel analogue with bellows | 0.001           | 0.00005           | 4                  | 2                  |
| 30-905-4140 | Vertical Display Mini Indicator 5mm Travel      | 0.01            | 0.0005            | 10                 | 2                  |
| 30-905-4540 | Vertical Display Mini Indicator 5mm travel      | 0.001           | 0.00005           | 5                  | 2                  |
| 30-905-4211 | Mini indicator 12.5mm Top Lifter                | 0.01            | 0.0005            | 10                 | 2                  |

## Sylvac Test Indicator

The unique Sylvac Quadra Test series gives the user all of the advantages of a sturdy, conventional analogue lever indicator, with the numerous useful facilities that can only be found in a quality digital gauge.



### Features

- 4 measuring modes: Min, Max, TIR, and Direct
- 4 measuring resolutions 0.01mm, 0.001mm, 0.0005", 0.00005", except 30-705-4321 (0.01 / 0.0005" only)
- mm / inch conversion
- RS-232 output
- Water, oil and coolant resistant to IP65 - IEC 529 specification
- 44mm diameter dial face, rotates through 360°
- Clear bar-graph
- Easy to read numeric digital display
- Meets or exceeds Din/ISO standards
- Available with 12.5mm or extra-long 36.5mm contact point



### SYLVAC TEST INDICATOR

| Code No     | Description                 | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Probe Type |
|-------------|-----------------------------|------------|--------------|-----------------|-------------------|------------|
| 30-905-4321 | Quadra Test Lever Indicator | 0.8        | 0.03         | 0.001           | 0.00005           | 12.5mm     |
| 30-905-4322 | Quadra Test Lever Indicator | 0.5        | 0.02         | 0.001           | 0.00005           | 36.5mm     |



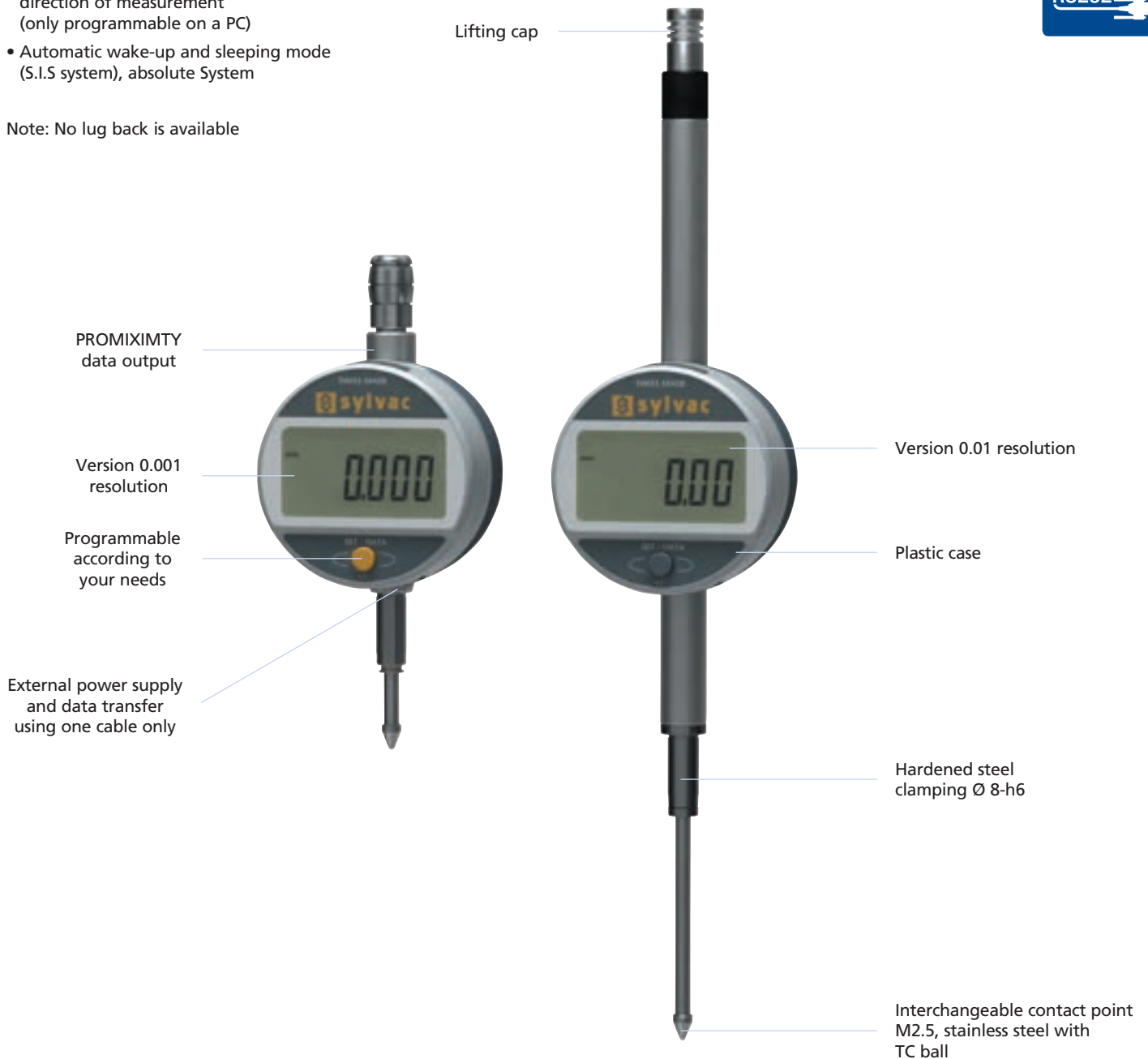
## Sylvac S\_Dial WORK Basic Digital Indicator

### Features

- Robust construction
- Water and coolant resistant
- Functions: mm/inch, preset, direction of measurement (only programmable on a PC)
- Automatic wake-up and sleeping mode (S.I.S system), absolute System



Note: No lug back is available



### SYLVAC S\_DIAL WORK BASIC DIGITAL INDICATOR

| Code No     | Description | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Maximum Error (µm) | Repeatability (µm) |
|-------------|-------------|------------|--------------|-----------------|-------------------|--------------------|--------------------|
| 30-805-1201 | Basic       | 12.5       | 0.5          | 0.01            | 0.0005            | 10                 | 2                  |
| 30-805-1301 | Basic       | 12.5       | 0.5          | 0.001           | 0.00005           | 4                  | 2                  |
| 30-805-1401 | Basic       | 25         | 1            | 0.01            | 0.0005            | 10                 | 2                  |
| 30-805-1501 | Basic       | 25         | 1            | 0.001           | 0.00005           | 5                  | 2                  |
| 30-805-1601 | Basic       | 50         | 2            | 0.01            | 0.0005            | 20                 | 2                  |
| 30-805-1621 | Basic       | 50         | 2            | 0.001           | 0.00005           | 7                  | 2                  |

## Sylvac S\_Dial WORK Advanced Digital Indicator

### Features

- Robust construction
- Water and coolant resistant
- Protection rating IP67 according to IEC 60529 for protected versions, even when connected
- New technology with configurable menus via PC
- Broad choice of functions (MIN/MAX/DELTA, TOL, Factor, PRESET, AUTO OFF, etc.)
- Automatic wake-up and sleeping mode (S.I.S system)
- Optional lifting lever



Swiss Precision



WiFi

Option



Bluetooth  
SMART  
Option



RS232



Note: Lug back available



### DATA TRANSMISSION

| Code No     | Description                           |
|-------------|---------------------------------------|
| 30-926-6721 | Sylvac Proximity USB Cable            |
| 30-926-6821 | Powered Opto / USB                    |
| 25-604-064  | Wireless Proximity Module Transmitter |
| 25-604-013A | Wireless Powered Opto Module          |

### KEY

- |   |  |   |  |
|---|--|---|--|
| 1 | PROXIMITY data output  | 6 | Interchangeable contact point M2.5, stainless steel with TC ball |
| 2 | Large display with integrated LEDs tolerances                | 7 | Lifting cap  |
| 3 | Programmable according to your needs                         | 8 | Optional lifting lever   |
| 4 | External power supply and data transfer using one cable only | 9 | Dust cover   |
| 5 | Hardened steel clamping Ø 8-h6                               |   |  |

### SYLVAC S\_DIAL WORK ADVANCED DIGITAL INDICATOR - SUPPLIED AS STANDARD

| Code No     | Description  | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Maximum Error (µm) |
|-------------|--|------------|--------------|-----------------|-------------------|--------------------|
| 30-805-5201 | Advanced, IP54 rated                               | 12.5       | 0.5          | 0.01            | 0.0005            | 10                 |
| 30-805-5301 | Advanced, IP54 rated                               | 12.5       | 0.5          | 0.001           | 0.00005           | 3                  |
| 30-805-5305 | Advanced, Protected IP67 rated                     | 12.5       | 0.5          | 0.001           | 0.00005           | 3                  |
| 30-805-5401 | Advanced, IP54 rated                               | 25         | 1.0          | 0.01            | 0.0005            | 10                 |
| 30-805-5501 | Advanced, Protected IP67 rated                     | 25         | 1.0          | 0.001           | 0.00005           | 4                  |
| 30-805-5505 | Advanced, IP54 rated                               | 25         | 1.0          | 0.001           | 0.00005           | 4                  |
| 30-805-5601 | Advanced, IP54 rated                               | 50         | 2.0          | 0.01            | 0.0005            | 20                 |
| 30-805-5621 | Advanced, IP54 rated                               | 50         | 2.0          | 0.001           | 0.00005           | 5                  |
| 30-805-5625 | Advanced, Protected IP67 rated                     | 50         | 2.0          | 0.001           | 0.00005           | 5                  |
| 30-805-5641 | Advanced, IP54 rated                               | 100        | 4.0          | 0.01            | 0.0005            | 20                 |
| 30-805-5661 | Advanced, IP54 rated                               | 100        | 4.0          | 0.001           | 0.00005           | 6                  |
| 30-805-5671 | Advanced, IP54 rated                               | 150        | 6.0          | 0.01            | 0.0005            | 20                 |
| 30-805-5681 | Advanced, IP54 rated                               | 150        | 6.0          | 0.001           | 0.00005           | 10                 |
| 30-805-6301 | Advanced, IP54 rated, Bluetooth                    | 12.5       | 0.5          | 0.001           | 0.00005           | 3                  |
| 30-805-6501 | Advanced, IP54 rated, Bluetooth                    | 25         | 1.0          | 0.001           | 0.00005           | 4                  |
| 30-805-6621 | Advanced, IP54 rated, Bluetooth                    | 50         | 2.0          | 0.001           | 0.00005           | 5                  |
| 30-805-6661 | Advanced, IP54 rated, Bluetooth                    | 100        | 4.0          | 0.001           | 0.00005           | 6                  |
| 30-805-0213 | Lug Back for Sylvac S_Dial WORK Digital Indicators | -          | -            | -               | -                 | -                  |

## Sylvac S\_Dial WORK Analogue Digital Indicators

### Features

- Adaptive analogue display (up to 0.2µm per segment)
- Robust construction
- Water and coolant resistant
- New technology with configurable menus
- Broad choice of functions (MIN/MAX/DELTA, TOL, Factor, PRESET, AUTO OFF, etc.)
- Automatic wake-up and sleeping mode (S.I.S system), absolute System

Note: Lug Back is available



Swiss Precision



Option



30-805-5307

30-805-5507

30-805-6307

30-805-6507

### TECHNICAL SPECIFICATION

|                                       | 30-805-5307   | 30-805-5507 | 30-805-6307         | 30-805-6507         |
|---------------------------------------|---|-------------|---------------------|---------------------|
| Maximum Error fe (µm)                 | 3µm   | 4µm         | 1.8µm               | 2.2µm               |
| Repeatability (µm)                    | 2µm   | 2µm         | 0.5µm               | 0.5µm               |
| S_Connect : Proximity/Power           | USB/RS232   | USB/RS232   | USB/RS232/Bluetooth | USB/RS232/Bluetooth |
| Programable by PC                     | Yes   | Yes         | Yes                 | Yes                 |
| Standard functions (customised by PC) | mm/inch, ref 1/11, preset (max 999.999) min/max/delta, tolerances, resolutions, direction of measurement, multiplication factor, automatic or manual switch off, key lock |             |                     |                     |

### SYLVAC S\_DIAL WORK ANALOGUE DIGITAL INDICATORS

| Code No     | Description  | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) |
|-------------|--|------------|--------------|-----------------|-------------------|
| 30-805-5307 | Adaptive Analog Display, IP54 rated                    | 12.5       | 0.5          | 0.001           | 0.00005           |
| 30-805-5507 | Adaptive Analog Display, IP54 rated                    | 25         | 1.0          | 0.001           | 0.00005           |
| 30-805-6307 | Adaptive Analog Display, IP54 rated, Bluetooth enabled | 12.5       | 0.5          | 0.0001          | 0.00005           |
| 30-805-6507 | Adaptive Analog Display, IP54 rated, Bluetooth enabled | 25         | 1.0          | 0.0001          | 0.00005           |
| 30-805-0213 | Lug Back for Sylvac S_Dial WORK Digital Indicators     | -          | -            | -               | -                 |

## Sylvac S\_Dial WORK Nano Digital Indicators

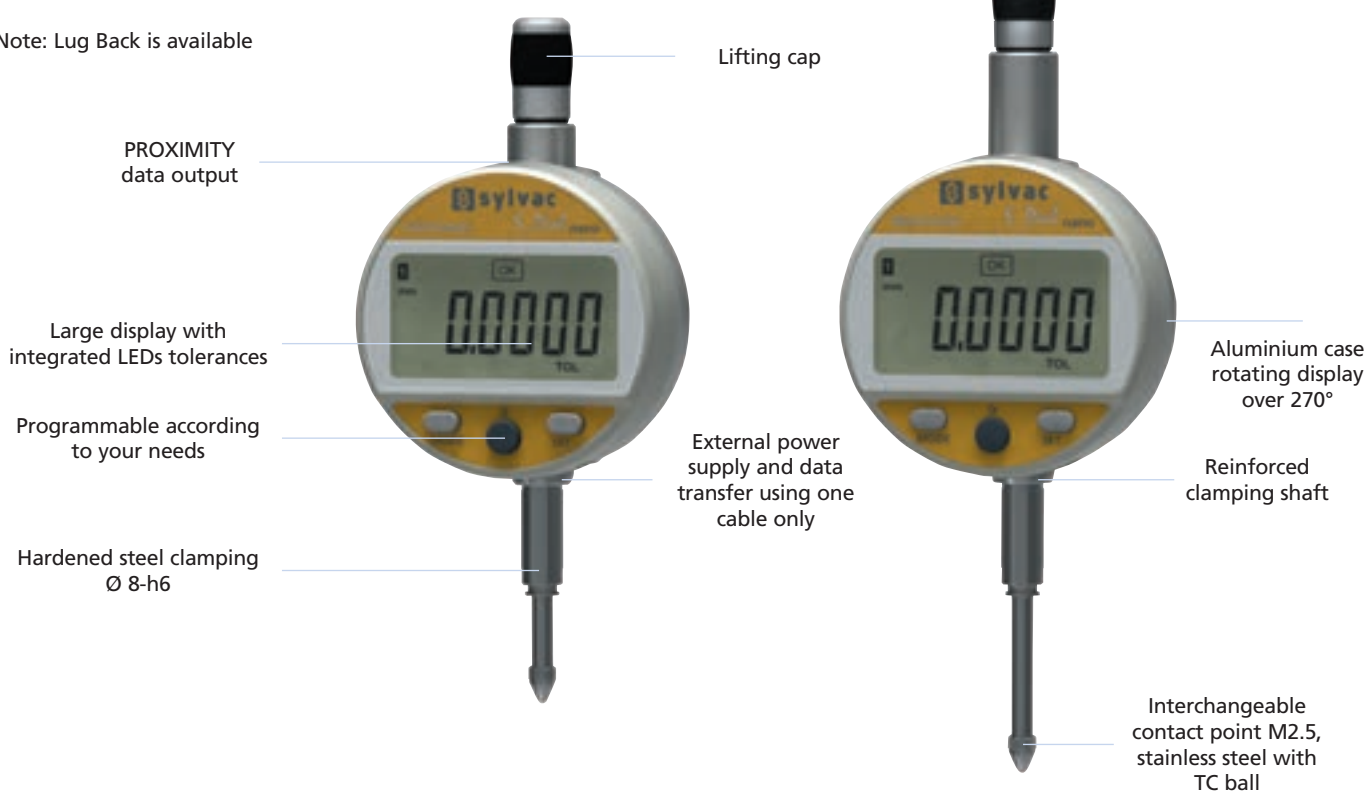
### Features

- 0.1µm resolution
- Robust construction
- Water and coolant resistant
- New technology with configurable menus
- Broad choice of functions (MIN/MAX/DELTA, TOL, Factor, PRESET, AUTO OFF, etc.)
- Automatic wake-up and sleeping mode (S.I.S system), absolute System
- Maximum error of 1.8µm



\*100% compatible with Bluetooth® Smart dongle 30-981-7100

Note: Lug Back is available



### TECHNICAL SPECIFICATION

|                                       | 30-805-5306  | 30-805-5506 | 30-805-6306          | 30-805-6506           |
|---------------------------------------|--|-------------|----------------------|-----------------------|
| Maximum Error fe (µm)                 | 1.8µm  | 2.2µm       | 1.8µm                | 2.2µm                 |
| Repeatability (µm)                    | 0.5µm  | 0.5µm       | 0.5µm                | 0.5µm                 |
| S_Connect : Proximity/Power           | USB/RS232  | USB/RS232   | USB/RS232/Bluetooth® | USB/RS232/Bluetooth®* |
| Programmable by PC                    | Yes  | Yes         | Yes                  | Yes                   |
| Standard functions (customised by PC) | mm/inch, ref I/II, preset (max 999.999) min/max/delta, tolerances, direction of measurement, multiplication factor, automatic or manual switch off, key lock |             |                      |                       |

\*100% compatible with Bluetooth® Smart dongle 30-981-7100

### SYLVAC S\_DIAL WORK NANO DIGITAL INDICATORS

| Code No     | Description  | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Note      |
|-------------|--|------------|--------------|-----------------|-------------------|-----------|
| 30-805-5306 | Advanced Nano                                      | 12.5       | 0.5          | 0.0001          | 0.000005          | -         |
| 30-805-5506 | Advanced Nano                                      | 25         | 1.0          | 0.0001          | 0.000005          | -         |
| 30-805-6306 | Advanced Nano, Bluetooth                           | 12.5       | 0.5          | 0.0001          | 0.000005          | Bluetooth |
| 30-805-6506 | Advanced Nano, Bluetooth                           | 25         | 1.0          | 0.0001          | 0.000005          | Bluetooth |
| 30-805-0213 | Lug Back for Sylvac S_Dial WORK Digital Indicators |            |              |                 |                   |           |

## Sylvac S\_Dial PRO Digital Indicator

### Features

- Resolution of 0.1µm
- Broad choice of functions (MIN/MAX/DELTA, TOL, Factor, PRESET, AUTO OFF, etc.)
- Max error 1.5µm / 50mm
- Constant measuring force (depending on model)
- Clamping stem Ø8 or Ø25 (depending on model)
- Mixed ceramic bearing / ball bearing system
- Measuring system with homing
- Battery life : 2 years
- Data output PROXIMITY and POWER



30-805-8601



30-805-8602



30-805-8501  
25mm



30-805-8661  
100mm

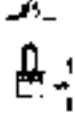
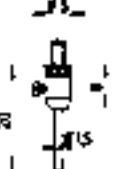

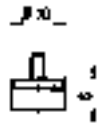







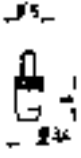
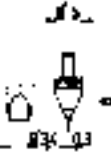





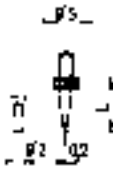
### SYLVAC S\_DIAL PRO DIGITAL INDICATOR

| Code No     | Description | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Maximum Error (µm) | Repeatability (µm) | Note          |
|-------------|-------------|------------|--------------|-----------------|-------------------|--------------------|--------------------|---------------|
| 30-805-8501 | Basic       | 25         | 1            | 0.0001          | 0.000005          | 1.3                | 0.2                | Clamp: Ø8 h6  |
| 30-805-8502 | Basic       | 25         | 1            | 0.0001          | 0.000005          | 1.3                | 0.2                | Clamp: Ø8 h6  |
| 30-805-8601 | Basic       | 50         | 2            | 0.0001          | 0.000005          | 1.5                | 0.2                | Clamp: Ø8 h6  |
| 30-805-8602 | Basic       | 50         | 2            | 0.0001          | 0.000005          | 1.5                | 0.2                | Clamp: Ø25 g7 |
| 30-805-8701 | Basic       | 50         | 2            | 0.0001          | 0.000005          | 1.5                | 0.2                | Clamp: Ø8 h6  |
| 30-805-8702 | Basic       | 50         | 2            | 0.0001          | 0.000005          | 1.5                | 0.2                | Clamp: Ø25 g7 |
| 30-805-8661 | Basic       | 100        | 4            | 0.0001          | 0.000005          | 2.2                | 0.2                | Clamp: Ø8 h6  |

## Contact Points

Bowers offers a wide selection of quality contact points to suit all analogue and digital indicators transducer probes, etc. containing standard M2.5 thread.

(S) = Steel (T/C) = Tungsten Carbide

|  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A20</td> <td>(S)</td> </tr> <tr> <td>40-42A21</td> <td>(T/C)</td> </tr> </tbody> </table>  | Code No  | Note | 40-42A20 | (S) | 40-42A21   | (T/C) |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A22</td> <td>(S)</td> </tr> <tr> <td>40-42A23</td> <td>(T/C)</td> </tr> </tbody> </table> | Code No  | Note              | 40-42A22 | (S)   | 40-42A23  | (T/C)    |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A25</td> <td>(T/C)</td> </tr> </tbody> </table> | Code No   | Note     | 40-42A25  | (T/C)   |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A26</td> <td>(S)</td> </tr> <tr> <td>40-42A27</td> <td>(T/C)</td> </tr> </tbody> </table> | Code No     | Note     | 40-42A26  | (S)      | 40-42A27 | (T/C)   |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A28</td> <td>(S)</td> </tr> <tr> <td>40-42A29</td> <td>(T/C)</td> </tr> </tbody> </table> | Code No  | Note     | 40-42A28 | (S)  | 40-42A29 | (T/C)    |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
|--|----------|------|----------|-----|------------|-------|---|----------|-------------------|----------|---|---|----------|---|---|----------|---|---|---|-------------|----------|---|----------|----------|---|---|----------|----------|----------|--|----------|----------|----------|----------|----------|----------|----------|--|---------|------|----------|-----|--------------------|--|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|---|---------|------|----------|-----|------------|--|----------|----------|----------|----------|----------|----------|--|
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A20   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A21   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A22   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A23   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A25   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A26   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A27   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A28   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A29   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
|  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A30</td> <td>(S)</td> </tr> <tr> <td>40-42A31</td> <td>(T/C)</td> </tr> </tbody> </table>  | Code No  | Note | 40-42A30 | (S) | 40-42A31   | (T/C) |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A85</td> <td>(S)</td> </tr> </tbody> </table>   | Code No  | Note              | 40-42A85 | (S)   |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A86</td> <td>(S)</td> </tr> </tbody> </table> | Code No  | Note  | 40-42A86  | (S)      |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A87</td> <td>(S)</td> </tr> </tbody> </table> | Code No   | Note  | 40-42A87    | (S)      |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A88</td> <td>(S)</td> </tr> </tbody> </table> | Code No  | Note     | 40-42A88  | (S)   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A30   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A31   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A85   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A86   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A87   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A88   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
|  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A40</td> <td>(S)</td> </tr> <tr> <td>40-42A41</td> <td>(T/C)</td> </tr> <tr> <td>10-901994</td> <td>-</td> </tr> <tr> <td colspan="2">Hard plastic ball</td> </tr> </tbody> </table>   | Code No  | Note | 40-42A40 | (S) | 40-42A41   | (T/C) | 10-901994   | -        | Hard plastic ball |          |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A42</td> <td>(S)</td> </tr> <tr> <td>40-42A43</td> <td>(T/C)</td> </tr> </tbody> </table> | Code No   | Note     | 40-42A42  | (S)   | 40-42A43 | (T/C)   |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A44</td> <td>(S)</td> </tr> <tr> <td>40-42A45</td> <td>(T/C)</td> </tr> </tbody> </table> | Code No   | Note        | 40-42A44 | (S)   | 40-42A45 | (T/C)    |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A82</td> <td>(S)</td> </tr> </tbody> </table> | Code No   | Note     | 40-42A82 | (S)      |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A84</td> <td>(S)</td> </tr> <tr> <td colspan="2">S convex</td> </tr> </tbody> </table> | Code No  | Note     | 40-42A84 | (S)      | S convex |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A40   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A41   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 10-901994  | -        |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Hard plastic ball  |          |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A42   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A43   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A44   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A45   | (T/C)    |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A82   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A84   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| S convex   |          |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
|  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A54</td> <td>(S)</td> </tr> <tr> <td colspan="2">(5mm long)</td> </tr> <tr> <td>40-42A55</td> <td>10mm (S)</td> </tr> <tr> <td>40-42A56</td> <td>15mm (S)</td> </tr> <tr> <td>40-42A57</td> <td>20mm (S)</td> </tr> <tr> <td>40-42A58</td> <td>30mm (S)</td> </tr> </tbody> </table> | Code No  | Note | 40-42A54 | (S) | (5mm long) |       | 40-42A55  | 10mm (S) | 40-42A56          | 15mm (S) | 40-42A57  | 20mm (S)  | 40-42A58 | 30mm (S)  |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A61</td> <td>(S)</td> </tr> <tr> <td colspan="2">(10mm long)</td> </tr> <tr> <td>40-42A62</td> <td>15mm (S)</td> </tr> <tr> <td>40-42A63</td> <td>20mm (S)</td> </tr> <tr> <td>40-42A64</td> <td>25mm (S)</td> </tr> <tr> <td>40-42A65</td> <td>30mm (S)</td> </tr> <tr> <td>40-42A66</td> <td>35mm (S)</td> </tr> <tr> <td>40-42A67</td> <td>40mm (S)</td> </tr> <tr> <td>40-42A68</td> <td>45mm (S)</td> </tr> <tr> <td>40-42A69</td> <td>50mm (S)</td> </tr> </tbody> </table> | Code No  | Note  | 40-42A61  | (S)   | (10mm long) |          | 40-42A62  | 15mm (S) | 40-42A63 | 20mm (S)  | 40-42A64  | 25mm (S) | 40-42A65 | 30mm (S) | 40-42A66   | 35mm (S) | 40-42A67 | 40mm (S) | 40-42A68 | 45mm (S) | 40-42A69 | 50mm (S) |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A70</td> <td>(S)</td> </tr> <tr> <td colspan="2">(1mm dia. carbide)</td> </tr> <tr> <td>40-42A71</td> <td>2mm (S)</td> </tr> <tr> <td>40-42A72</td> <td>3mm (S)</td> </tr> <tr> <td>40-42A73</td> <td>4mm (S)</td> </tr> <tr> <td>40-42A74</td> <td>5mm (S)</td> </tr> <tr> <td>40-42A75</td> <td>6mm (S)</td> </tr> </tbody> </table> | Code No | Note | 40-42A70 | (S) | (1mm dia. carbide) |  | 40-42A71 | 2mm (S) | 40-42A72 | 3mm (S) | 40-42A73 | 4mm (S) | 40-42A74 | 5mm (S) | 40-42A75 | 6mm (S) |  <table border="1"> <thead> <tr> <th>Code No</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>40-42A50</td> <td>(S)</td> </tr> <tr> <td colspan="2">(5mm long)</td> </tr> <tr> <td>40-42A51</td> <td>10mm (S)</td> </tr> <tr> <td>40-42A52</td> <td>15mm (S)</td> </tr> <tr> <td>40-42A53</td> <td>20mm (S)</td> </tr> </tbody> </table> | Code No | Note | 40-42A50 | (S) | (5mm long) |  | 40-42A51 | 10mm (S) | 40-42A52 | 15mm (S) | 40-42A53 | 20mm (S) |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A54   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| (5mm long)   |          |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A55   | 10mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A56   | 15mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A57   | 20mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A58   | 30mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A61   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| (10mm long)  |          |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A62   | 15mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A63   | 20mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A64   | 25mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A65   | 30mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A66   | 35mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A67   | 40mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A68   | 45mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A69   | 50mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A70   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| (1mm dia. carbide)   |          |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A71   | 2mm (S)  |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A72   | 3mm (S)  |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A73   | 4mm (S)  |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A74   | 5mm (S)  |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A75   | 6mm (S)  |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| Code No  | Note     |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A50   | (S)      |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| (5mm long)   |          |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A51   | 10mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A52   | 15mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |
| 40-42A53   | 20mm (S) |      |          |     |            |       |   |          |                   |          |   |   |          |   |   |          |   |   |   |             |          |   |          |          |   |   |          |          |          |  |          |          |          |          |          |          |          |  |         |      |          |     |                    |  |          |         |          |         |          |         |          |         |          |         |   |         |      |          |     |            |  |          |          |          |          |          |          |  |

## Magnetic Bases and Fitments

### Magnetic Bases

- All units are suitable for use with dial indicators and test dial indicators
- 900 and 901 versions both have push button 'ON/OFF' control
- 905 model has a toggle lever for 'ON/OFF' function
- The base incorporates a vee slot for location on curved surfaces (with the exception of 909)
- 909 Non-switchable (M6 coarse thread)

### Magnetic Base Fitments

- All fitments accept stem or back lug mounting
- All fitments have M8 x 1.25mm screw thread for fixing
- Compatible with any of the Eclipse range of magnetic bases



E909-MW



E905-WFMW + RP991BLMW

E901-WFMW + RP995BLMW

E905-WFMW + RP999MW

### MAGNETIC BASES

| Code No   | Force | Length (mm) | Width (mm) | Height (mm) | No. of Magnetic Faces | Note                    | Weight |
|-----------|-------|-------------|------------|-------------|-----------------------|-------------------------|--------|
| E900-WFMW | 30kg  | 48          | 40         | 50          | 4                     | Vee for Curved Surfaces | 0.5kg  |
| E901-WFMW | 80kg  | 64          | 64         | 76          | 4                     | Vee for Curved Surfaces | 1.7kg  |
| E905-WFMW | 80kg  | 65          | 50         | 55          | 2                     | Vee for Curved Surfaces | 1.05kg |
| E909-MW   | 14kg  | n/a         | 35         | 30          | 1                     | -                       | 0.35kg |

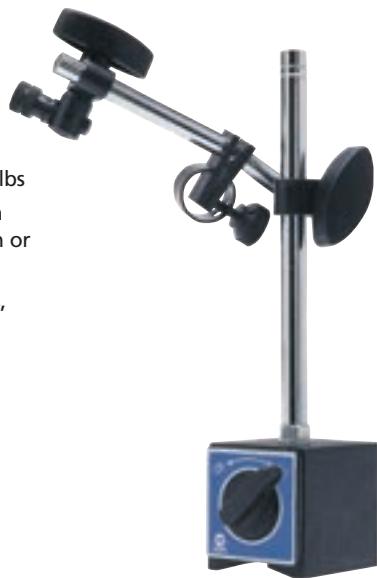
### MAGNETIC BASES FITMENTS

| Code No   | Type               | Description   | Clamp Size            | Note  |
|-----------|--------------------|---|-----------------------|---|
| RP991BLMW | Fine Adjust        | Column dia - 12mm, length - 175mm.<br>Arm dia - 10mm, length - 165mm    | 10mm Universal        | Accepts 1/4" I.D Lug<br>Stem / Spigot Dia: 1/8", 1/4", 5/16" and 3/8" |
| RP995BLMW | Plain              | Column dia - 12mm, length - 175mm.<br>Arm dia - 10mm, length - 165mm    | 10mm Universal        | Accepts 1/4" I.D Lug<br>Stem / Spigot Dia: 1/8", 1/4", 5/16" and 3/8" |
| RP72CPMW  | Plain              | Column dia - 12.5mm, length - 185mm.<br>Arm dia - 6.3mm, length - 150mm | 6.35 Standard Clamp   | Accepts 1/4" I.D Lug<br>Stem/Spigot Dia: 5/16"                        |
| RP999MW   | 3 Point Adjustable | Column dia - 15mm, length - 295mm.                                      | 3 Point Special Clamp | Accepts 1/4" I.D Lug and Dovetails<br>Stem / Spigot Dia: 5/16"        |

## Moore & Wright Magnetic Indicator Stand 475 Series

### Features

- Features fine adjustment
- With powerful on / off magnetic base
- Magnetic force 80Kg / 175lbs
- Universal model which can be used for indicators with or without lug on back plate
- Accepts dial test indicators, digital indicators and normal indicators
- Extra rigid



### MAGNETIC INDICATOR STAND

| Code No  | Description     | Type            |
|----------|-----------------|-----------------|
| MW475-01 | ON/OFF Magnetic | Fine Adjustment |

## Moore & Wright Magnetic Hydraulic Stand 485 Series

### Features

- Features a unique hydraulic central lock for all arms and swivel positions
- Super solid model
- With fine adjustment
- With powerful on/off magnetic base
- Magnetic force 80Kg / 175lbs
- Universal model which can be used for indicators with or without lug on back plate
- Accepts dial test indicators, digital indicators and normal indicators
- Dovetail groove for clamping a dial test indicator
- Super rigid



### MAGNETIC HYDRAULIC STAND

| Code No  | Description     | Type                            |
|----------|-----------------|---------------------------------|
| MW485-01 | ON/OFF Magnetic | Hydraulic lock, dovetail groove |

## Moore & Wright Magnetic Snake Stand 496 Series

### Features

- Corrosion resistant chrome plated flex arm
- Magnetic force 40kg / 85 lbs
- Holds rigidly in almost any position
- V -base for mounting on rounded surfaces



### MAGNETIC SNAKE STAND

| Code No  | Description | Type            |
|----------|-------------|-----------------|
| MW496-01 | Snake Stand | Mechanical Lock |

## Moore & Wright Magnetic Articulating Stand 477 Series

### Features

- Versatile magnetic base that can be adjusted in almost unlimited ways
- With fine adjustment
- 30kg clamp force
- V-base for mounting on rounded surfaces



### MAGNETIC ARTICULATING STAND

| Code No  | Description                    | Type            |
|----------|--------------------------------|-----------------|
| MW477-01 | Articulating arm magnetic base | Fine Adjustment |



## Comparator Stands

The rigid construction and quality materials used in manufacturing these quality Bowers comparator stands gives the user both a solid component support and a strong fixing for most types of indicator, transducer probe etc.

### Features

- Hard chrome column
- Table surface is lapped
- One piece bracket for high rigidity and constant parallelism
- Adapter Hole for dial gauge 8mm H7



13-03304 /  
13-03305



13-03306



13-03308 /  
13-03309



MW498-05



30-808-1204 /  
30-808-1206



13-1423102



30-908-1209

### COMPARATOR STANDS

| Code No    | Load Range (mm) | Height (mm) | Overhang (mm) | Weight | Measuring Table Area | Type              | Note                      |
|------------|-----------------|-------------|---------------|--------|----------------------|-------------------|---------------------------|
| 13-03304   | 150             | 284         | 76            | 7kg    | 98 x 115mm           | Plain Column      | Indicator sold separately |
| 13-03305   | 160             | 320         | 104           | 12kg   | 98 x 180mm           | Plain Column      | Indicator sold separately |
| 13-03306   | 160             | 320         | 104           | 12kg   | 98 x 180mm           | Threaded Column   | Indicator sold separately |
| 13-03308   | 160             | 320         | 104           | 12kg   | 98 x 180mm           | Handwheel Column  | Indicator sold separately |
| 13-03309   | 180             | 320         | 104           | 9.5kg  | 150 x 200mm          | Handwheel Column  | Indicator sold separately |
| 13-1423102 | 200             | 250         | 130           | 14kg   | 230 x 200 x 50mm     | Granite, grade 00 | Indicator sold separately |
| MW498-05   | 110             | 280         | 70            | 12kg   | 98 x 98mm            | Threaded Column   | Indicator sold separately |

Other models available. Not supplied with dial gauge.

### SYLVAC COMPARATOR STANDS

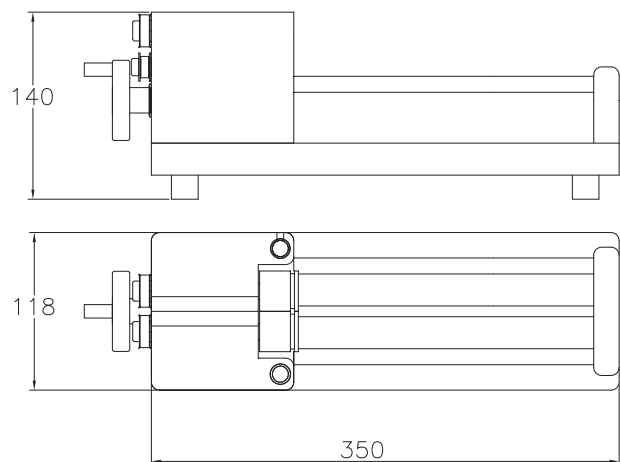
| Code No     | Height (mm) | Load Range (mm) | Overhang (mm) | Weight | Type                              | Size of Base     |
|-------------|-------------|-----------------|---------------|--------|-----------------------------------|------------------|
| 30-808-1204 | 360         | 0-260           | 115           | 13.4kg | Fine adjustment. Granite grade 00 | 300 x 210 x 60mm |
| 30-808-1206 | 270         | 0-190           | 70            | 2.9kg  | Granite, grade 00                 | 100 x 150 x 40mm |
| 30-908-1209 | 215         | 0-115           | 78            | 4.3kg  | Cast iron, ceramic table          | 85 x 85 x 25mm   |

Not supplied with dial gauge.

## DEMM Concentricity Gauge

### Features

- Instrument for measuring concentricity and roundness
- Lightweight
- Rotor on hardened stainless steel
- Three different supports for dial gauge
- Dial gauge not included
- Movable supports
- Transmission through toothed belt drive system
- Delivery: ABS case



### DEMM CONCENTRICITY GAUGE

| Code No  | Range (mm) | Repeatability (mm) | Diameter (mm) | Weight |
|----------|------------|--------------------|---------------|--------|
| 50-00879 | 1.5-50     | 0.002              | 1.5-50        | 8.5kg  |
| 50-00880 | 10-100     | 0.002              | 10-100        | 12.0kg |

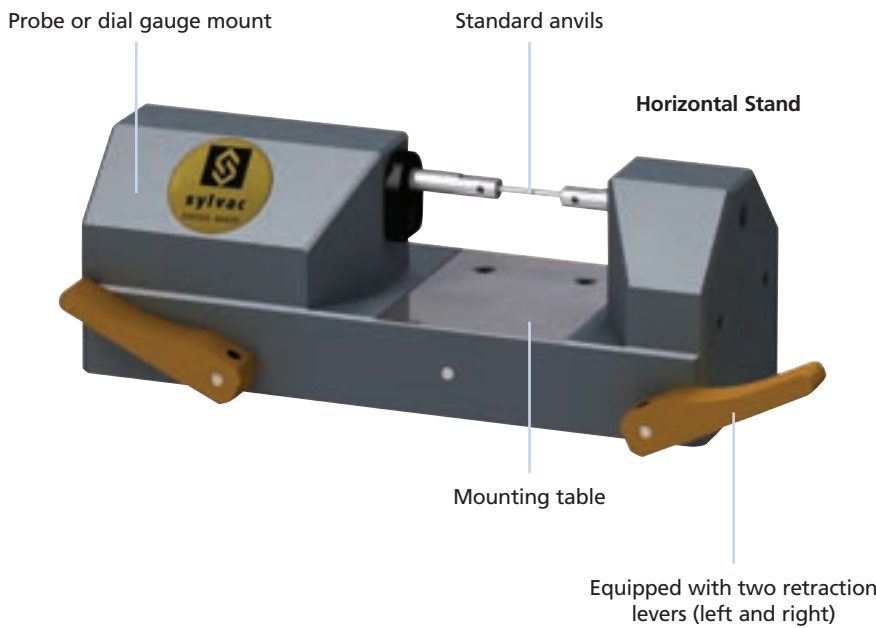
## Sylvac Measuring Stand: PS15

The Sylvac Mini-Measuring Stand is the perfect solution to the rapid and accurate inspection of small parts. This extremely robust device exerts a low measuring force and is activated by one of the two convenient operating levers. The flexible Mini-Measuring Stand can be fitted with most analogue or digital indicators, or transducer probes.



### Features

- Small horizontal or vertical bench table designed to easily and quickly check small parts up to 20mm
- Measuring spindle guided by linear ball bearing
- The measured value will be displayed either by a Sylvac digital gauge range 12.5mm, up to 0.0001mm resolution or by a Sylvac measuring probe P10 (P10L) linked to a digital display unit. Using a pair display unit / measuring probe an overall accuracy of 0.6μ and repeatability of 0.2μ can be reached
- This bench table can be equipped with different kind of tables as well as with several types of anvils of any shapes
- Wide choice of special applications can be found on our specific flyer Measuring Benches PS15-16-17



### TECHNICAL SPECIFICATION

|                                | 30-808-1215 | 30-808-1216 | 30-908-1218 |
|--------------------------------|-------------|-------------|-------------|
| Description                    | PS15BH      | PS15BV      | PS15BV+     |
| Max. capacity (mm)             | 20          | 20          | 20          |
| Measuring Range (mm)           | 10          | 10          | 10          |
| Adjustable measuring force (N) | 0.3-1.0     | 0.3-1.0     | 0.3-1.0     |
| Measuring direction            | Horizontal  | Vertical    | Vertical    |
| Anvils fixation                | Ø 1.5mm     | M2.5        | Ø 1.5mm     |
| Cary compatibility             | Yes         | Yes         | Yes         |

### SYLVAC MEASURING STAND PS15

| Code No     | Description  | Weight |
|-------------|--|--------|
| 30-808-1215 | Horizontal stand with anvils Ø 1.5mm without support table       | 1.8kg  |
| 30-808-1216 | Vertical stand with 5mm / M2.5 flat anvils without support table | 1.8kg  |
| 30-808-1218 | Vertical stand with anvils Ø 1.5mm without support table         | 1.8kg  |

Note: For indicators, probes and accessories please ask for separate specification sheet.

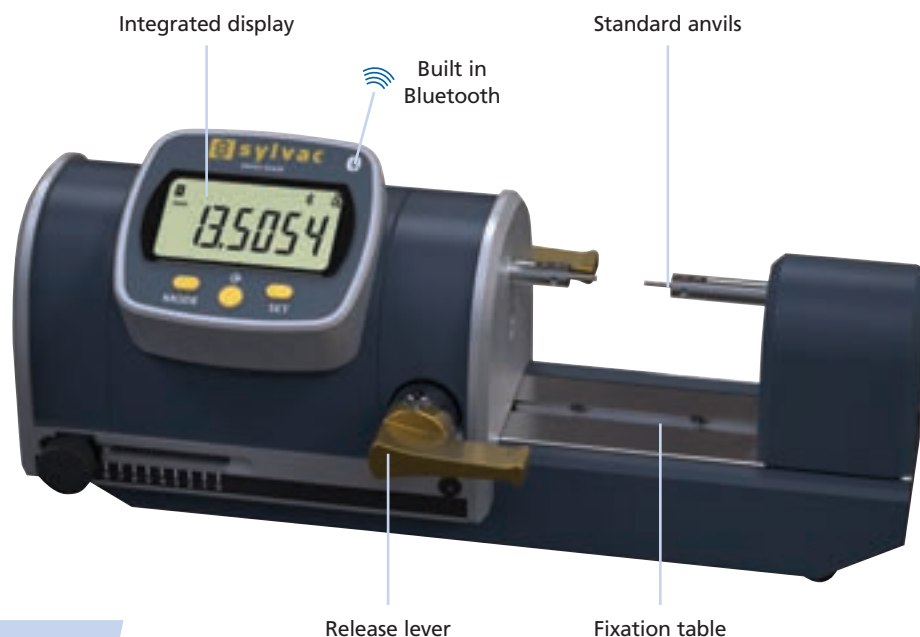
## Sylvac Horizontal Measuring Bench Table: PS16 V2

The easy to use Sylvac Horizontal Measuring Table is capable of very accurate external and internal (with attachment) measurement. Ideal for repeatable small part batch measurements, the ingenious gauge has adjustable measuring force and can be supplied with a built-in digital display or connected to a multi-function Sylvac readout unit.



### Features

- Integrated Bluetooth
- Brand new design
- Designed to check dimensions up to 50mm
- Equipped with various tables / anvils to fit the user's needs
- Adjustable measuring force
- Data output via USB or Bluetooth
- Standard measuring anvils  $\varnothing$  1.5mm



### TECHNICAL SPECIFICATION

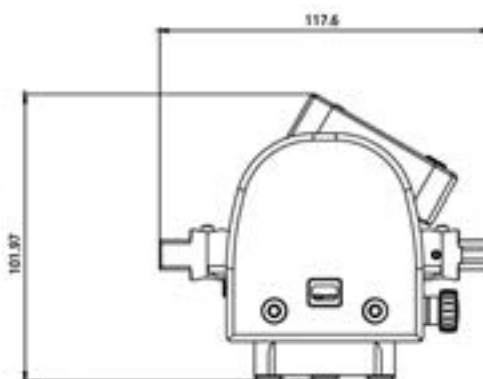
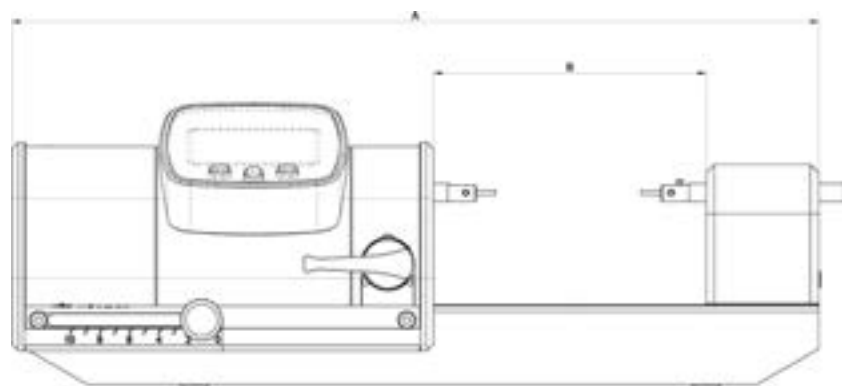
#### External and internal measurement

|                                | 30-808-1231       | 30-808-1232       |
|--------------------------------|-------------------|-------------------|
| Measuring range (mm)           | 25                | 50                |
| Max. Error ( $\mu$ m)          | 1.5               | 2.0               |
| Repeatability ( $\mu$ m)       | 0.2               | 0.2               |
| Resolution ( $\mu$ m)          | 0.1               | 0.1               |
| Measuring force (Adjustable) N | 0.1-0.6           | 0.1-0.6           |
| Weight (kg)                    | 3.6               | 4.2               |
| Anvils clamping dimension (mm) | $\varnothing$ 1.5 | $\varnothing$ 1.5 |
| Dimensions - A (mm)            | 232               | 287               |
| Dimensions - B (mm)            | 66                | 97                |

### MEASURING BENCH TABLE PS16 V2

| Code No     | Description                              |
|-------------|--|
| 30-808-1231 | Horizontal stand, integral display, 25mm |
| 30-808-1232 | Horizontal stand, integral display, 50mm |

See additional literature for alternative anvils and accessories.



## Sylvac D70 Digital Display

The Sylvac D70S/H/I have 2 probe inputs that provide multiple probe combinations, high resolution touch screen operation and the option of a simple user display or double display with an additional analogue bar-graph.

### Features

- 4.3" touch screen display
- Available in 3 versions:
  - D70S for Sylvac capacitive probes
  - D70I for Sylvac inductive probes
  - D70H for Heidenhain Spectro/Metro probes
- All versions with 2 probe inputs
- Display resolution selectable up to 0.00001 mm
- Simple or double display with bargraph or needle
- Different possibilities of probe's combination : (C1, C2, C1-C2 ...)
- Direct measurement or Min, Max, Average, Max-Min...
- User friendly interface
- Very robust construction
- USB connection 'Keyboard', the easiest way to transfer data to PC
- No driver, no software to be installed. Works everywhere (Excel, etc.)
- Powered by the computer when connected by USB cable



### SYLVAC S\_VIEW D70S/H/I DIGITAL DISPLAY UNIT

| Code No     | Description                              |
|-------------|--|
| 30-804-2070 | D70S digital display 0.0001mm resolution |
| 30-804-2071 | D70I digital display 0.0001mm resolution |
| 30-804-2072 | D70H digital display 0.0001mm resolution |
| 30-904-4101 | Foot pedal                               |

## Sylvac D300S V2 Digital Display

The D300s V2 digital display from Swiss Metrology manufacturer, Sylvac is able to display the absolute displacement position of Sylvac's extremely accurate capacitive and Inductive transducer probes, to a resolution of 0.1µm, as well as now being capable of connecting probes and instruments from other manufacturers due to the introduction of the new M-Bus input. The D300S has a highly visible 8.5" LCD touch screen digital display and is capable of accepting readings from up to 64 instruments via USB, RS232 and various other types of transducer probes from multiple manufacturers at the same time. The D300S can memorise previously input configurations and values and can recall both individual or group preset values. Each of the D300s' 64 channels has a separate maths function, whilst all of the channels have switchable numeric / analogue and statistical displays.



### Features

- Digital display with 8.5" touch screen IP65 Rated
- 6 USB inputs for Sylvac instruments
- Optional embedded inputs for Sylvac probe, 2, 4 or None
- Capability to connect transducers and instruments from other manufacturers using M-Bus
- Automatic detection of connected instruments
- Maths functions for each channel
- Switchable and configurable interface / display
- Compatible with Bluetooth instruments (USB Dongle required)



### TECHNICAL SPECIFICATIONS

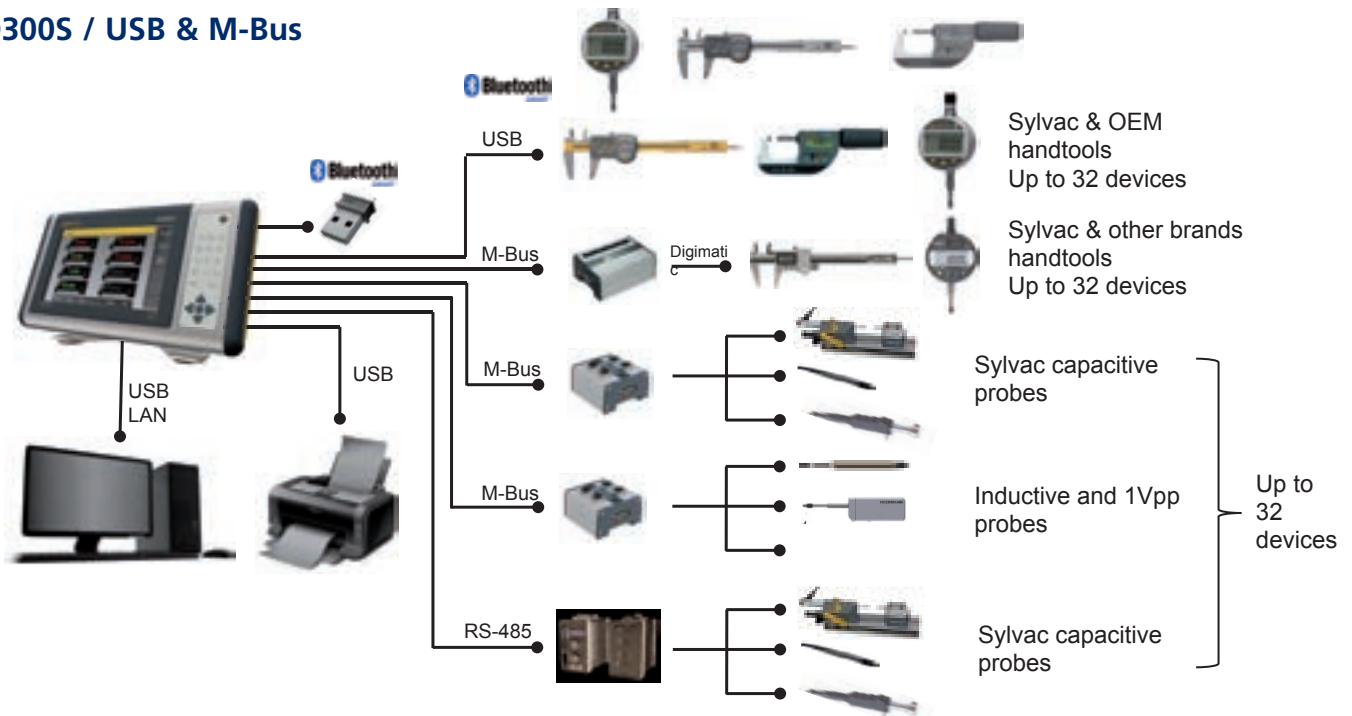
|                              | 30-804-1310        | 30-804-1300        | 30-804-1320        |
|------------------------------|--------------------|--------------------|--------------------|
| Embedded probe inputs        | 0                  | 2                  | 4                  |
| Probes types                 | Capa / ind / Lvdtd | Capa               | Capa               |
| Max probe inputs*            | 32                 | 32                 | 32                 |
| RS232 in / out               | 1                  | 1                  | 1                  |
| RS485 in                     | 1                  | 1                  | 1                  |
| M-BUS                        | 1                  | -                  | -                  |
| USB out                      | 1                  | 1                  | 1                  |
| USB in                       | 6 (up to 32*)      | 6 (up to 32*)      | 6 (up to 32*)      |
| RJ45 / LAN                   | Yes                | Yes                | Yes                |
| Footpedal plug               | Binder (2x)        | Binder (2x)        | Binder (2x)        |
| RS232 cable*                 | 1:1                | 1:1                | 1:1                |
| I/O optocoupled              | Yes                | Yes                | Yes                |
| Display mode                 | Digital & Analogue | Digital & Analogue | Digital & Analogue |
| Meas. / sec / input at 0.1µm | up to 500          | 20                 | 20                 |
| Data via USB                 | Yes**              | Yes**              | Yes**              |

\*With ext. modules \*\*Virtual COM port

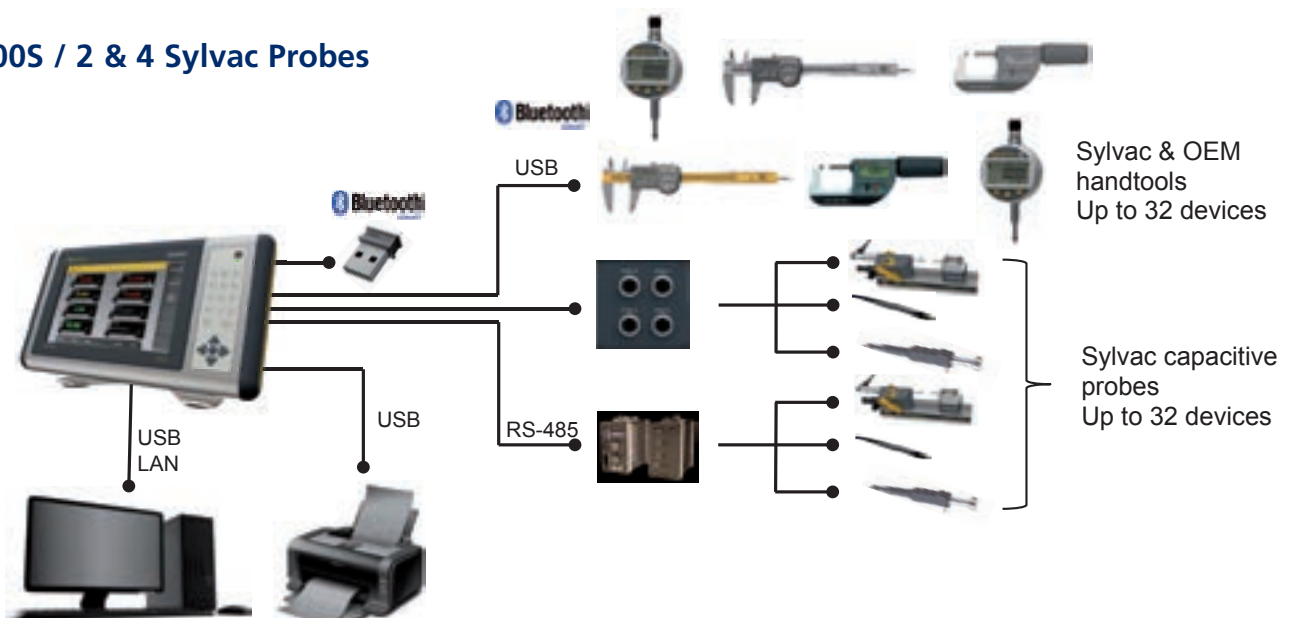
Key: Probe Types, CAPA - Capacitive, Ind - Inductive, Lvdtd - Low Voltage Displacement Transducer

## Sylvac D300S V2 Digital Display

### D300S / USB & M-Bus



### D300S / 2 & 4 Sylvac Probes



### SYLVAC D300S

| Code No     | Description                      | Output                   |
|-------------|----------------------------------|--------------------------|
| 30-804-1300 | D300S Display Unit 2 Probes 6USB | USB / RS232 Output / LAN |
| 30-804-1310 | D300S Display Unit MBUS 6USB     | USB / RS232 Output / LAN |
| 30-804-1320 | D300S Display Unit 4 Probes 6USB | USB / RS232 Output / LAN |

## Sylvac D400S Digital Display

### Features

- Digital multifunctional unit with 7" touch screen display
- Multi-brands compatible through M-BUS multiplexers (possibility to mix the transducer brands)
- Designed for multigauging applications
- Up to 99 input (probes, instruments, I/O) through M-BUS multiplexers
- Automatic detection of connected instruments
- Storage of up to 128 different parts configurations
- Up to 30,000 measurements can be saved by configuration
- Display of up to 32 channels simultaneously (on the same screen)
- Single or multi-gauging display mode
- SPC functions (run chart, pareto, histogram with Gaussian curve, etc.)
- PLC functions and PLC communication protocols
- Formula editor, free combination between all instruments connected to the M-BUS
- Configurable by PC
- Ethernet connection
- Footpedal input
- User friendly interface
- Very robust construction



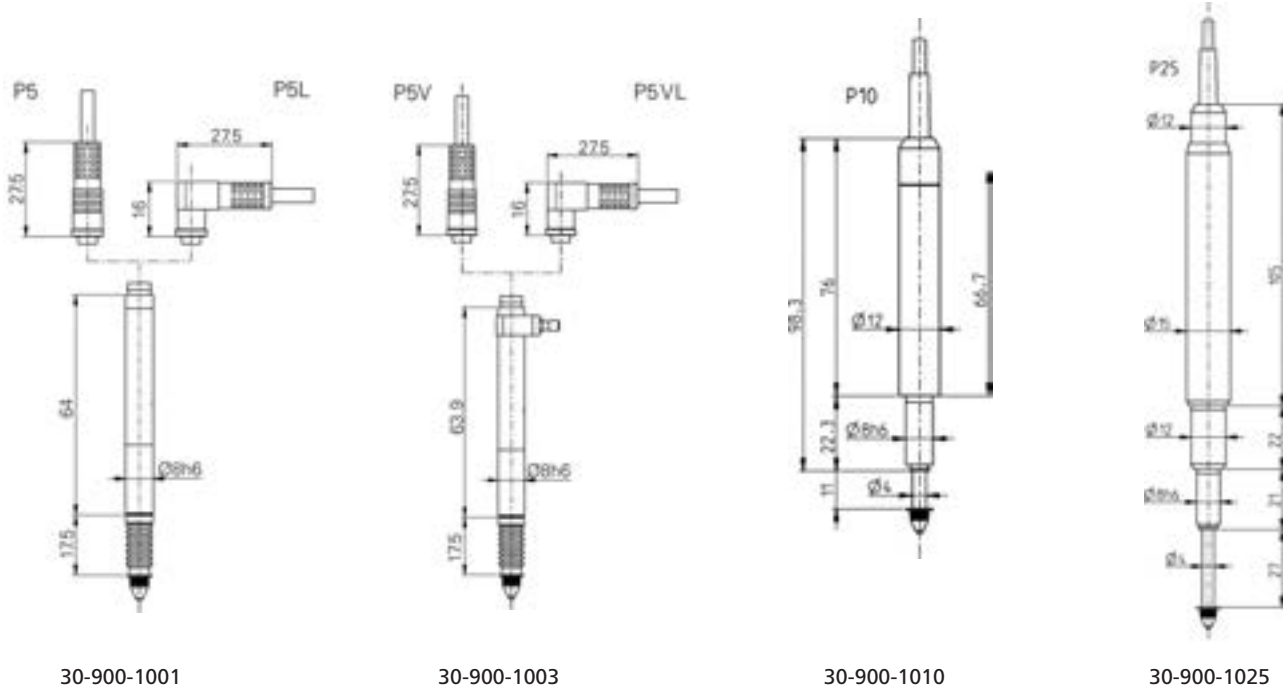
### SYLVAC D400S

| Code No     | Description        | Size                | Output                  | Weight |
|-------------|--------------------|---------------------|-------------------------|--------|
| 30-804-2400 | D400S Display Unit | 200 x 143 x 151.6mm | Mini-USB / RS232 Output | 1.3kg  |



## Transducer Probes

Sylvac long travel probes have built-in capacitive transducers which allow them to function for both absolute and comparative measurements. The Sylvac capacitive probes can be used with all Sylvac digital display units. The Sylvac inductive (PXI) probes can be used with the Sylvac D300s V2 MBUS or D70i Display Unit.



30-900-1001

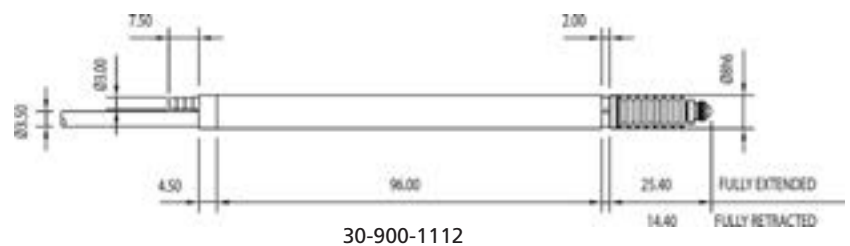
30-900-1003

30-900-1010

30-900-1025

### TRANSDUCER PROBES

| Code No     | Description                                   |
|-------------|---|
| 30-900-1025 | Sylvac P25 Transducer Probe                   |
| 30-900-1010 | Sylvac P10 Transducer Probe                   |
| 30-900-1014 | Sylvac P10L Transducer Probe                  |
| 30-900-1001 | Sylvac P5 Transducer Probe                    |
| 30-900-1006 | Sylvac P5L Transducer Probe                   |
| 30-900-1002 | Sylvac P5BL Transducer Probe                  |
| 30-900-1003 | Sylvac P5V Transducer Probe                   |
| 30-900-1008 | Sylvac P5VL Transducer Probe                  |
| 30-900-1007 | Sylvac P5BVL Transducer Probe                 |
| 30-900-1101 | Sylvac P2i Inductive Probe - Spring Force     |
| 30-900-1102 | Sylvac P2iP Inductive Probe - Pneumatic Force |
| 30-900-1111 | Sylvac P5i Inductive Probe - Spring Force     |
| 30-900-1112 | Sylvac P5iP Inductive Probe - Pneumatic Force |



30-900-1112

### CAPACITIVE PROBES

|                             | P5, P5L & P5V Probes | P10 Probe         | P25 Probe          | P2i & P2iP Probes  | P5i & P5iP Probes  |
|-----------------------------|----------------------|-------------------|--------------------|--------------------|--------------------|
| Linear measuring range      | 5mm / 0.2"           | 10mm / 0.4"       | 25mm / 1"          | +/-2mm / 0.08"     | +/-5mm / 0.2"      |
| Maximum error               | 2µm / 0.00008"       | 1µm / 0.00004"    | 1.5µm / 0.00006"   | 2µm / 0.00008"     | 5µm / 0.0002"      |
| Measuring force             | 0.45-0.65 N          | 0.6-0.9 N         | 0.6-1.2 N          |                    |                    |
| Increase of measuring force | 0.04N/mm             | 0.03 N/mm         | 0.024 N/mm         |                    |                    |
| Repeatability               | 0.2µm / 0.000008"    | 0.1µm / 0.000004" | 0.01µm / 0.000004" | 0.15µm / 0.000006" | 0.15µm / 0.000006" |
| Zero drift                  | 0.0001mm/°C          | 0.0001mm/°C       | 0.0001mm/°C        |                    |                    |
| Temperature range           | 0-50°C               | 0-70°C            | 0-70°C             |                    |                    |

'V' denotes vacuum retraction probe, 'B' denotes ball bearing, 'L' denotes side entry cable, 'P' denotes pneumatic.

## SYLVAC D62S Digital Display

### Features

- New compact display unit exclusively for P12D probes with industrial connector M8
- 2x P12D probe inputs (M8)
- Innovative modern design
- Large touch screen display 4.3" with intuitive functions
- Shockproof construction
- Built-in battery autonomy 8 hours (depends on model)
- Indication of the global tolerance (depends on model)
- Data output RS232, USB or Bluetooth® technology (depends on model)
- Advanced version with Bluetooth Data output to PC, integrated battery, and indication of global tolerances status



### SYLVAC HAND DIGITAL PROBES

| Code No     | Description   | Resolution (mm) | Force     | Maximum Error (µm) | Repeatability (µm) | Output | Resolution | Note                          |
|-------------|---|-----------------|-----------|--------------------|--------------------|--------|------------|-------------------------------|
| 30-801-2012 | Sylvac Digital Standard Resolution Probe, P12D USB  | 0.0001          | 0.2 - 0.3 | 0.6                | 0.08               | USB    | 0.00001    | Linear Measuring Range 12.7mm |
| 30-801-2017 | Sylvac Digital Standard Resolution Probe, P12D USB LF   | 0.0001          | 0.06      | 0.6                | 0.08               | USB    | 0.00001    | Linear Measuring Range 12.7mm |
| 30-801-2212 | Sylvac Digital Standard Resolution Probe, P12D M8   | 0.0001          | 0.2 - 0.3 | 0.6                | 0.08               | MB     | 0.00001    | Linear Measuring Range 12.7mm |
| 30-801-1012 | Sylvac Digital High Resolution Probe, P12D USB  | 0.00001         | 0.4 - 0.8 | 0.6                | 0.08               | MB     | 0.00001    | Linear Measuring Range 12.7mm |
| 30-801-1018 | Sylvac Digital High Resolution Probe, P12D USB CF   | 0.00001         | 0.6       | 1                  | 0.02               | USB    | 0.00001    | Linear Measuring Range 12.7mm |
| 30-801-1212 | Sylvac Digital High Resolution Probe, P12D M8   | 0.00001         | 0.2 - 0.3 | 1                  | 0.02               | USB    | 0.00001    | Linear Measuring Range 12.7mm |
| 30-801-1218 | Sylvac Digital High Resolution Probe, P12D M8 CF  | 0.00001         | 0.4-0.8   | 1                  | 0.02               | USB    | 0.00001    | Linear Measuring Range 12.7mm |
| 30-804-1062 | SYLVAC D62S Digital Display   |                 |           |                    |                    |        |            | Display details page 123      |
| 30-804-1063 | SYLVAC D62S Advanced Digital Display with Battery, Tolerance Lights and Bluetooth Data Transmission |                 |           |                    |                    |        |            | Display details page 123      |

Note: LF = Low Force, CF= Constant Force (Vertical Use Only)

## Multiplexers

A wide range of flexible Sylvac Multiplexers are available to enable the connection of multiple transfer probes (up to 64) or instruments containing an Opto RS232 output to the Sylvac range of digital display units. Plus other types of digital instruments.

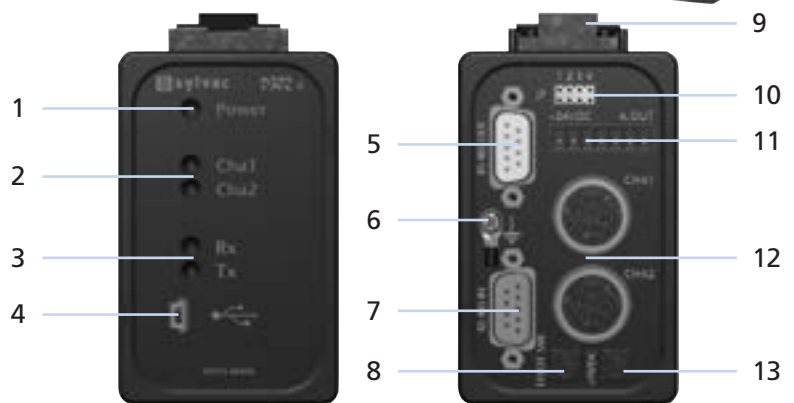


### Features

- Multiplexing unit with 2 or 4 inputs for Sylvac probes P2 to P50
- Dynamic measurement (10 - 20 meas./Sec. according to resolution)
- Perfect solution for multi-gauging system
- Analogue output for PC connection
- Standalone use possible
- Programmable by PC
- Protection rating: IP40

### MULTIPLEXERS - KEY

- |    |   |
|----|---|
| 1  | LED Power                               |
| 2  | LEDS channel                            |
| 3  | LED RS 485 activity                     |
| 4  | USB port for PC connection              |
| 5  | RS 485 output                           |
| 6  | Ground connector                        |
| 7  | RS 485 input                            |
| 8  | External connector                      |
| 9  | Standard clamping (DIN 35mm)            |
| 10 | Jumpers                                 |
| 11 | Analogue output/24 VDC (only version a) |
| 12 | Probes input                            |
| 13 | 9V power supply input                   |



### MULTIPLEXERS

| Code No     | Description                                |
|-------------|--|
| 30-804-1302 | D302 Multiplexer Unit                      |
| 30-804-1303 | D302 Multiplexer Unit with Analogue Output |
| 30-804-1304 | D304 Multiplexer Unit                      |
| 30-804-1305 | D304 Multiplexer Unit with Analogue Output |

## M-Bus Multiplexers

### Features

- Multiplexer units allowing to connect different kind and brands of instruments to the D300S V2 and D400S display units
- Possibility to connect and mix different brands together
- RS485 based protocol
- The different units can be mounted on a DIN rail
- Robust construction



### M-BUS MULTIPLEXERS

| Code No     | Description                          | Code No     | Description                   |
|-------------|--------------------------------------|-------------|-------------------------------|
| 30-804-2102 | M-Bus 2C Multiplexer Unit            | 30-804-2130 | M-Bus IO PLC I/O              |
| 30-804-2104 | M-Bus 4C Multiplexer Unit            | 30-804-2140 | M-Bus PS Measuring Bench      |
| 30-804-2108 | M-Bus 8i Inductive Multiplexer Unit  | 30-804-2160 | M-Bus RS Computer             |
| 30-804-2114 | M-Bus 4D Digimatic Multiplexer Unit  | 30-804-2170 | M-Bus TP Temperature Sensor   |
| 30-804-2118 | M-Bus 8D Digimatic Multiplexer Unit  | 30-804-2180 | M-Bus BT Bluetooth Instrument |
| 30-804-2122 | M-Bus 2S Heidenhain Multiplexer Unit | 30-804-2190 | M-Bus AG Air Gauges           |

## Baty Dual Plane Digital Height Gauge

### Features

- Range up to 0-600mm
- Measures offset components
- Can be used as an ordinary digital caliper
- Easy to use clear readout
- Large ground face to ensure component square when being measured
- 0.01mm resolution (0.0005")

DHG-300 and DHG-600

- 300mm and 600mm models supplied with dial indicator mounting feature as shown



Indicator not included

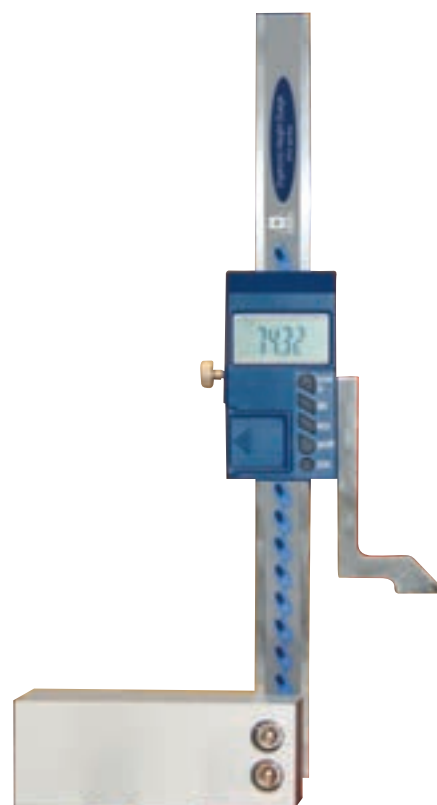
### BATY DUAL PLANE DIGITAL HEIGHT GAUGE

| Code No | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Accuracy (inch) |
|---------|------------|--------------|-----------------|-------------------|---------------|-----------------|
| DHG-150 | 0-150      | 0-6          | 0.01            | 0.0005            | +/-0.03       | 0.0012          |
| DHG-300 | 0-300      | 0-12         | 0.01            | 0.0005            | +/-0.04       | 0.0015          |
| DHG-600 | 0-600      | 0-24         | 0.01            | 0.0005            | +/-0.05       | 0.002           |

## Moore & Wright Digital Mini Height Gauge 192 Series

### Features

- Standard: Factory standard
- Large LCD display
- Solid aluminium alloy base with magnets
- Hardened stainless steel beam
- Digital functions: inch/metric/fractional, ABS, HOLD, power saving functions
- IP54 water, dust and oil resistant protection



### DIGITAL MINI HEIGHT GAUGE

| Code No   | Range (mm) | Range (inch) | Accuracy (mm) | Accuracy (inch) |
|-----------|------------|--------------|---------------|-----------------|
| MW192-20D | 0-150      | 0-6          | 0.03          | 0.001           |

## Moore & Wright Digital Height Gauge 190 Series

### Features

- Standard: Factory standard
- Easy to read LCD display
- Digital Functions: mm/inch conversion, on/off, zero-setting, max, min, hold, battery low indication
- Soft keys for maximum operating comfort
- Ground micro-lapped measuring surfaces
- Fine adjustment for high precision measurement



### DIGITAL HEIGHT GAUGE

| Code No     | Range (mm) | Range (inch) | Resolution (mm) | Resolution (inch) | Accuracy (mm) | Size of Base (mm) |
|-------------|------------|--------------|-----------------|-------------------|---------------|-------------------|
| MW190-30DBL | 0-300      | 0-12         | 0.01            | 0.001             | 0.04          | 90 x 140          |
| MW190-50DBL | 0-500      | 0-20         | 0.01            | 0.001             | 0.05          | 120 x 180         |
| MW190-60DBL | 0-600      | 0-24         | 0.01            | 0.001             | 0.05          | 120 x 180         |

## Moore & Wright Digital Height Gauge 193 Series

### Features

- Standard: Factory standard
- Easy to read LCD Display
- Digital functions: mm/inch conversion, on/off, zero setting, preset
- Ground & Micro lapped measuring surfaces
- Fine adjustment for high precision measurement
- Hand wheel operation with positive lock
- Supplied with carbide tipped scriber



### DIGITAL HEIGHT GAUGE

| Code No     | Range (mm) | Resolution (mm) | Repeatability (mm) | Accuracy (mm) |
|-------------|------------|-----------------|--------------------|---------------|
| MW193-30DDL | 0-300      | 0.01            | 0.01               | +/- 0.040mm   |
| MW193-60DDL | 0-600      | 0.01            | 0.01               | +/- 0.050mm   |

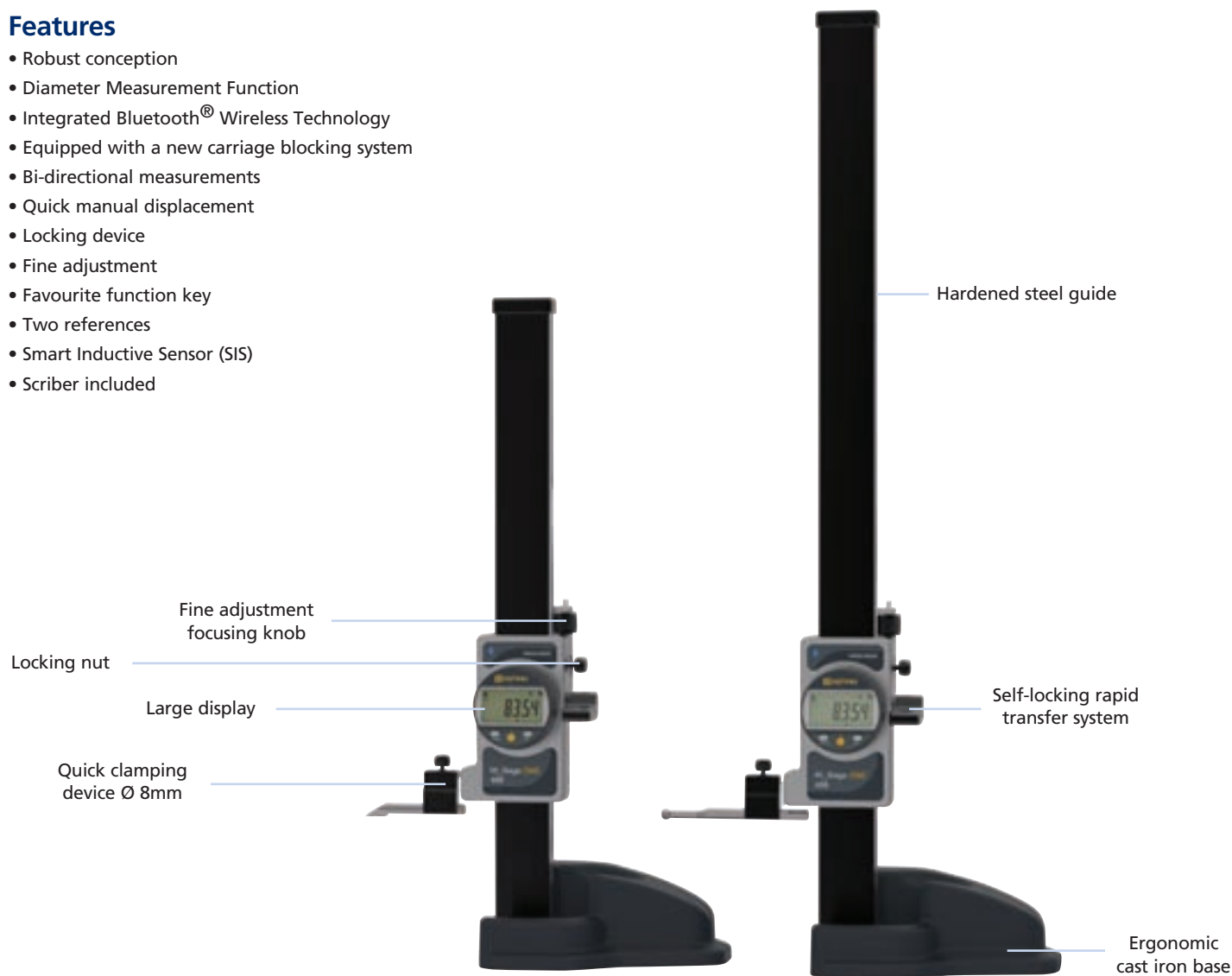
## Sylvac Hi\_Gauge ONE

Digital Height Gauge with BlueTooth from Sylvac. Tagged as IoT ready as the Integrated Bluetooth Wireless Technology give wireless connectivity. By introducing the external diameter ball probe as a constant value you can use the Hi\_Gauge ONE Smart to measure groove widths, distances and diameters making this device a very flexible instrument.



### Features

- Robust conception
- Diameter Measurement Function
- Integrated Bluetooth® Wireless Technology
- Equipped with a new carriage blocking system
- Bi-directional measurements
- Quick manual displacement
- Locking device
- Fine adjustment
- Favourite function key
- Two references
- Smart Inductive Sensor (SIS)
- Scriber included



### SYLVAC HI\_GAUGE ONE SMART

| Code No     | Description               | Range (mm) | Resolution (mm) | Maximum Error (µm) | Repeatability (µm) |
|-------------|---------------------------|------------|-----------------|--------------------|--------------------|
| 30-840-0406 | Sylvac Hi Gauge ONE Smart | 400        | 0.01            | 40                 | 10                 |
| 30-840-0606 | Sylvac Hi Gauge ONE Smart | 600        | 0.01            | 50                 | 10                 |

### SYLVAC HI\_GAGE ONE HEIGHT GAUGE

| Code No     | Description                     |
|-------------|---------------------------------|
| 30-840-9001 | Ball Probe Ø 8mm                |
| 30-840-9002 | Replacement scriber             |
| 30-905-2247 | Lever indicator dovetail holder |

## Sylvac Hi\_Cal Digital Motorised Height Gauge

The Sylvac Hi\_Cal Digital Motorised Height Gauge is perfect for a variety of measuring tasks including step heights, internal/external diameters and centre-line distances.

The height gauge benefits from Sylvac's patented inductive measuring electronics and the latest motorised probing system, to give excellent repeatability and ease of use.



### Features

- Available in three models: 150mm, 300mm and 450mm
- Motorised carriage with 2 progressive speed ranges
- Light and compact with a small footprint
- Simultaneous display of diameter and centerline
- Measures internal and external diameter, centerline, height, thickness and depth
- Extremely low measuring force
- USB data output or RS232
- Supplied with setting master and standard probe



### SYLVAC HI\_CAL DIGITAL MOTORISED HEIGHT GAUGE

| Code No     | Description       | Range (mm) | Range (inch) | Resolution (mm) | Accuracy (mm) | Height (mm) | Repeatability (µm) | Application Range (mm) | Application Range (inch) | Weight |
|-------------|-------------------|------------|--------------|-----------------|---------------|-------------|--------------------|------------------------|--------------------------|--------|
| 30-830-0150 | Non-Bluetooth     | 150        | 6            | 0.01 / 0.001    | 2.5 + L / 175 | 379         | 2                  | 0-155                  | 6                        | 3.9kg  |
| 30-830-0300 | Non-Bluetooth     | 300        | 12           | 0.01 / 0.001    | 2.5 + L / 175 | 529         | 2                  | 0-320                  | 12                       | 4.6kg  |
| 30-830-0450 | Non-Bluetooth     | 450        | 18           | 0.01 / 0.001    | 2.5 + L / 175 | 679         | 2                  | 0-470                  | 19                       | 6.8kg  |
| 30-830-0156 | Bluetooth Enabled | 150        | 6            | 0.01 / 0.001    | 2.5 + L / 175 | 379         | 2                  | 0-155                  | 6                        | 3.9kg  |
| 30-830-0306 | Bluetooth Enabled | 300        | 12           | 0.01 / 0.001    | 2.5 + L / 175 | 529         | 2                  | 0-320                  | 12                       | 4.6kg  |
| 30-830-0456 | Bluetooth Enabled | 450        | 18           | 0.01 / 0.001    | 2.5 + L / 175 | 679         | 2                  | 0-470                  | 19                       | 6.8kg  |

| Code No     | Description  |
|-------------|--|
| 30-930-2150 | Full accessories set in wooden box - 13 probes and holders |
| 30-930-2151 | Basic accessories set in wooden box - 4 probes and holders |

## Trimos Mini-Vertical Height Gauge

The Trimos Mini-Vertical Height Gauge is perfect for height measurements and scribing work and suitable for all kinds of workshop conditions. Its unique, compact design offers mobility and extreme stability. Because of its advanced measuring system, the self-contained working time of the Mini-Vertical is one year; therefore it can be used for multiple applications on the shop-floor.

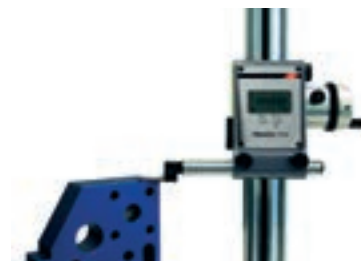


### Features

- Robust and compact construction
- Perfect for use on the shop-floor
- Constant measuring pressure
- Accurate and reliable measurements
- User friendly
- Opto-RS232 data output
- 3V Lithium battery CR2032
- Large range of accessories
- Two models available: cast iron base or granite base



Diameter measurement



Height and depth measurement



Measurement of centreline



Scribing

### TRIMOS MINI-VERTICAL

| Code No   | Description           | Range (mm) | Range (inch) | Accuracy (mm) | Resolution (mm) | Resolution (inch) | Repeatability (mm) |
|-----------|-----------------------|------------|--------------|---------------|-----------------|-------------------|--------------------|
| 20-23CI   | 300mm, Cast iron base | 320        | 12           | 0.02          | 0.01 / 0.001    | 0.0005 / 0.00005  | 0.005              |
| 20-23GR   | 300mm, Granite base   | 320        | 12           | 0.02          | 0.01 / 0.001    | 0.0005 / 0.00005  | 0.005              |
| 20-2310CI | 600mm, Cast iron base | 620        | 24           | 0.03          | 0.01 / 0.001    | 0.0005 / 0.00005  | 0.005              |
| 20-2310GR | 600mm, Granite base   | 620        | 24           | 0.03          | 0.01 / 0.001    | 0.0005 / 0.00005  | 0.005              |



## Trimos V3 and V4 Digital Height Gauges

The V3 and V4 vertical measuring instruments have been developed for the most difficult workshop environments. Manufactured in Switzerland, they guarantee a robust, precise and reliable product. The RF version has a fine adjustment.

The display unit provides functions that are directly accessible and depicted with symbols that are easy to understand. This allows for easy and quick handling even by unqualified personnel. The large 2-line 'Black Mask' display offers an exceptional contrast in all lighting conditions, a unique characteristic on the market.

The V3 measuring column represents the entry level Trimos universal measuring column, benefiting from the very latest in product development. The V4 offers the same functions as the V3. In addition it is equipped with a second probe holder as well as with an air cushion for easy displacement on the measuring table. The programmable functions buttons on the handle allow quick access to the most used functions.



Swiss Precision



Option



See page 139 for details

### Features

- Measuring range: 400mm and 700mm
- Extremely easy to use
- Electronically adjustable measuring force
- Autonomy: 40 h (lithium-ion batteries)
- Larger than 300 mm probes as standard
- Vast range of accessories
- All adjustments possible without tools
- RS232 and USB interfaces



### TRIMOS V3 AND V4 DIGITAL HEIGHT GAUGES

| Code No                           | 20-V3-400                                    | 20-V3-700                                    | 20-V4-400                                  | 20-V4-700                                   | 20-V4-400RF                                | 20-V4-700RF                                 |
|-----------------------------------|--|--|--|---|--|---|
| Range (mm)                        | 407  | 711  | 407  | 711   | 407  | 711   |
| Range (inch)                      | 16   | 28   | 16   | 28  | 16   | 28  |
| Description                       | Measuring range with extension - 508mm/20"   | Measuring range with extension - 812mm/32"   | Measuring range with extension - 719mm/28" | Measuring range with extension - 1023mm/40" | Measuring range with extension - 719mm/28" | Measuring range with extension - 1023mm/40" |
| Maximum Error (µm)                | 7  | 8  | 4.5  | 6   | 4.5  | 6   |
| Repeatability (µm)                | 2 (Ø: 4)                                     | 2 (Ø: 4)                                     | 2 (Ø: 4)                                   | 2 (Ø: 4)                                    | 2 (Ø: 4)                                   | 2 (Ø: 4)                                    |
| Frontal Squareness Deviation (µm) | 10   | 15   | 10   | 15  | 10   | 15  |
| Resolution                        | 0.001mm / (0.00005inch)                      | 0.001mm / (0.00005inch)                      | 0.001mm / (0.00005inch)                    | 0.001mm / (0.00005inch)                     | 0.001mm / (0.00005inch)                    | 0.001mm / (0.00005inch)                     |
| Force                             | Measuring Force 0.75 - 1.5N                  | Measuring Force 0.75 - 1.5N                  | Measuring Force 0.75 - 1.5N                | Measuring Force 0.75 - 1.5N                 | Measuring Force 0.75 - 1.5N                | Measuring Force 0.75 - 1.5N                 |
| Note                              | Without Air Cushion, without Fine Adjustment | Without Air Cushion, without Fine Adjustment | With Air Cushion, without Fine Adjustment  | With Air Cushion, without Fine Adjustment   | With Air Cushion with Fine Adjustment      | With Air Cushion With Fine Adjustment       |

Note: RF equals Fine Adjustment

## Trimos V5 and V6 Manual / Motorised Height Gauges

The vertical measuring instruments V5 and V6 are the descendants of the legendary V+ line; universally recognised for its ease of use and high quality.

Their clear display and user-friendly functions offer exceptional ease of use. But that's not all: the V5 and V6 are equipped with a revolutionary displacement hand-wheel offering its user the choice of displacement mode of the measuring carriage; either manual or motor-driven. Neither mode is compromised, which means that the user who prefers a manual instrument will not notice a difference from a classic manual instrument, and the same applies to the motor-driven displacement. This innovation avoids having to make a difficult choice during the purchasing process and can accommodate multiple users with the same instrument.

The design of the V5 with its side probe holders revives an old Trimos tradition: they enable measuring with long, robust probes guaranteeing excellent repeatability. The V6 is of the same calibre as the V5. It's equipped with a more precise measuring system and enables the use of an electronic perpendicular probe.



Swiss Precision



WiFi

Option



Bluetooth  
SMART  
Option



RS232

See page 139 for details

### Features

- Measuring ranges: 400, 700 and 1100mm
- Extremely easy to use
- Electronically adjustable measuring force
- Manual or motor-driven displacement
- Larger than 300mm probes as standard
- Vast range of accessories
- All adjustments possible without tools
- RS232 et USB interfaces



### TRIMOS V5 HEIGHT GAUGE

| Code No            | 20-V5-400  | 20-V5-700   | 20-V5-1100  |
|--------------------|--|---|---|
| Range (mm)         | 407  | 711   | 1110  |
| Range (inch)       | 16.0   | 28.0  | 43.7  |
| Description        | Measuring range with extension<br>mm/inch - 719/28.3 | Measuring range with extension<br>mm/inch - 1023/40.3 | Measuring range with extension<br>mm/inch - 1422/56 |
| Maximum Error (µm) | 2.5 + L(mm)/300                                      | 2.5 + L(mm)/300                                       | 2.5 + L(mm)/300                                     |
| Repeatability (µm) | 2  | 2   | 2   |
| Resolution (mm)    | 0.01 / 0.001   | 0.01 / 0.001  | 0.01 / 0.001  |
| Resolution (inch)  | 0.0005 / 0.00005                                     | 0.0005 / 0.00005                                      | 0.0005 / 0.00005                                    |
| Force              | Measuring Force - 0.75 - 1.5                         | Measuring force - 0.75 - 1.5                          | Measuring force - 0.75 - 1.5                        |
| Note               | With Air Cushion                                     | With Air Cushion                                      | With Air Cushion                                    |

### TRIMOS V6 HEIGHT GAUGE

| Code No                           | 20-V6-400  | 20-V6-700   | 20-V6-1100  |
|-----------------------------------|--|---|---|
| Range (mm)                        | 407  | 711   | 1110  |
| Range (inch)                      | 16.0   | 28  | 43.7  |
| Description                       | Measuring range with extension<br>mm/inch - 719/28.3 | Measuring range with extension<br>mm/inch - 1023/40.3 | Measuring range with extension<br>mm/inch - 1422/56 |
| Maximum Error (µm)                | 2 + L(mm)/400  | 2 + L(mm)/400   | 2 + L(mm)/400                                       |
| Repeatability (µm)                | 1 (Ø: 2)   | 1 (Ø: 2)  | 1 (Ø: 2)  |
| Frontal Squareness Deviation (µm) | 5  | 8   | 11  |
| Resolution                        | 0.001mm/ (0.00005inch)                               | 0.001mm/ (0.00005inch)                                | 0.001mm / (0.00005inch)                             |
| Force                             | Measuring Force - 0.75 - 1.5                         | Measuring Force - 0.75 - 1.5                          | Measuring Force - 0.75 - 1.5                        |
| Note                              | With Air Cushion                                     | With Air Cushion                                      | With Air Cushion                                    |

## Trimos V7 Height Gauges

The V7 combines technological innovation and tradition. With the touch-display and lateral insert holders, it truly is a universal instrument for the workshop. Functions, normally considered as complex, such as 2D, programming, statistics, become child's play, resulting in an unequalled ease of use and a substantial increase in productivity.

The pair of lateral insert holders come from generations of instruments that have forged the reputation of Trimos. Their great robustness and flexibility allow the use of very diverse probes up to 400mm long with a breath-taking repeatability.

The V7, is equipped with the revolutionary displacement handwheel allowing the user to choose either the manual or motorised displacement mode.



See page 139 for details

### Features

- Measuring ranges 400 to 1800mm
- Simple and easy-to-use graphic interface
- Electronically adjustable measuring force
- Manual or motorised displacement
- 2D, programming, statistics
- Large range of accessories
- All possible adjustments without tools
- Interfaces RS232 and USB



### TRIMOS V7 HEIGHT GAUGE

| Code No            | 20-V7-400                                     | 20-V7-700                                      | 20-V7-1100                                     | 20-V7-1800                                     |
|--------------------|---|--|--|--|
| Range (mm)         | 407   | 711  | 1110   | 1810   |
| Range (inch)       | 16  | 28   | 44   | 71   |
| Description        | Measuring range with extension mm/inch 719/28 | Measuring range with extension mm/inch 1023/40 | Measuring range with extension mm/inch 1422/56 | Measuring range with extension mm/inch 2122/83 |
| Resolution (mm)    | 0.0001  | 0.0001   | 0.0001   | 0.0001   |
| Force              | 0.75 - 1.5                                    | 0.75 - 1.5                                     | 0.75 - 1.5                                     | 0.75 - 1.5                                     |
| Resolution (inch)  | 0.00001                                       | 0.00001  | 0.00001  | 0.00001  |
| Maximum Error (µm) | 2 + L(mm)/400                                 | 2 + L(mm)/400                                  | 2.5 + L(mm)/400                                | 2 + L(mm)/300                                  |
| Repeatability (µm) | 1 (σ:2)                                       | 1 (σ:2)  | 1 (σ:2)  | 1 (σ:2)  |
| Output             | USB / RS232                                   | USB / RS232                                    | USB / RS232                                    | USB / RS232                                    |
| Note               | With Air Cushion                              | With Air Cushion                               | With Air Cushion                               | With Air Cushion                               |

## Trimos V8 and V9 Height Gauges

The V8 range has been specifically designed for applications requiring a fine adjustment of the carriage position. The V9 height gauge combines technological innovation and tradition. With the touch-display and lateral insert holders, they truly are universal instruments for the workshop. Functions, normally considered as complex, such as 2D, programming, statistics, become child's play, resulting in an unequalled ease of use and a substantial increase in productivity. The V9 is equipped with the revolutionary displacement handwheel allowing the user to choose either the manual or motorised displacement mode.



See page 139 for details

### Features for V8

- Measuring range 400-700mm
- Simple and easy to use graphics interface
- Electronically adjustable measuring force
- Manual displacement only
- 2d programming, statistics
- Large range of accessories
- All possible adjustments without tools
- Interfaces RS232 and USB

### Features for V9

- Measuring ranges 400-1100mm
- Simple and easy-to-use graphic interface
- Electronically adjustable measuring force
- Electronic probe for squareness measurements
- Manual or motorised displacement
- 2d, programming, statistics
- Interfaces RS232 and USB
- Large range of accessories
- Smart Reverse available



### TRIMOS V8 HEIGHT GAUGE

| Code No            | 20-V8-400RF                                     | 20-V8-700RF                                    | 20-V8-1100RF                                   |
|--------------------|---|--|--|
| Range (mm)         | 406   | 710  | 1109   |
| Range (inch)       | 16  | 28   | 43   |
| Description        | Measuring range with extension mm/inch - 724/28 | Measuring range with extension mm/inch 1028/40 | Measuring range with extension mm/inch 1427/56 |
| Resolution (mm)    | 0.0001  | 0.0001   | 0.0001   |
| Resolution (inch)  | 0.00001   | 0.00001  | 0.00001  |
| Accuracy (µm)      | 1.2 + l(mm) / 1000 µm                           | 1.2 + l(mm) / 1000 µm                          | 1.2 + l(mm) / 1000 µm                          |
| Force              | Measuring Force 0.75 - 1.5                      | Measuring Force 0.75 - 1.5                     | Measuring Force 0.75 - 1.5                     |
| Repeatability (µm) | 0.4 (Ø: 1)                                      | 0.4 (Ø: 1)                                     | 0.4 (Ø: 1)                                     |
| Note               | With Air Cushion                                | With Air Cushion                               | With Air Cushion                               |

### TRIMOS V9 HEIGHT GAUGE

| Code No            | 20-V9-400                                       | 20-V9-700  | 20-V9-1100                                       |
|--------------------|---|--|--|
| Range (mm)         | 406   | 710  | 1109   |
| Range (inch)       | 16  | 28   | 43   |
| Description        | Measuring range with extension mm/inch - 724/28 | Measuring range with extension mm/inch - 1028/40 | Measuring range with extension mm/inch - 1427/56 |
| Force              | Measuring Force 0.75 - 1.5                      | Measuring Force 0.75 - 1.5                       | Measuring Force 0.75 - 1.5                       |
| Resolution (mm)    | 0.0001  | 0.0001   | 0.0001   |
| Resolution (inch)  | 0.00001   | 0.00001  | 0.00001  |
| Repeatability (µm) | 0.4 (Ø: 1)                                      | 0.4 (Ø: 1)                                       | 0.4 (Ø: 1)                                       |
| Note               | With Air Cushion                                | With Air Cushion                                 | With Air Cushion                                 |

## Accessories Set (Micro) Compatible with Trimos V3, V4, V5, V6, V7 and V8

### Set includes:

- TA-MI-115, Measuring insert M1.4 with ball Ø1mm, L=12.5mm
- TA-MI-116, Measuring insert M1.4 with ball Ø2mm, L=12.5mm
- TA-MI-117, Measuring insert M1.4 with ball Ø3mm, L=12.5mm
- TA-MI-118, Measuring insert M2.5 with 4 interchangeable pins, L=16/26/36/46mm
- V-50.8, Insert holder 90°, Ø4mm
- TA-IH-116, Measuring insert holder, Ø1 x 10mm, L=80mm
- V-50.6, Measuring insert holder M2.5, L=80mm
- V-50.2.1, Disc-shaped inserts M2.5, Ø7.7mm
- V-50.2.2, Disc-shaped insert M2.5, Ø11.5mm
- V-50.10, Knife-edge insert L=88/16mm

- V-50.3, Corner insert M2.5 Ø11.5mm
- V-50.4, Measuring insert M2,5 with ball contact
- V-50.9, Measuring insert with ruby ball Ø2mm, L=88mm
- V-50.12, Measuring insert Ø1mm with holder, L=86mm
- TA-TO-003 Allen key 1.5mm
- V-50.15, Allen key 2.5mm
- V-50.13, Wrench for measuring inserts
- TA-IH-117, Holder for measuring inserts M2.5, M1.6, M1.4
- TA-IH-128, Measuring insert holder Ø4mm
- TA-IH-104, Swivel holder Ø4 and Ø8mm



20-TA-SE-105

## Accessories Set (Macro) Compatible with Trimos V3, V4, V5, V6, V7, V8 and V9

### Set includes:

- TA-MI-115, Measuring insert M1.4 with ball Ø1mm, L=12.5mm
- TA-MI-116, Measuring insert M1.4 with ball Ø2mm, L=12.5mm
- TA-MI-117, Measuring insert M1.4 with ball Ø3mm, L=12.5mm
- V-50.5, Measuring insert holder M2.5, L=124mm
- -IH-115, Measuring insert holder M2.5, L=200mm
- V-50.2.3, Disc-shaped inserts M2.5, Ø18mm
- V-50.4, Measuring insert M2,5 with ball contact
- V-50.15, Allen key 2.5mm
- V-50.13, Wrench for measuring inserts

- TA-MI-110, Measuring insert with tungst. carb. ball Ø2mm, L=80mm
- TA-MI-105, Measuring insert with tungst. carb. ball Ø4mm, L=140mm
- TA-MI-107, Measuring insert with pin Ø1.5mm, L=78mm
- TVA4, Insert holder with pin Ø2 x 20mm
- TA-IH-101, Measuring insert holder M2.5, L=103mm
- TA-IH-105, Swivel holder Ø4 and Ø8mm, L=150mm
- TA-IH-109, Insert holder 90°, Ø4mm L=65mm



20-TA-SE-106

## Accessories Set (Eco) Compatible with Trimos Vectra Touch, Mestra Touch, V3, V4, V5, V6, V7, V8 and V9

### Set includes:

- V-50.5, Measuring insert holder M2.5, L=124mm
- V-50.2.3, Disc-shaped inserts M2.5, Ø18mm
- V-50.4, Measuring insert M2,5 with ball contact
- V-50.15, Allen key 2.5mm

- TA-MI-110, Measuring insert with tungst. carb. ball Ø2mm, L=80mm
- TVA4, Insert holder with pin Ø2 x 20mm
- TA-IH-109, Insert holder 90°, Ø4mm L=65mm



20-TA-SE-107

### COMPATIBILITY WITH TRIMOS' HEIGHT GAUGE MODELS

|               | V3 | V4 | V5 | V6 | V7 | V8 | V9 |
|---------------|----|----|----|----|----|----|----|
| Set TA-SE-105 | X  | X  | X  | X  | X  | X  |    |
| Set TA-SE-106 | X  | X  | X  | X  | X  | X  | X  |
| Set TA-SE-107 | X  | X  | X  | X  | X  | X  | X  |

### TRIMOS DATA TRANSFER

| Code No      | Description  |
|--------------|--|
| 20-TA-EL-022 | Wireless Data Transfer Kit (Includes Wireless Module and Smart USB Dongle) |
| 20-TS-EL-021 | Additional Wireless Module (for addition instruments)                      |
| 30-981-7161  | Sylvac VMux Dongle (Single Licence)  |

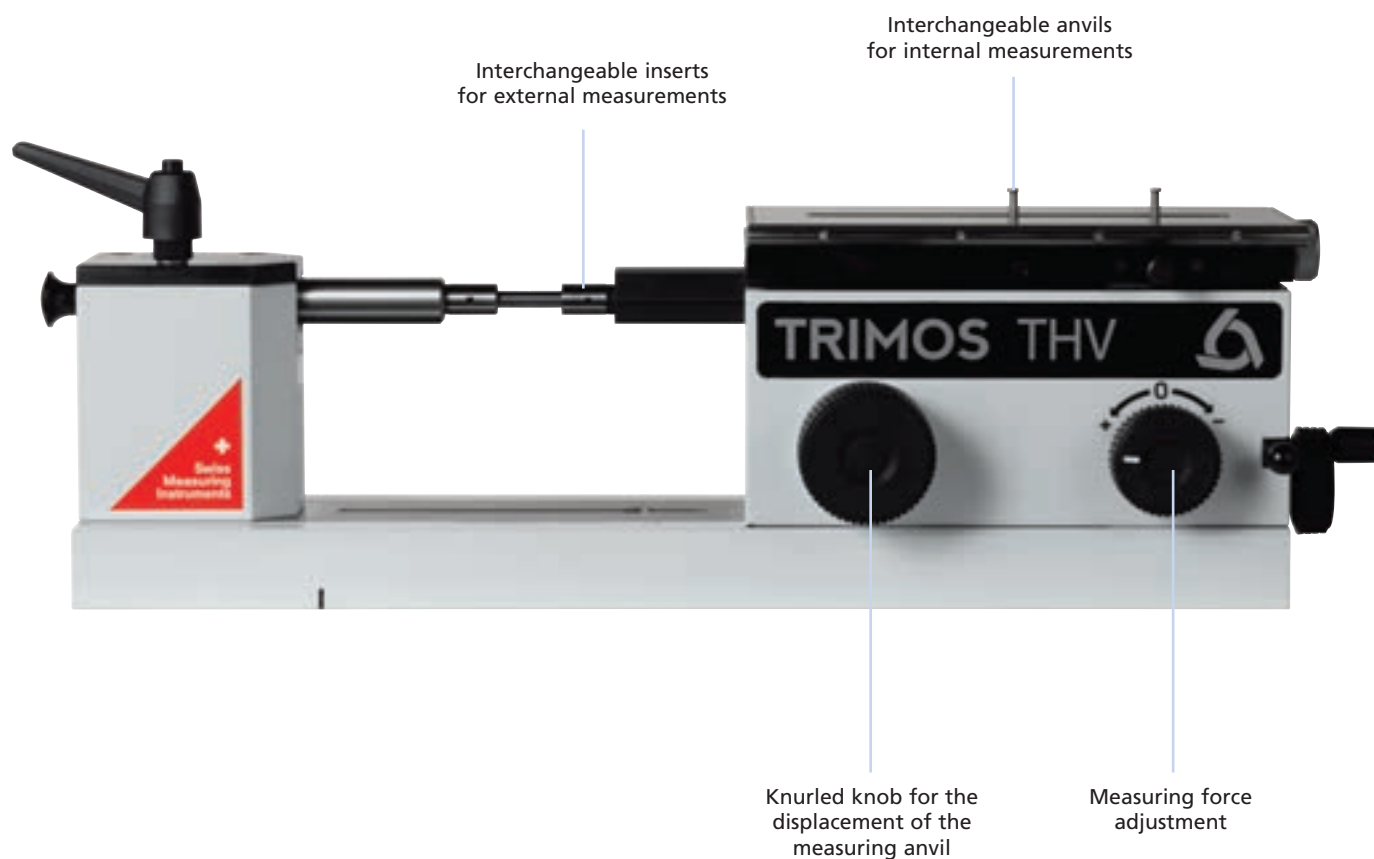
## Trimos THV Mini Horizontal Calibration Machine

The flexible Trimos THV Calibration Machine is capable of undertaking a wide range of internal and external calibration routines, belying its relatively inexpensive price. This flexible instrument can be supplied fitted with a variety of probes, scales and readouts, including Heidenhain units, dependent on the customers required accuracy specification.



The large range of ingenious, quick-fit accessories available for the THV, ensures great versatility of application. Simplicity of design and ease of use of the instrument allows rapid and accurate calibration of a wide variety of measuring instruments.

The basic instrument is supplied with a set of 6.5mm diameter carbide anvils for external measurements and a set of anvils for internal measurements, minimum diameter 10mm. Smaller diameters available on request. Resolution is dependant upon the display unit.



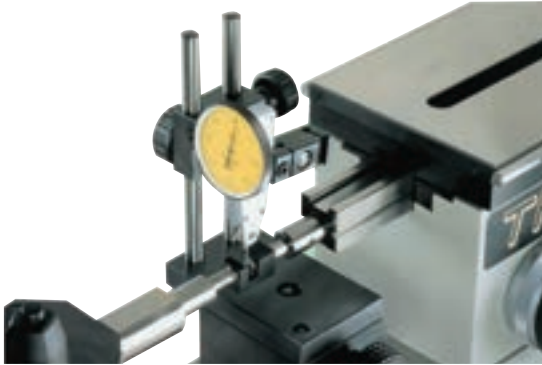
### FEATURES WITH HEIDENHAIN READOUT

|                                | Trimos THV                           |
|--------------------------------|--------------------------------------|
| Measuring range                | 0-100mm / 4"                         |
| Absolute measuring range       | 0-50mm / 2"                          |
| Resolutions                    | 0.1 - 0.00001mm / 0.0001 - 0.000001" |
| Repeatability                  | 0.1um                                |
| Measuring Force                | 0 - 4N                               |
| Accuracy over 50mm scale range | 0.2+L (mm) / 250                     |
| Operational temperature        | +10 - +40°C                          |
| Temperature of storage         | -10 - +40°C                          |
| Functions                      | Min / Max / TIR Preset               |
| Output                         | RS232 output (USB)                   |
| Weight                         | 22kg                                 |

Extensive range of accessories available - please request detailed literature.

## Trimos Accessories

Versatility of application is ensured by a large range of accessories for checking all types of gauges. The simplicity of the instrument and its ease of use allows quick and precise measurements.



1) Checking of test indicators



2) Measuring of precision parts



3) Checking of plain and threaded plug gauges using the floating table



4) Checking of internal diameters



Heidenhain Display



TFT/Touch screen option with TRIMOS-WinDHI software for all required measuring functions

### HORIZONTAL/VERTICAL CALIBRATION INSTRUMENTS

| Code No | Description                                    |
|---------|--|
| 20-3300 | THV with fixed table Heidenhain display        |
| 20-3301 | THV with floating table Heidenhain display     |
| 20-3302 | THV with fixed table D300S display P25 probe   |
| 20-3307 | THV with fixed table PC display with WinDHI    |
| 20-3309 | THV with floating table PC display with WinDHI |

For a complete list of accessories, please contact the sales office.

## Trimos Horizon Setting and Horizon Setting + Horizontal Setting Machines

Horizon Setting and Horizon Setting + are the ideal instruments for the control and calibration of measuring means with fixed and variable dimensions. Their high precision and finishing, position it as a top of the range model for workshops or laboratory use.



All measuring ranges are direct, which means that the whole measuring range is available without adjustment or intermediary re-calibration. A large selection of interchangeable accessories completes the possible applications and guarantees a correct positioning of the instruments to be calibrated.

**Note: Trimos Horizon Settings - Setting only,  
Trimos Horizon Setting + - Setting and measurement.**

### Features

- Delivered with two parallel 25mm TEL5 gauge blocks
- Robust design, ideal for use in workshop
- Very simple use
- Fast and precise checking
- Works on battery or power supply



### TRIMOS HORIZON SETTING AND HORIZON SETTING +

| Code No    | Description    | Range (mm) | Resolution (mm) | Resolution (inch) | Force | Operating Temperature | Maximum Error (µm)  | Repeatability (µm) | Range - Internal (inch) | Output    | Weight |
|------------|----------------|------------|-----------------|-------------------|-------|-----------------------|---------------------|--------------------|-------------------------|-----------|--------|
| 20-HS500   | Trimos HS500   | 0-500      | 0.0001          | 0.00001           | 15N   | +10C - +40C           | 0.7+<br>L(mm)/1000  | 0.5 (2s)           | 20                      | USB/RS232 | 94kg   |
| 20-HS1000  | Trimos HS1000  | 0-1000     | 0.0001          | 0.00001           | 15N   | +10C - +40C           | 0.7+<br>L(mm)/1000  | 0.5 (2s)           | 40                      | USB/RS232 | 123kg  |
| 20-HS1500  | Trimos HS1500  | 0-1500     | 0.0001          | 0.00001           | 15N   | +10C - +40C           | 0.7+<br>L(mm)/1000  | 0.5 (2s)           | 60                      | USB/RS232 | 152kg  |
| 20-HS2000  | Trimos HS2000  | 0-2000     | 0.0001          | 0.00001           | 15N   | +10C - +40C           | 0.7+<br>L(mm)/1000  | 0.5 (2s)           | 80                      | USB/RS232 | 1814kg |
| 20-HS3000  | Trimos H3000   | 0-3000     | 0.0001          | 0.00001           | 15N   | +10C - +40C           | 0.7+<br>L(mm)/1000  | 0.5 (2s)           | 120                     | USB/RS232 | 239kg  |
| 20-HS500+  | Trimos HSP500  | 0-500      | 0.0001          | 0.00001           | 3N    | +10C - +40C           | 0.7 +<br>L(mm)/1000 | 0.2 (2s)           | 20                      | USB/RS232 | 94kg   |
| 20-HS1000+ | Trimos HSP1000 | 0-1000     | 0.0001          | 0.00001           | 3N    | +10C - +40C           | 0.7 +<br>L(mm)/1000 | 0.2 (2s)           | 40                      | USB/RS232 | 123kg  |
| 20-HS1500+ | Trimos HSP1500 | 0-1500     | 0.0001          | 0.00001           | 3N    | +10C - +40C           | 0.7 +<br>L(mm)/1000 | 0.2 (2s)           | 60                      | USB/RS232 | 152kg  |
| 20-HS2000+ | Trimos HSP2000 | 0-2000     | 0.0001          | 0.00001           | 3N    | +10C - +40C           | 0.7 +<br>L(mm)/1000 | 0.2 (2s)           | 80                      | USB/RS232 | 181kg  |
| 20-HS3000+ | Trimos HSP3000 | 0-3000     | 0.0001          | 0.00001           | 3N    | +10C - +40C           | 0.7 +<br>L(mm)/1000 | 0.2 (2s)           | 120                     | USB/RS232 | 239kg  |



## Trimos Horizon Premium

The Trimos 'Horizon' Series of Horizontal Machines are capable of setting, checking and calibrating a wide range of gauges. The availability of the machine in a range of sizes and wide variety of holders and adapters further improves the usefulness of these quality instruments.



TFT/Touch screen option with TRIMOS-WinDHI software for all required measuring functions



### TRIMOS HORIZON PREMIUM

| Code No   | Description                             |
|-----------|---|
| 20-34550  | Trimos HPD500 Horizon, Premium digital  |
| 20-341050 | Trimos HPD1000 Horizon, Premium digital |
| 20-341550 | Trimos HPD1500 Horizon, Premium digital |
| 20-342050 | Trimos HPD2000 Horizon, Premium digital |
| 20-343050 | Trimos HPD3000 Horizon, Premium digital |

### Features

- Suitable for the shopfloor or inspection room
- Available in 5 different capacities ranging from 0-550mm up to 0-3050mm
- Separate digital readout, PC display or touchscreen option
- For machine Specifications and Accessories please request Trimos catalogue for details

## Trimos Labconcept and Labconcept Premium Calibration Machines

The Trimos Labconcept represents the latest developments in the field of multifunction calibration machines. Capable of calibrating an extremely wide range of measuring instruments with incredible speed and accuracy the instrument is now the calibration machine of choice for some of the biggest UKAS and factory laboratories throughout the UK and beyond.



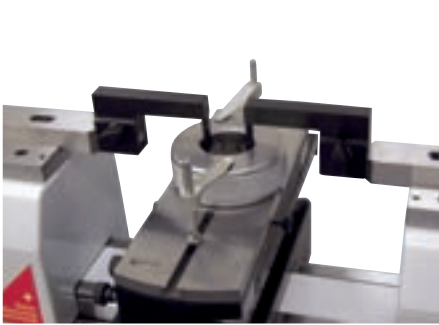
The wide range of quick-change ingenious accessories and holders facilitates the accurate calibration of an exceedingly wide range of measuring instruments. Utilising the user-friendly QM software, the instrument can rapidly send its findings to a gauge-management module or generate calibration certificates instantly.



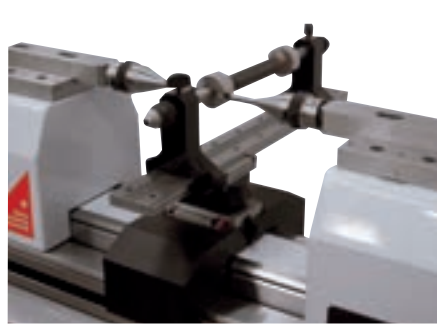
### TRIMOS LABCONCEPT CALIBRATION MACHINE

| Code No    | Range (mm) | Range (inch) | Maximum Error      | Repeatability (µm) | Resolution (mm) | Resolution (inch) | Force | Weight |
|------------|------------|--------------|--------------------|--------------------|-----------------|-------------------|-------|--------|
| 20-32500   | 550        | 21           | 0.3 + L (mm)/1500  | 0.1 (2s)           | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 94kg   |
| 20-321000  | 1050       | 41           | 0.3 + L (mm)/1500  | 0.1 (2s)           | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 123kg  |
| 20-321500  | 1550       | 61           | 0.3 + L (mm)/1500  | 0.1 (2s)           | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 152kg  |
| 20-322000  | 2050       | 80           | 0.3 + L (mm)/1500  | 0.1 (2s)           | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 181kg  |
| 20-32300P  | 370        | 14           | 0.1 + L (mm)/2000  | 0.05 (2s)          | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 78kg   |
| 20-325000P | 550        | 21           | 0.15 + L (mm)/2000 | 0.05 (2s)          | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 95kg   |
| 20-321000P | 1050       | 41           | 0.15 + L (mm)/2000 | 0.05 (2s)          | 0.01-0.00001    | 0.0001-0.000001   | 0-12N | 125kg  |

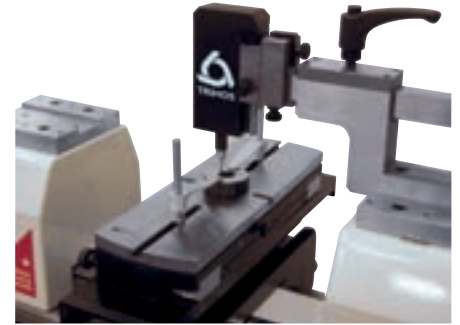
## Trimos Labconcept and Labconcept Premium Calibration Machine Applications



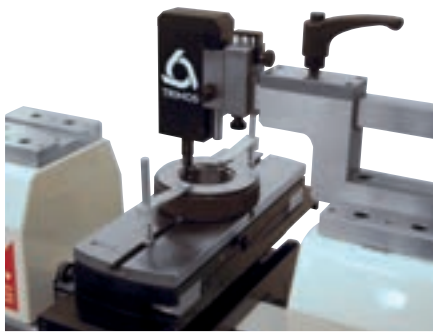
Checking of ring gauges



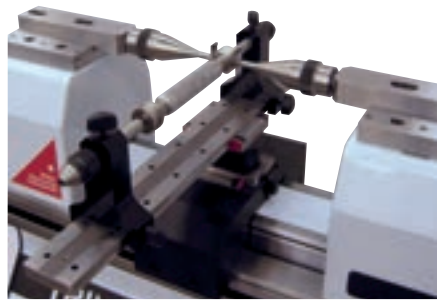
Checking of plug gauges



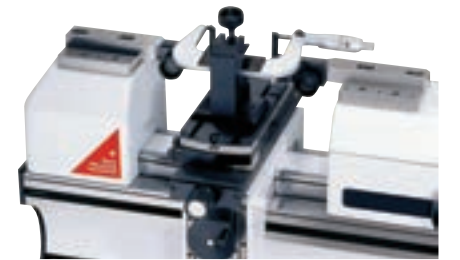
Checking of small ring gauges



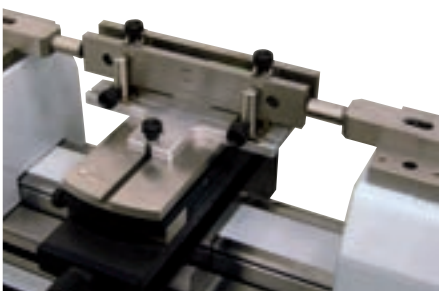
Checking of screw ring gauges



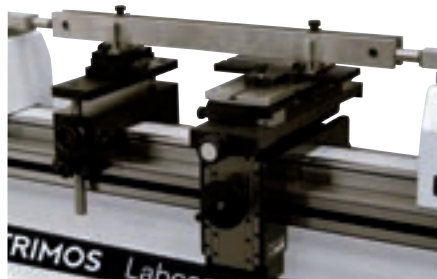
Checking of thread plug gauges



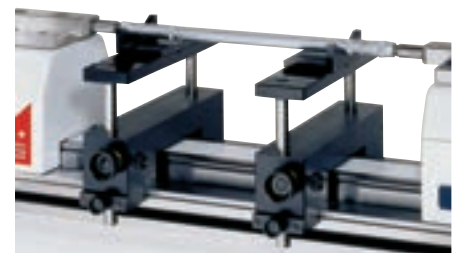
Checking of micrometers



Checking of gauge blocks



Checking of long series gauge blocks



Setting of 2-point comparative measuring equipment

### Features

- Large measuring range 0-14" (0-370mm) up to 0-79" (0-2050mm)
- Developed for EN ISO 9000/2000 standards
- Switchable resolution; 0.0001", 0.00001", 0.000001", or 0.001mm, 0.0001mm, 0.00001mm
- Wide range of easily interchangeable accessories
- Adjustable measuring force 0-12N
- Displacement speed of measuring carriage: Labconcept 1500mm/s, Labconcept Premium 400mm/s
- Fine adjustment range = 0.394" / 10mm
- Operational temperature limit 10°-40°C
- Operational humidity limit 20-80%

## Trimos Labconcept Nano Calibration Machine

The Labconcept Nano is a new reference in the field of dimensional metrology. The result of a unique combination of the most recent developments in technology and Trimos' expertise in the metrology market, comes an outstanding instrument adapted to perform all dimensional measuring tasks requiring extreme high accuracy.



With the Trimos Labconcept Nano it is possible to check all kinds of gauges as plain ring gauges, plain plug gauges, pins, threaded ring and plug gauges, conical thread ring and plug gauges, gauge blocks, snap gauges, gauge bars etc. The sizes of all gauges can be considered by selecting the required model (350mm / 600mm / 1100mm).



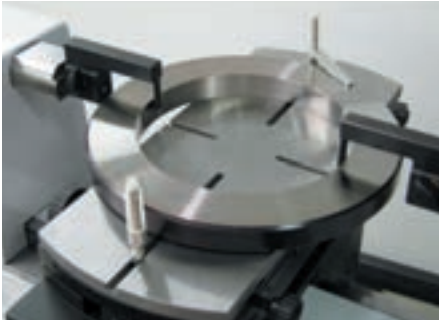
### TECHNICAL SPECIFICATION

|   |                                     |
|---|-------------------------------------|
| Max. permissible errors ( $\mu\text{m}$ )       | $0.07+L(\text{mm})/2000$            |
| Max. resolution (mm/inch)                       | 0.00001 (0.0000004)                 |
| Repeatability (2s) ( $\mu\text{m}$ )            | 0.03                                |
| Measuring force (adjustable by software) (N)    | 0-12                                |
| Time measuring a plain ring (sec)               | 40                                  |
| Time measuring a thread ring (sec)              | 50                                  |
| Movement of X axis                              | motorised                           |
| TFT screen                                      | 2 x TFT touch screen                |
| Interface                                       | PC-Dell                             |
| Temperature compensation                        | Yes, with 2 sensors                 |
| Measuring table with motorised Y and Z axis     | Yes                                 |
| Z axis, displacement range (mm)                 | 100                                 |
| Y axis, displacement range (mm)                 | 50                                  |
| X axis, floating movement (mm)                  | $\pm 10$                            |
| Angle of rotation $\emptyset$ Y ( $^\circ$ )    | $\pm 1.5$                           |
| Angle of inclination $\emptyset$ Z ( $^\circ$ ) | $\pm 4$                             |
| Operational temperature ( $^\circ\text{C}$ )    | +15 $^\circ$ to 35 $^\circ\text{C}$ |
| Stocking temperature ( $^\circ\text{C}$ )       | -10 $^\circ$ to 50 $^\circ\text{C}$ |
| Relative humidity (%)                           | 20 .. 80                            |

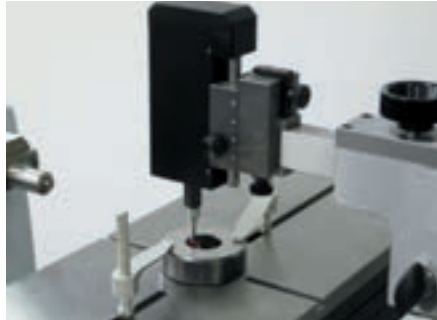
### LABCONCEPT NANO

| Code No    | Range (mm) | Range (inch) | Application Range (mm) | Application Range (inch) | Weight |
|------------|------------|--------------|------------------------|--------------------------|--------|
| 20-32350N  | 350        | 14           | 0-350                  | 0-14                     | 350kg  |
| 20-32600N  | 350        | 14           | 0-600                  | 0-24                     | 420kg  |
| 20-321100N | 350        | 14           | 0-1100                 | 0-44                     | 500kg  |

## Trimos Labconcept Nano Calibration Machine



Plain ring gauge from 15mm up to 250mm



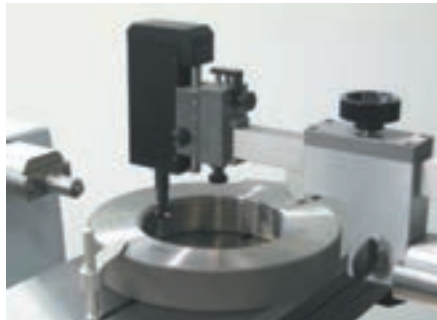
Plain ring gauge from 1mm up to 20mm



Plug gauges / pins without centers up to dia. 100mm



Thread plug gauges between centers up to 100mm



Threaded ring gauges from M3 up to M180



Checking of gauge blocks up to 250mm (250 to 1000mm)



Gauge bars from 100mm (up to the instrument range)



Checking of taper thread gauges (plug/ring gauges)

A large range of accessories is available as standard. Accessories to suite special applications can be supplied.

### Features

- Unequaled high level of accuracy:  $0.07\mu\text{m} + L/2000\text{mm}$
- Exceptional repeatability:  $0.03\mu\text{m}$
- Motorised measuring carriage, X axis, selection of speed by software
- Motorised universal measuring table, Y/Z axis. 60Kg range
- Measuring force (0-12N) and locking of measuring anvil performed by software
- Integrated temperature compensation system (2 sensors)
- Integrated gauge management software (optional)

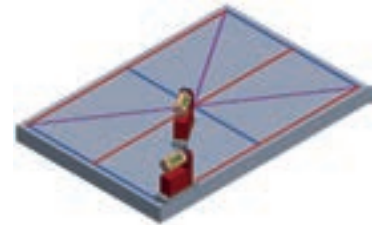
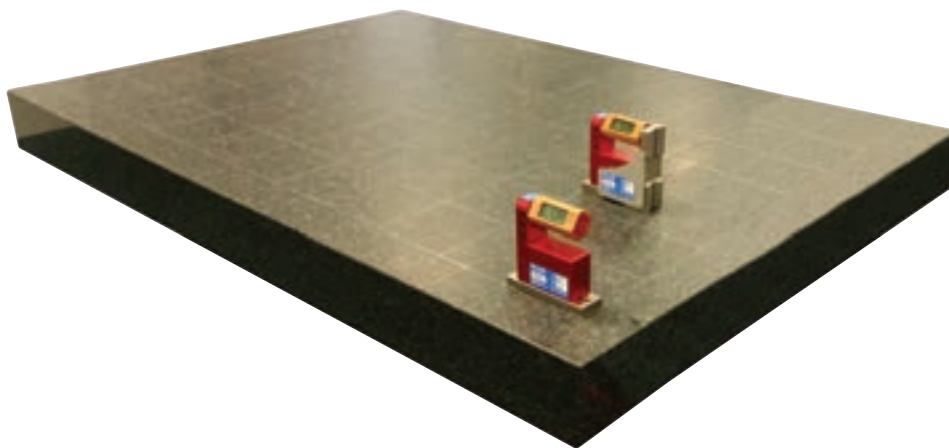
## Flatness, Calibration and Machine Tool Verification

The all-new WylerSPEC software replaces the software packages of LEVELSOFT PRO and MTSOFT. Thanks to its user-friendliness and informative display of readings, it is even easier to set up, calibrate and measure machine tools and surface plates. The new integration of popular brand laser interferometers and autocollimators makes it possible to record all the desired parameters of a machine with a single software solution.

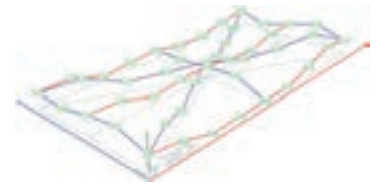


### Features

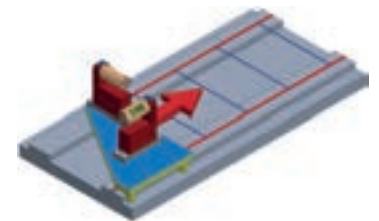
- Conforms to British Standards for surface plate calibration
- UKAS Acceptable editable certificate format
- User friendliness
- Straightforward interpretation of results
- Machine and Surface measurement database
- Modular design
- Efficient – time can be saved thanks to simultaneous measurements of multiple axis'
- Integration of laser interferometers and autocollimators



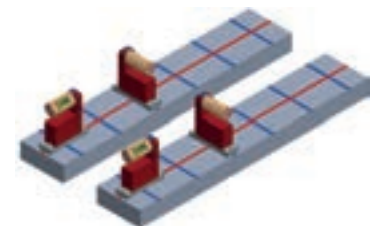
U-Jack



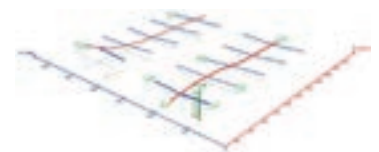
U-Jack Output



Elements Line Twist



Parallels



Parallels Chart

### TECHNICAL SPECIFICATION

|           |                                      |
|-----------|--------------------------------------|
| Module 1  | Lines / Parallelism                  |
| Module 2  | Lines / Parallelism with Twist       |
| Module 3  | Perpendicularity                     |
| Module 4  | Flatness                             |
| Module 5  | Circular Paths                       |
| Module 6  | Lines / Guideways                    |
| Module 7  | Rotation vertical axis               |
| Module 8  | Pitch, Roll and Yaw                  |
| Module 9  | Flatness and Parallelism of Surfaces |
| Module 10 | Own measurement tasks                |



### SOFTWARE OPTIONS

| Code No           | Description  |
|-------------------|--|
| 60-024-Elements-5 | WylerELEMENTS = Measurement Modules 1-5  |
| 60-024-Prof-5     | WylerPROFESSIONAL = Modules 1-9  |
| 60-024-Spec       | WylerSPEC = All modules 1-10 plus any future developed features including trend analysis functions |

## Sylvac Vmux Device Management Software

Vmux is a virtual multiplexer which allows you to connect and organise the whole range of SYLVAC Bluetooth Smart and USB products by redirecting them to the virtual COM ports.



### Features

- 32 available channels
- A maximum of 4 Bluetooth® Low Energy dongles
- 8 devices by dongle
- Instruments can also be connected by USB cable
- Application is compatible with Windows XP, Windows 7, Windows 8 & Windows 10.



### SYLVAC VMUX BLUETOOTH AND DEVICE MANAGEMENT SOFTWARE

| Code No     | Description                         |
|-------------|-------------------------------------|
| 30-981-7161 | Sylvac VMux Dongle (Single Licence) |

## Sylvac SYLCOM

The latest software from Sylvac. Sylcom allows a connection between most of the Sylvac instruments, either by USB or Bluetooth. The universal software can be used to display values in different modes, to upload the drawings of parts with dimensions, to show the agreed level of tolerances and to show the pass / fail readings. All of this data can be exported out to Excel for use in reports.

### Standard Features

- Can connect up to 16 different devices, 8 if using Bluetooth
- Can export data to Excel
- Has tolerances and control limits, selectable display mode, multigauges mode, sequence mode, user management and configuration of digital indicator menu

### Advanced Features

- Can link up to 128 devices or 40 BT devices (5 Dongles 8 Instruments per Dongle)
- Software requirements: Windows 7 / 8.1 / 10 64-Bit processor
- Hardware requirements: From Intel i5 and 4Gb RAM (8Gb recommended)

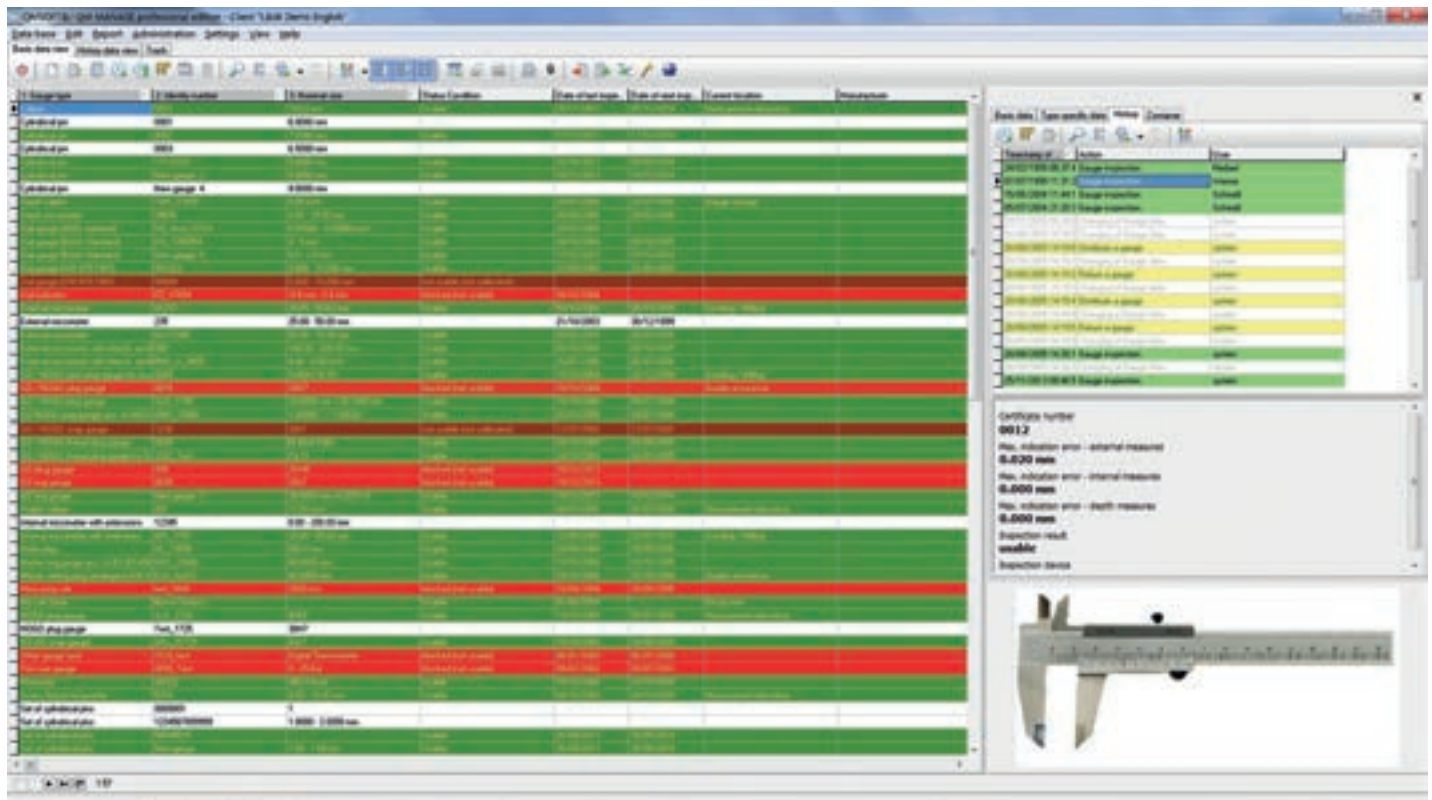
### SYLVAC SYLCOM

| Code No     | Description     |
|-------------|-----------------|
| 30-981-7132 | Sylcom Standard |
| 30-981-7232 | Sylcom Advanced |
| 30-981-7245 | Sylcom Pro      |



## Gauge Management & Calibration Software

The inspired QMSOFT (Quality Management Software) system is a comprehensive, user-friendly gauge management software programme, enabling the efficient administration of a company's measuring instrument inventory, or the effective management of commercial calibration laboratory gauge throughput. Add on individual modules relating to specific gauge categories render this powerful software one of the most comprehensive and flexible currently available.



### QMSOFT Main Features

- Gauge management and gauge inspection are integrated into the system with equal importance
- Specially developed modules make possible the calibration of all common gauges using any national, international or user defined standard. It is therefore not necessary to define an inspection procedure for each gauge type
- Extensive support for directly connected measuring devices including Trimos & Sylvac calibration instruments
- All normal sizes and tolerances for gauges are calculated by the program (with relevant modules installed)
- Inspection certificates may be customised for individual presentation saved as html, doc or pdf files

### QM-MANAG - The Gauge Management system

Code No 20-3250

QM-MANAG provides all the functions to manage the complete inventory of measuring tools and gauges. It also allows the creation of identification cards, search and reminder lists, as well as histories of all measuring tools and gauges.



The QMSOFT modules allow the operator to calibrate all types of measuring instruments against major international standards or to create and use more practical in-house standards for each gauge within the database. The easy to use, modular nature of QMSOFT allows the user to customise the software to match their own requirements.



## QM-PLAIN - plain gauge inspection

**Code No 20-3251**

QM-PLAIN supports the inspection of master rings and ring gauges, plug gauges and snap gauges. Using the selected gauge type and the nominal value provided (e.g. 2H7), the program calculates the gauge tolerances.

Includes DIN, ANSI/ASME and British Standards.

## QM-THREAD - thread gauge inspection

**Code No 20-3252**

QM-THREAD calculates the expected size over wires or balls and the pitch diameter depending on the measurement method. The program calculates the nominal sizes and tolerances for varied international standards including:

- ISO metric threads BS 3643
- Unified threads to ANSI / ASME
- Pipe threads to BS 2779
- Steel Conduit threads to DIN 40431
- Trapezoidal threads to DIN 103
- Whitworth threads BS 84:1956
- Helicoil threads to BOELLHOFF standard
- Unified threads to BS 1580
- Unified Helicoil to BOELLHOFF standard
- Buttress threads to DIN 513
- MJ threads to DIN ISO 5855
- NPSM pipe threads to ANSI / ASME
- Threads for valves to DIN 7756 / ETRTO V.7
- ACME screw threads to ASME / ANSI
- STUB ACME screw threads to ASME / ANSI
- Buttress inch screw threads 7°/45° to ANSI
- Thread gauges according to factory standard
- Plus many others



## QM-DIAL - dial gauge inspection

**Code No 20-3255**

QM-DIAL supports the inspection of dial gauges, dial indicators and dial test indicators. Standards supported include:

- Dial gauges to DIN 878
- Dial indicators to DIN 879
- Dial test indicators to DIN 227
- Dial gauges to BS 907
- Dial indicators to BS 2795

### Additional modules include:

**QM-CALIP** - Code No 20-3256 - inspection of calipers

**QM-MICRO** - Code No 20-3258 - inspection of micrometers

**QM-PINS** - Code No 20-3257 - inspection of pin gauges

**QM-EMP4W** - Code No 20-3261 - inspection of gauge blocks

**QM-TTAP** - Code No 20-3248 - inspection of tapered threads



# INNOVATEST FENIX 200 Rockwell Bench Hardness Tester

The Fenix 200 is a new fast and affordable Rockwell testing machine with high quality long life mechanics and readings from a precision analogue indicator. The newly designed C frame made out of steel (no casting) provides 100% more rigidity compared to traditional cast designs and assures excellent GR & R results, even after many years of use.

W-Fenix-200AR: the load is applied from a dead weight force actuator with solid test load selector design.

## Features

- Rockwell scales A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
- Test loads, pre-load 10kgf, main-load, (see below)
- Adjustable hydraulic force speed damper
- Adjustable dial indicator with 0.5 HR Rockwell units
- Throat depth 150mm, Working height 240mm
- Rockwell EN-ISO 6508, ASTM E-18, JIS Z 2245
- Machine weight (net) 126kg,  
Machine dimensions H765mm/W270mm/D555mm



W-Fenix-200AR

## FENIX RANGE

| Code No       | Operating Temperature | Rockwell Scales                             | Weight | Hardness Scale | Test Load Application                          | Testing Range  |
|---------------|-----------------------|---|--------|----------------|--|----------------|
| W-Fenix-200AR | 10C - 30C             | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V | 126kgs | Rockwell       | Pre-load: 10kgf.<br>Main-load: 60, 100, 150kgf | 10kgf - 150kgf |

## INNOVATEST FENIX 200 Rockwell and Brinell Bench Hardness Tester

The Fenix 200 is a new fast and affordable Rockwell testing machine with high quality long life mechanics and readings from a precision analogue indicator. The newly designed C frame made out of steel (no casting) provides 100% more rigidity compared to traditional cast designs and assures excellent GR & R results, even after many years of use.

W-Fenix-200ACL: the load is applied with a load cell, closed loop with force feedback system.

### Features

- Rockwell scales A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
- Test loads, pre-load 10kgf, main-load, (see below)
- Digital display for scale indicator, dwell time count and calibration function
- Adjustable dial indicator with 0.5 HR Rockwell units
- Start/ stop and menus selection buttons
- Throat depth 150mm, working height 240mm
- Rockwell EN-ISO 6508, ASTM E-18, JIS Z 2245
- Machine weight (net) 126kg, Machine dimensions H765mm/W270mm/D555mm
- **The Fenix-200ACL loadcell, closed loop, force feedback system is a unique feature in this class of instrument**



W-Fenix-200ACL

### FENIX RANGE

| Code No        | Operating Temperature | Rockwell Scales                             | Weight | Hardness Scale     | Test Load Application   | Testing Range                               |
|----------------|-----------------------|---|--------|--------------------|---|---|
| W-Fenix-200ACL | 10C - 30C             | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V | 116kgs | Rockwell / Brinell | Pre load: 10kgf. Main loads: 15, 62.5, 25, 30, 31.25, 60, 62.5, 100, 125, 150, 187.5kgf | 10kgf - 187.5kgf HBW<br>1/ 10 to HBW 10/100 |

## INNOVATEST NEXUS 605 and NEXUS 610 Rockwell and Brinell Hardness Testers

The NEXUS 605 and the NEXUS 610 Rockwell hardness testers offer quality and durability. The design and performance of these models make it actually best in its class. These Twin Scale models (Rockwell & Superficial Rockwell) can accommodate a wide variety of applications. The RSB models cover Brinell hardness testing from 2.5kgf up to 187.5kgf, in combination with an analogue microscope. Simply key in the measured diameters of the Brinell indent and testers calculate the Brinell value including statistics and conversion to other scales. Both models have been developed for use in general metal workshops, laboratories, schools, universities and for industries that use hardness testers on a regular basis during an 8 hours shift.

### Features

- Scales: Rockwell & Superficial Rockwell, Brinell (RSB model)
- Test Forces: 3, 10kgf pre-load, 60, 100, 150kgf main load
- All Brinell test forces from 2.5kgf up to 187.5kgf
- Load App System: Fully automatic, load cell, closed loop, force feedback
- Control and Display: 605: i-Touch, 6.5" full color touch screen  
610: Fully integrated Windows Controller, SSD hard disk, Windows 10 operated, IMPRESSIONS™ advanced workflow software, includes automatic measurement, keyboard & mouse 6.5" industrial touch screen
- Software: No of tests, Mean, St. Deviation, Min., Max., Range, CP, CPk, individual reading list, storage memory, Dwell time, test for force setting, scale selection, calibration
- Memory: 605: Large internal memory stores 99 readings  
610: Large internal memory stores 9999 readings
- Illumination: Adjustable workpiece illumination
- Spindle: Traditional cast iron frame with spindle and spindle bellows.  
Clamp to protect indenter and fix workpiece to anvil or stage
- Workpiece Acc: 260mm (H) x 165mm (D)
- Output: 605: USB  
610: Multi USB, CSV files, single readings, reports, printer

### Standard Delivery

- V-anvil
- Flat anvil 60mm
- Round testing table 150mm
- Brinell microscope (RSB)
- Power cable
- Four adjustable feet
- INNOVATEST certificate
- Installation and user manual

### Optional Accessories

- Certified indentors (ASTM, DIN, ISO)
- Certified reference hardness blocks (ASTM, DIN, ISO)
- Precision vice for small parts, jaw width 36mm
- Precision vice for small parts, jaw width 42mm
- Precision vice for small parts, jaw width 75mm
- V-blocks and special clamps
- Manual X-Y stage 100mm x 60mm, micrometer travel 25mm x 25mm
- Solid tester table and storage cabinet



### INNOVATEST NEXUS 605 AND 610 SERIES

| Code No                      | W-605RS  | W-610RS  | W-605RSB   | W-610RSB   |
|------------------------------|--|--|--|--|
| <b>Hardness Scale</b>        | Rockwell and Superficial Rockwell, all scales                | Rockwell and Superficial Rockwell, all scales  | Rockwell and Superficial Rockwell and all Brinell scales   | Rockwell and Superficial Rockwell and all Brinell scales   |
| <b>Pre-Load</b>              | 3kgf and 10kgf   | 3kgf and 10kgf   | 3kgf and 10kgf   | 3kgf and 10kgf   |
| <b>Test Load Application</b> | Load cell, force feedback, closed loop system                | Load cell, force feedback, closed loop system  | Load cell, force feedback, closed loop system  | Load cell, force feedback, closed loop system  |
| <b>Scale</b>                 | <b>Rockwell:</b> A, B, C, D, E, F, G, H, K, L, M, P, R, S, V | <b>Rockwell:</b> A, B, C, D, E, F, G, H, K, L, M, P, R, S, V   | <b>Rockwell:</b> A, B, C, D, E, F, G, H, K, L, M, P, R, S, V.<br><b>Brinell:</b> HB1, HB2.5, HB5, HB10 | <b>Rockwell:</b> A, B, C, D, E, F, G, H, K, L, M, P, R, S, V.<br><b>Brinell:</b> HB1, HB2.5, HB5, HB10 |
| <b>Load Range</b>            | <b>Rockwell Loads</b> - 15, 30, 45, 60, 100, 150kgf          | <b>Rockwell Loads</b> - 15, 30, 45, 60, 100, 150kgf  | <b>Brinell:</b> 2.5kgf./24.5N to 187.5kgf/1838N  | <b>Rockwell Loads</b> - 15, 30, 45, 60, 100, 150kgf<br><b>Brinell:</b> 2.5kgf./24.5N to 187.5kgf/1838N |
| <b>PC Connectivity</b>       | USB-2  | USB-2, (3x), converter to RS-232, LAN, RJ45, WLAN (Optional), Wi-Fi onboard (optional), Bluetooth (Optional) | USB-2  | Multi USB, CSV files, single readings, reports, printer  |
| <b>Height (mm)</b>           | 855  | 855  | 855  | 855  |
| <b>Weight</b>                | 82kgs  | 82kgs  | 82kgs  | 82kgs  |

## INNOVATEST VERZUS 710 Rockwell and Brinell Hardness Testers

The VERZUS 700 series is a new generation of hardness testing instrument. Constructed around a rock solid C-frame with unparalleled rigidity, the closed loop system based on a load cell and precision force actuator guarantees the best GR & R results ever seen on Rockwell hardness testers. The tester meets or exceeds the ISO, ASTM and JIS standards and easily passes Nadcap auditing.

### Features

- Load cell, force feedback, closed loop system
- High performance embedded fanless micro PC
- MS Windows embedded operating system
- Excellent accuracy
- Unmatched GR & R results in its class
- Load range 1kgf/9.8N up to 250kgf/2452N
- Fully automatic operation
- Meets or exceeds ISO, ASTM and JIS standards
- Shape correction settings for curved surfaces
- Go/No Go function with visual and acoustic warning
- Large memory for measurements with statistic results
- Easy calibration function
- Testing program storage
- Testing value storage
- Standard workpiece clamping attachment
- Printer & USB (3x), RJ45-LAN, W-LAN (optional), Wi-Fi onboard (Optional), Bluetooth (Optional) output
- Large workpiece accommodation
- Firmware service over internet  
"INNOVATEST Team Viewer" pre-installed

### Standard Delivery

- Flat anvil, hardened,  $\phi$ 60mm
- V-anvil, hardened,  $\phi$ 80mm
- Fuse 3A slow (2 pcs)
- BIOS, Brinell Indent Optical Scanner (RSB)
- Power cable
- Four adjustable feet
- INNOVATEST® certificate
- Installation and user manual

### Optional Accessories

- Certified indentors (ASTM, DIN, ISO)
- Certified reference hardness blocks (ASTM, DIN, ISO)
- Testing table, hardened,  $\phi$ 180mm
- Large testing table 350mm x 250mm with T-slot and spindle adapter
- Custom testing tables
- Goose neck indenter holder
- Precision vice for small parts, jaw width 42mm
- Precision vice for small parts, jaw width 75mm
- V-blocks and special clamps
- Manual X-Y stage 100mm x 60mm, micrometer travel 25mm x 25mm
- Motorized spindle operation
- Solid tester table and storage cabinet



### ROCKWELL AND BRINELL HARDNESS TESTER

| Code No  | Description   |
|----------|---|
| W-710RS  | Rockwell, Superficial Rockwell, HVT, HBT, Ball indentation for plastic ISO 2039/1, test forces 15kgf to 150kgf          |
| W-710RSB | Rockwell, Superficial Rockwell, Brinell, HVT, HBT, Ball indentation for plastic ISO 2039/1, test forces 15kgf to 150kgf |

## INNOVATEST NEMESIS 6100 Rockwell & Brinell Hardness Tester

The NEMESIS 6100 and 6100RSB are very sophisticated hardness testers. They feature an all linear force application system, with a descending test head and a fixed work piece position. This completely eliminates, any unwanted tolerance in the depth measurement. Both feature Load cell, force feedback, closed loop system, fully automatic, servo motor driven. These hardness testers can accommodate a wide variety of applications due to the IMPRESSIONS advanced hardness software. They are perfectly suitable for aircraft engine parts, automobile parts, production lines, general quality assurance and the highest standard for laboratory use..

### Features

- Scales: Rockwell & Superficial Rockwell, Brinell (RSB) model
- Test forces: 3, 10kgf pre-load; 60, 100, 150kgf main load
- All Brinell test forces from 1kgf - 250kgf (RSB models)
- Load app. system: Fully automatic, Load cell, closed loop, force feedback
- Control for W-6100: i-Touch software
- Display: 6.5" color touch screen
- Advanced output available (see below for individual machine specs)
- Software: No. of tests, Mean, St. Deviation, Min., Max., Range, Cp, CPk, individual readings list, storage memory, Dwell time, test force setting, scale selection, calibration etc
- Illumination: Adjustable workpiece illumination
- Z-Axis: Descending test head, with collision detection, CNC motorized, ball bearing spindle, with fast up down and joystick for fine adjustment
- XY-stage: Manual or/and anvils or work tables at choice
- Workpiece acc.: 345mm (H) X 220mm (D)



W-6100

### NEMESIS 6000 SERIES FROM INNOVATEST

| Code No   | Scale                                    | Load Range                                   | Output                                  |
|-----------|--|--|---|
| W-6100    | Rockwell & Superficial Rockwell          | 3 - 10kgf pre-load 60, 100, 150kgf main load | USB, single readings, text file reports |
| W-6100RSB | Rockwell & Superficial Rockwell, Brinell | 1kgf - 250kgf                                | USB, single readings, text file reports |

## INNOVATEST NEMESIS 6200 Rockwell & Brinell Hardness Tester

The NEMESIS 6200 and 6200RSB are very sophisticated hardness testers. They feature an all linear force application system, with a descending test head and a fixed work piece position. This completely eliminates, any unwanted tolerance in the depth measurement. Both feature Load cell, force feedback, closed loop system, fully automatic, servo motor driven. These hardness testers can accommodate a wide variety of applications due to the IMPRESSIONS advanced hardness software. They are perfectly suitable for aircraft engine parts, automobile parts, production lines, general quality assurance and the highest standard for laboratory use.

### Features

- Scales: Rockwell & Superficial Rockwell, Brinell (RSB models)
- Test forces: 3, 10kgf pre-load; 60, 100, 150kgf main load
- All Brinell test forces from 1kgf - 250kgf (RSB models)
- Load app. system: Fully automatic, Load cell, closed loop, force feedback
- Built-in Laser Positioning System
- Control for W-6200: Fully integrated Windows Controller, SDD hard disk, Windows 10 operated, IMPRESSIONS advanced workflow software, includes automatic measurement, keyboard & mouse
- Display: 15" full colour touch screen
- Advanced output: Multiple CSV files, single reading reports, printer, QDAS certificate
- Software: No. of tests, Mean, St. Deviation, Min., Max., Range, Cp, CPk, individual readings list, storage memory, dwell time, test force setting, scale selection, calibration etc
- Illumination: Adjustable workpiece illumination
- Z-Axis: Descending test head, with collision detection, CNC motorised, ball bearing spindle, with fast up down and joystick for fine adjustment
- XY-stage: Manual, motorised stages (option) or/and anvils or work tables at choice
- Workpiece acc.: 345mm (H) X 220mm (D)



W-6200

### NEMESIS 6000 SERIES FROM INNOVATEST

| Code No   | Scale                                    | Load Range                                   | Output   |
|-----------|--|--|--|
| W-6200    | Rockwell & Superficial Rockwell          | 3 - 10kgf pre-load 60, 100, 150kgf main load | Multi USB, CSV files, single readings, reports, printer Q-DAS cert |
| W-6200RSB | Rockwell & Superficial Rockwell, Brinell | 1kgf - 250kgf                                | Multi USB, CSV files, single readings, reports, printer Q-DAS cert |

# INNOVATEST NEXUS 3200 Load Cell Closed Loop Brinell Hardness Tester

High quality compact Brinell hardness tester with video measuring system.

RS232 



W-3200



W-3200XLM

## Features

- Simultaneous conversion to Rockwell, Vickers, Brinell and Leeb rebound testing
- Indent ZOOM function
- Fully automatic indent measurement
- BIOS equipped with LED ring light for dark field illumination
- Connectivity USB (4), UTP-RJ45-LAN, W-LAN, RS232
- Motorized X-Y stage (optional)
- XL version, 390mm workpiece height, 220mm throat depth (optional)



## INNOVATEST NEXUS 3200 Load Cell Closed Loop Brinell Hardness Tester



### TECHNICAL SPECIFICATION

|                         |   |
|-------------------------|---|
| Hardness scales         | Brinell (HB)  |
| Load range              | 62.5kgf/612N to 3000kgf/29kN  |
| Test loads              | 62.5kgf/612N, 80kgf/784N, 100kgf/980.7N, 120kgf/1176N, 125kgf/1225N, 187.5kgf/1838N, 250kgf/2.45kN, 500kgf/4.9kN, 750kgf/7.35kN, 1000kgf/9806N, 1500kgf/14.7kN, 3000kgf/29kN  |
| Brinell test range HB   | 62.5kgf/612N, 100kgf/980.7N, 125kgf/1225N, 187.5kgf/1838N, 250kgf/2.45kN, 500kgf/4.9kN, 750kgf/7.35kN, 1000kgf/9806N, 1500kgf/14.7kN, 3000kgf/29kN  |
| Indentors               | Balls 2.5mm - 5mm - 10mm  |
| Video system            | Brinell Indent Optical Scanner (BIOS-1, standard, field of view Hor. 8mm; Ver.6,5mm)<br>Brinell Indent Optical Scanner (BIOS-2, optional, field of view Hor. 2.4mm; Ver.1.8mm)  |
| Electronic system       | High performance embedded micro system controller, MS Windows®, 6.5" full color touch screen, automatic and manual measurement  |
| Test force selection    | Electronic, closed loop, load cell, force feedback system.<br>Test force selectable over menu operation   |
| Test procedure          | Automatic, loading/dwell/unloading  |
| Loading speed           | Variable, depending on test load, scale   |
| Test force accuracy     | Tolerance within 0.5% full range  |
| Firmware                | IMPRESSIONS™, advanced hardness testing software including options for: manual measurement, automatic measurement, indent zoom function, scale conversion, file storage, report printing, test program storage, machine settings storage, graphic interface for indentor position |
| Hardness conversion     | Rockwell, Vickers, Brinell, Leeb and Tensile 2 scales simultaneously  |
| Standards               | Meets or exceeds, ISO, ASTM, JIS/GB (Nadcap) standards  |
| Statistics              | Total tests, max, min, average, range, standard deviation, all in real time after each test   |
| Connectivity            | USB (4), UTP-RJ45-LAN, W-LAN, RS232   |
| Loading mechanism       | Fully automatic, closed loop, force feedback, loading, dwell, unloading   |
| Dwell time setting      | Default 10 seconds, user defined 1 to 99 seconds  |
| Workpiece accommodation | Vertical capacity 190mm normal model, 390mm XL/XLM model,<br>Horizontal capacity 220mm (from center-line), 220mm XL/XLM model (from center-line)  |
| Operating temperature   | 10°C to 35°C, non-condensing  |
| Humidity                | 10% to 90% non-condensing   |
| Machine dimensions      | 190mm x 617mm x 790mm,<br>190mm x 617mm x 985mm (XL/XLM model)  |
| Machine weight          | 130kg, 145kg XL model 150kg XLM model   |
| Power supply            | 100V AC to 240V AC, 50Hz/60Hz, single phase   |



### Standard Delivery

- V-anvil, hardened, ø80mm
- Large flat anvil, ø200mm
- Ball indentors ø 2.5mm, ø5mm and ø10mm
- Hardness test block, 150-250 HBW 10/3000
- Hardness test block, 75-125 HBW 10/1000
- Hardness test block, 150-250 HBW 2.5/187.5
- Brinell Indent Optical Scanner (BIOS-1, field of view Hor. 8mm - Ver. 6.5mm), including large support base, small support base and magnetic support base
- Wireless mouse and keyboard
- Fuse 2A (3 pcs)
- Power cable
- Four adjustable vibration dampers
- INNOVATEST certificate
- Installation and user manual

### Optional Accessories

- Certified indentors (ASTM, DIN, ISO)
- Certified reference hardness blocks (ASTM, DIN, ISO)
- Large testing table, 350mm x 250mm, with T-slots
- Extra large testing table, 450mm x 350mm, with T-slots
- Custom testing tables
- Motorized X-Y stage
- Spring loaded workpiece clamping system
- Extended height/width frame XL models
- Motorised spindle for fully automatic testing on XL models
- Solid tester stand and storage cabinet

### NEXUS 3200 SERIES TESTER

| Code No   | Description   |
|-----------|---|
| W-3200    | Brinell, with BIOS, test forces 62.5kgf/612N to 3000kgf/29kN                                      |
| W-3200XL  | Brinell, with BIOS, tall version, test forces 62.5kgf/612N to 3000kgf/29kN                        |
| W-3200XLM | Brinell, with BIOS, tall version with motorized spindle, test forces 62.5kgf/612N to 3000kgf/29kN |

## INNOVATEST NEXUS 3300 - 3400 Brinell Hardness Tester from Innovatest

The NEXUS 3300-3400 has a fully enclosed body. Dust proof. Can either be accommodated with a manual spindle for semi-automatic testing or with a motorized spindle (the M-model) for fully automatic testing. The standard included Brinell Indent Optical Scanner (BIOS) can be used on large or small components. One push on the button of the BIOS generates a crisp high definition image of the indent on the large full color touch screen. Automatic measurement provides instant Brinell readings. The rock solid frame structure, covered with ABS shock absorbers, can withstand the harshest environment.



### Features

- Scales: Brinell
- Test Forces: 62.5kgf - 3000kgf
- Microscope: BIOS Brinell Indent Optical Scanner
- Load App System: Fully automatic, Load cell, closed loop, force feedback
- Control: Fully integrated Windows Controller, SSD hard disk, Windows 10 operated, IMPRESSIONS™ advanced workflow software, includes Automatic measurement
- Display: 15" full colour touch screen
- Software: Multi USB, CSV files, single readings, reports, printer
- Illumination: Power LED
- Z-Axis: Manual or motorised
- Clamp to protect indenter and fix workpiece to anvil or stage
- Workpiece Acc:
  - 3300; 345mm (H) x 230mm (D)
  - 3300M; 365mm (H) x 230mm (D)
  - 3400; 520mm (H) x 280mm (D)
  - 3400M; 485mm (H) x 280mm (D)
- Anvils: Anvils, stages, accessories as per detailed catalogue



W-3300M

### THE NEXUS 3300 AND 3400

| Code No | Description                                   | Load Range        |
|---------|---|-------------------|
| W-3300M | Load Cell Closed Loop Brinell Hardness Tester | 62.5kgf - 3000kgf |
| W-3400M | Load Cell Closed Loop Brinell Hardness Tester | 62.5kgf - 3000kgf |

## INNOVATEST NEXUS 3300 - 3400 Brinell Hardness Tester from Innovatest

The NEXUS 3300-3400 has a fully enclosed body. Dust proof. Can either be accommodated with a manual spindle for semi-automatic testing or with a motorized spindle (the M-model) for fully automatic testing. The standard included Brinell Indent Optical Scanner (BIOS) can be used on large or small components. One push on the button of the BIOS generates a crisp high definition image of the indent on the large full color touch screen. Automatic measurement provides instant Brinell readings. The rock solid frame structure, covered with ABS shock absorbers, can withstand the harshest environment.



### Features

- Scales: Brinell
- Test Forces: 62.5kgf - 3000kgf
- Microscope: BIOS Brinell Indent Optical Scanner
- Load App System: Fully automatic, Load cell, closed loop, force feedback
- Control: Fully integrated Windows Controller, SSD hard disk, Windows 10 operated, IMPRESSIONS™ advanced workflow software, includes Automatic measurement
- Display: 15" full colour touch screen
- Software: Multi USB, CSV files, single readings, reports, printer
- Illumination: Power LED
- Z-Axis: Manual or motorised
- Clamp to protect indenter and fix workpiece to anvil or stage
- Workpiece Acc:
  - 3300; 345mm (H) x 230mm (D)
  - 3300M; 365mm (H) x 230mm (D)
  - 3400; 520mm (H) x 280mm (D)
  - 3400M; 485mm (H) x 280mm (D)
- Anvils: Anvils, stages, accessories as per detailed catalogue



W-3400FA

### THE NEXUS 3300 AND 3400

| Code No  | Description  | Load Range        |
|----------|--|-------------------|
| W-3300FA | Fully Automatic, Load Cell Closed Loop, Force Feedback | 62.5kgf - 3000kgf |
| W-3400FA | Fully Automatic, Load Cell Closed Loop, Force Feedback | 62.5kgf - 3000kgf |

## INNOVATEST FALCON 400 Micro Vickers, Vickers, Knoop, Micro Brinell Hardness Testers

The FALCON 400 series, Micro Vickers, Vickers, Knoop and Micro Brinell hardness testing machines are a new generation of instruments, improving conventional hardness testing methods and focused user influence on the test results.

The unique force actuator system utilises an electronically controlled closed loop system and advanced force sensor technology, with force feedback to achieve absolute accuracy, reliability and repeatability, on each of the forces used for a test.

### Standard features on all models

- Load cell, closed loop force control
- Force Range from 1gf to 31.25kgf (Dependent on model)
- I-Touch® work flow control
- Automatic scale selection
- Animated graphics shows current test status
- Outside limit ranges highlighted in red
- Calibrated step less Indent ZOOM system (standard with IMP system)
- Auto save, program setup, data storage
- 2 indenter positions, 4 objective positions
- Quality optical system
- Integrated Camera mount
- High power LED vertical illuminator with filter position
- 7.5" HD industrial touch screen on adjustable table stand
- Connectivity: USB port, RS-232 1 camera USB port

### Standard configuration & accessories

- 1 Indenter position / actuator installed
- 1 factory certified Micro Vickers indenter
- 1 objective 10x, 1 objective 40x
- Manual X-Y stage 100mm x 100mm, travel 25mm x 25mm
- 4 Vibration dampers
- Installation and operator manual
- Power cable
- Spare fuse
- Certificate of calibration



7.5" Standard Touch Screen Display

Optional Impressions™ Software Package

Notes: Machine shown with optional motorised XY stage available with IMPRESSIONS software package

### FALCON 400 HARDNESS TESTERS

| Code No | Hardness Scale                         | Hardness Conversion  | Test Cycles                    | Test Load Application                               | Load Range      | Weight |
|---------|--|--|--------------------------------|---|-----------------|--------|
| W-401   | Micro Vickers, Vickers, Knoop, Brinell | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb and Tensile. (ISO 18625/ASTM E140) | Motorized, automatic procedure | Multi-load cell, force feedback, closed loop system | 10gf - 2kgf     | 75kg   |
| W-402   | Micro Vickers, Vickers, Knoop, Brinell | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb and Tensile. (ISO 18625/ASTM E140) | Motorized, automatic procedure | Multi-load cell, force feedback, closed loop system | 1gf - 2kgf      | 75kg   |
| W-403   | Micro Vickers, Vickers, Knoop, Brinell | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb and Tensile. (ISO 18625/ASTM E140) | Motorized, automatic procedure | Multi-load cell, force feedback, closed loop system | 10gf - 10kgf    | 75kg   |
| W-404   | Micro Vickers, Vickers, Knoop, Brinell | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb and Tensile. (ISO 18625/ASTM E140) | Motorized, automatic procedure | Multi-load cell, force feedback, closed loop system | 1gf - 10kgf     | 75kg   |
| W-407   | Micro Vickers, Vickers, Knoop, Brinell | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb and Tensile. (ISO 18625/ASTM E140) | Motorized, automatic procedure | Multi-load cell, force feedback, closed loop system | 10gf - 31.25kgf | 75kg   |
| W-408   | Micro Vickers, Vickers, Knoop, Brinell | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb and Tensile. (ISO 18625/ASTM E140) | Motorized, automatic procedure | Multi-load cell, force feedback, closed loop system | 1gf - 31.25kgf  | 75kg   |

## INNOVATEST FALCON 450 Micro Vickers, Vickers, Knoop, Micro Brinell Hardness Tester

The FALCON 450 series, Micro/Macro Vickers and Micro Brinell hardness testing machines are a new generation of instruments, improving conventional hardness testing methods and focused on eliminating user influence on the test results.

The unique force actuator system utilises an electronically controlled closed loop system and advanced force sensor technology, with force feedback to achieve absolute accuracy, reliability and repeatability, on each of the forces used for a test.

Besides this advanced electromechanical force application system, the FALCON offers superior quality mechanical and optical components, used to complete the instrument.

### Standard features on all models

- Load cell, closed loop force control
- Force Range from 10gf to 62.5kgf (Dependent on Model)
- I-Touch™ work flow control
- Automatic scale selection
- Animated graphics shows current test status
- Outside limit ranges highlighted in red
- Calibrated step less Indent ZOOM system (standard with IMP system)
- Auto save, program setup, data storage
- 2 indenter positions, 4 objective positions
- Quality optical system
- Integrated Camera mount
- High power LED vertical illuminator with filter position
- 7.5" HD industrial touch screen on adjustable table stand
- Connectivity: USB port, RS-232 1 camera USB port

### Standard configuration & accessories

- 1 Indenter position / actuator installed
- 1 factory certified Micro Vickers indenter
- 1 objective 10x, 1 objective 20x
- Manual X-Y stage 100mm x 100mm, travel 25mm x 25mm
- 4 Vibration dampers
- Installation and operator manual
- Power cable
- Spare fuse
- Certificate of calibration



7.5" Standard Touch Screen Display

Optional Impressions™ Software Package



### FALCON 450 SERIES OF HARDNESS TESTERS

| Code No | Hardness Scale                            | Hardness Conversion  | Magnification             | Test Cycles                    | Test Load Application                               | Load Range                                    | Weight |
|---------|---|--|---------------------------|--------------------------------|---|---|--------|
| W-455   | Micro Vickers, Vickers, Knoop and Brinell | Rockwell, Superficial<br>Rockwell, Vickers, Brinell, Knoop, Leeb and Tensile | 5x, 10x, 20x,<br>40x, 60x | Motorized, automatic procedure | Multi load cell, force feedback, closed loop system | 200gf - 31.25 kgf<br>(optional 10gf - 200kgf) | 80kg   |
| W-459   | Micro Vickers, Vickers, Knoop and Brinell | Rockwell, Superficial<br>Rockwell, Vickers, Brinell, Knoop, Leeb and Tensile | 5x, 10x, 20x,<br>40x, 60x | Motorized, automatic procedure | Multi load cell, force feedback, closed loop system | 200gf -62.5kgf<br>(optional 10gf - 200kgf)    | 80kg   |

## INNOVATEST FALCON 500 Micro/Macro Vickers Hardness Tester

The FALCON 500 series, Micro Vickers, Vickers and Micro Brinell hardness testing machines improve conventional hardness testing methods and focus on eliminating user influence on the test results. The unique force actuator system utilizes an electronically controlled closed loop system and advanced force sensor technology to achieve absolute accuracy, reliability and repeatability, on each of the forces used for a test.

IMPRESSIONS software allows file storing, test program setting and storing, image zoom, auto focus, limit settings, conversions to other hardness scales, system setup and (remote) control, pattern testing (CHD/Nht/Rht) and widely contributes to the high reproducibility of test results. Fully automatic image evaluation combined with intuitive operator software avoid operator influence on the test results.



W-501

### Features

- Load cell, closed loop force control
- IMPRESSIONS operator control
- Auto brightness
- Auto contrast
- Auto sharpness
- Auto focus
- Automatic indent measurement
- 2 indenter positions, 4 objective positions
- 5mp HD camera
- High power LED vertical illuminator with filter position
- Anti-collision system
- Powerful Embedded Micro Controller; MS Windows, 80gb dual SSD data storage keyboard & mouse
- 15" portrait mode, HD industrial touch screen on adjustable table stand

## INNOVATEST FALCON 500 Micro/Macro Vickers Hardness Tester

### Optional Accessories

- Overview camera
- Click & Go software option (requires motorised X-Y stage & Overview camera)
- Pattern testing (requires motorised X-Y stage)
- CHD, Nht, Rht (requires Pattern testing and motorised X-Y stage)
- Certified indenters
- Certified hardness test blocks
- Motorised X-Y stage
- 2nd indenter position
- 150mm Ø table
- Choice of objectives (see specification leaflet)
- V-anvil for 1-6mm
- V-anvil for 4-20mm

### TECHNICAL SPECIFICATION

|                         |   |
|-------------------------|---|
| Hardness scale          | (Micro/Macro) Vickers, Knoop & Brinell  |
| Load application        | Load cell, force feedback, closed loop system   |
| Load range              | 1gf up to 62.5Kgf   |
| Motorised turret        | 6 positions; 2 indenter positions, 4 objectives positions   |
| Optical system          | High definition, 5Mpx machine Vision system   |
| Objectives              | 2.5x, 5x, 10x, 20x, 40x, 60x, 100x  |
| Overview & full view    | 5Mpx optical ZOOM camera, field of view 35x35mm / 200x200mm   |
| Electronic system       | High performance embedded micro system controller, MS Windows® , 15" full colour industrial touch screen, automatic and manual measurement  |
| Test loads              | 1gf, 2gf, 3gf, 4gf, 5gf, 6gf, 7gf, 8gf, 9gf, 10gf, 20gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1kgf, 2kgf, 2.5kgf, 3kgf, 4kgf, 5kgf, 6.25kgf, 10kgf, 15.625kgf, 20kgf, 25kgf, 30kgf, 31.25kgf, 50kgf, 62.5kgf |
| Vickers test range      | HV0.001, HV0.002, HV0.003, HV0.004, HV0.005, HV0.006, HV0.007, HV0.008, HV0.009, HV0.010, HV0.020, HV0.025, HV0.050, HV0.1, HV0.2, HV0.3, HV0.5, HV1, HV2, HV2.5, HV3, HV4, HV5, HV10, HV20, HV25, HV30, HV50   |
| Brinell test range      | HB1/1kgf, HB1/2.5kgf, HB1/5kgf, HB1/10kgf, HB1/30kgf; HB2.5/6.25kgf, HB2.5/15.625kgf, HB2.5/31.25kgf, HB2.5/62.5kgf   |
| Knoop                   | HK0.01, HK0.02, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1, HK2, HK5  |
| Indenters               | Factory indenters or certified indenters (DKD, UKAS, ASTM) (optional)   |
| Test cycles             | Fully automatic, automatic and manual   |
| Standards               | Complies to or exceeds, ISO, ASTM, JIS (Nadcap) standards   |
| Test force accuracy     | <1% for test force 200gr to 62.5kg, <1.5% for test force below 100gr  |
| Display resolution      | 0.1 HV, HK, 0.5 HB  |
| Hardness conversion     | Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile   |
| Statistics              | Total test, max, min, average, range, standard deviation, all in real time after each test  |
| Data storage capacity   | Dual SSD 80Gb, RAID system  |
| Connectivity            | 2 USB ports, RJ45 Ethernet LAN, W-LAN, RS-232, Blue Tooth, 5 Axis CNC & motorized X-Y stage connector   |
| Dwell time setting      | Default 10 seconds, user defined 1 to 99 seconds (1 sec increments)   |
| Printer                 | A4, A3 full colour laser printer (optional)   |
| Manual stage dimensions | Stage 100mm x 100mm,<br>Travel 25mm x 25mm,<br>Reading 0.01mm   |
| Operating temperature   | 10°C to 35°C, non-condensing  |
| Humidity                | 10% to 90% non-condensing   |
| Machine dimensions      | 485mm x 322mm x 683mm   |
| Machine weight          | 60kg  |
| Power consumption       | 100W  |
| Power supply            | 100VAC to 240VAC, 50/60Hz, single phase   |

### FALCON 500 SERIES TESTER

| Code  | Description                                |
|-------|--|
| W-501 | 3gf – 2kgf, Vickers & Knoop                |
| W-503 | 10gf – 10kgf, Vickers, Knoop & Brinell     |
| W-505 | 200gf – 31.25kgf, Vickers, Knoop & Brinell |
| W-507 | 10gf – 31.25kgf, Vickers, Knoop & Brinell  |
| W-508 | 1gf – 31.25kgf, Vickers, Knoop & Brinell   |
| W-509 | 200gf – 62.5kgf, Vickers, Knoop & Brinell  |
| W-510 | 10gf – 62.5kgf, Vickers, Knoop & Brinell   |
| W-511 | 1gf – 62.5kgf, Vickers, Knoop & Brinell    |

### Overview & full view zoom camera

The optional overview & full view autofocus zoom camera with additional surface illumination, ensures a perfect overview or full view on your sample or samples.

The combination of the zoom overview & zoom full view camera and superior measuring objectives ranges allow a viewing range of 60µm to 200mm.

This technology allows an overall picture of the test subject or subjects or a further magnified part of the object. The overview/full view images can also be saved with the test report.

IMPRESSIONS 'click and go' functionality allows random test point selection on the screen, while the high speed motorised X-Y stage perfectly positions the selected test point under the indenter and measuring objective.

## INNOVATEST FALCON 5000 Micro/Macro Vickers & Low Load Brinell Hardness Tester

The FALCON 5000 is the most revolutionary, advanced and powerful Micro Vickers, Vickers hardness testing machine currently available. Apart from Micro Vickers, Vickers, Knoop and low force Brinell scales, configuration of the FALCON 5000 is freely definable and offers flawless upgrades to hardness testing according to standards of Superficial Rockwell, regular Rockwell & higher force Brinell hardness scales.

In its ultimate configuration and most advanced version, the FALCON 5000 offers fully automatic advanced coordinate pattern, weld pattern and free style testing of metallic and plastic parts in any common hardness scale;

- Micro Vickers
- Vickers
- Knoop
- Superficial Rockwell
- Rockwell
- KIC fracture toughness
- Brinell
- HVT (Vickers depth)
- HBT (Brinell depth)
- ISO 2039 1 & 2 for plastics

### Stunning Test Force Range

The servo driven testers force actuator allows test forces from 10gf up to 250kgf, currently unique on the world market. Great efforts have been taken by INNOVATEST® in designing our own ultra-precise load cells and force control electronics, that are the foundation of this new product. The load/force actuator driven by top class servo technology positions the test head at light speed and at sub-micron level accuracy, in any required position.

### Setting the GLOBAL Standards for Advanced High Speed Turrets

The FALCON 5000's high speed, 8 position turret, has the first in the industry, standard built in laser positioning system.

- The 8 position turret also contains 2 HD cameras with autofocus and optical zoom system, allowing stage (over) viewing at indenter position
- Quick change stage & anvil post
- Ultra fast, dedicated system controller with i7 processor and 2 Intel SSD drives
- Advanced report generator with extended CSV export functionality

### Quick Change Stage & Anvil Post

Alternatively to the standard ultra-fast motorised CNC stages, there is the option to install larger T-slot stages, fixed stages and a number of anvils. To save time exchanging the nearly unlimited choice of stage and anvil options, the tester has another unique feature: The "Quick Change" accessories post, the tester can reconfigure in seconds.

### Safety First / Collision Detection System

In order to ensure maximum safety for the user and to protect the tester against user errors, all FALCON models have an advanced collision detection warning and Z-Axis / test head retraction system. This system is triggered by any uncommon force on the turret and will stop and retract the test head in milliseconds. Finders, hands and work pieces are safe and there is no risk of damage to the indentors.

### Clamping Device

An integrated clamping device will firmly hold the work piece against the anvil or test table while performing Rockwell or other depth measuring tests (optional).



W-5000HV



## INNOVATEST FALCON 5000 Micro/Macro Vickers & Low Load Brinell Hardness Tester

### TECHNICAL SPECIFICATION

|                                    |   |
|------------------------------------|---|
| Hardness scale                     | Micro/Macro Vickers, Knoop<br>(Optional Brinell, Rockwell, Superficial Rockwell, HVT, HBT, ISO 2039 1/2)  |
| Load application                   | Load cell, force feedback, closed loop system   |
| Load range                         | 10gf up to 250Kgf   |
| Motorized turret                   | 8 positions; 2 indenter positions, 4 objectives positions, overview camera, laser pointer   |
| Optical system                     | High definition, 5Mpx machine Vision system   |
| Objectives                         | 2.5x, 5x, 10x, 20x, 40x, 60x, 100x  |
| Overview camera Cam 2              | 5Mpx optical ZOOM camera, field of view 50 x 37mm / 200 x 160mm   |
| Electronic system                  | High performance embedded micro system controller, MS Windows®, 15" full colour industrial touch screen, automatic and manual measurement   |
| Software                           | IMPRESSIONS™ Workflow system & tester control   |
| Test loads                         | 10gf, 15gf, 20gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1kgf, 1.25kgf, 2kgf, 2.5kgf, 3kgf, 4kgf, 5kgf, 6.25kgf, 7.8125kgf, 10kgf, 15kgf, 15.625kgf, 20kgf, 30kgf, 31.25kgf, 40kgf, 50kgf, 60kgf, 62.5kgf, 80kgf, 100kgf, 120kgf, 125kgf, 150kgf, 187.5kgf, 250kgf |
| Vickers                            | HV0.010, HV0.015, HV0.020, HV0.025, HV0.050, HV0.1, HV0.2, HV0.3, HV0.5, HV1, HV2, HV2.5, HV3, HV4, HV5, HV10, HV20, HV25, HV30, HV40, HV50, HV100, HV120;<br>All test forces are also available for the HVT scales   |
| Knoop                              | HK0.01, HK0.02, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1, HK2, HK5, HK10, HK20, HK30, HK50  |
| Rockwell & Superficial Rockwell    | Pre Load 3kgf & 10kgf<br>Main Load 15kgf, 30kgf, 45kgf, 60kgf, 100kgf & 150kgf  |
| Brinell                            | HB1/1kgf, HB1/2.5kgf, HB1/5kgf, HB1/10kgf, HB1/30kgf; HB2.5/6.25kgf, HB2.5/15.625kgf, HB2.5/31.25kgf, HB2.5/62.5kgf; HB5/25kgf, HB5/62.5kgf, HB5/125kgf HB5/250kgf; HB10/100kgf, HB10/250kgf;<br>All test forces are also available for the HBT scales              |
| ISO 2039 1/2                       | For plastics  |
| Indenters                          | Certified indenters (ISO / ASTM) (standard included, 1 Vickers, 1 Rockwell)   |
| Test cycles                        | Fully automatic, automatic and manual   |
| Standards                          | Complies to or exceeds, ISO, ASTM, JIS (Nadcap) standards   |
| Test force tolerance               | <0.5% for test force 100g to 62.5kg,<br><1% for test force below 100g<br><0.1% for test force 100g to 62.5kg, (Optional standardizing model)<br><0.1% for test force below 100g, (Optional standardizing model)   |
| Display resolution                 | 0.1 HV, HK, 0.5 HB, 0.01HR  |
| Hardness conversion                | Rockwell, Rockwell Superficial, Brinell, Vickers, Leeb & Tensile  |
| Statistics                         | Total test, max, min, average, range, standard deviation, all in real time after each test  |
| Data storage capacity              | Dual SSD 80Gb, RAID system  |
| Connectivity                       | USB, RJ45 LAN, W-LAN & HDMI   |
| Dwell time setting                 | Default 10 seconds, user defined 1 to 99 seconds (1 sec increments)   |
| Printer                            | A4, A3 full colour laser printer (optional)   |
| Motorized CNC X-Y stage dimensions | Stage 400mm x 225mm,<br>Travel X-Axis: 220mm x Y-Axis: 120mm<br>Repeatability 0.002mm   |
| Operating temperature              | 10°C to 35°C, non-condensing  |
| Humidity                           | 10% to 90% non-condensing   |
| Machine dimensions                 | 695mm x 425mm x 1100mm  |
| Machine weight                     | 180kg   |
| Power consumption                  | 100W  |
| Power supply                       | 100VAC to 240VAC, 50/60Hz, single phase   |

### MICRO/MACRO VICKERS AND LOW FORCE BRINELL HARDNESS TESTER

| Code No           | Description  |
|-------------------|--|
| <b>W-5000HV</b>   | Vickers, Knoop, Low force Brinell, KiC Test force 10gf-62,5Kgf   |
| <b>W-5000HVR</b>  | Vickers, Knoop, Low force Brinell, KiC, Rockwell, Super Rockwell. Test force 10gf-150Kgf   |
| <b>W-5000HVRB</b> | Vickers, Knoop, Low force Brinell, KiC, Rockwell, Super Rockwell, Brinell, HVT, HBT, ISO 2039 1/2 for plastics. Test force 10gf-250Kgf |

# INNOVATEST VERZUS 750 Universal Hardness Tester

The VERZUS 750 series is a new generation of hardness testing machines. The testers are constructed around a solid C-frame with unparalleled rigidity. The closed loop system based on a load cell and precision force actuator guarantees the best GR & R results ever seen on Rockwell hardness testers. The tester meets or exceeds ISO, ASTM and JIS standards and conforms to Nadcap auditing. Test forces ranging from 1 to 250kgf.



## Features

- Load cell, force feedback, closed loop system
- Unparalleled rigidity
- Unmatched GR & R results
- Load range 1kgf up to 250kgf depending on model
- Complies to all applicable EN/ISO, ASTM and JIS standards
- Shape correction settings for curved surfaces
- Optical depth measuring system (Rockwell, HBT, HVT, Hb)
- Powerful Embedded PC with 2 hard disks and HD industrial touch screen
- IMPRESSIONS™ high end video based hardness testing firmware including CCD camera, automatic indent measurement, indent ZOOM system, conversion to other hardness scales, test data & image storage, statistic results storage, Jominy stage operation, X-Y stage operation
- Go / No Go function with visual and acoustic warning
- Large memory for measurements with statistic results
- Easy calibration function
- Testing program storage
- Standard nose cone clamping attachment
- USB-2 output
- Built on Vickers / Brinell microscope with LED ring light
- Work piece sliding table
- Large work piece accommodation
- Motorised spindle (Optional)

## INNOVATEST VERZUS 750 Universal Hardness Tester



W-750CCD

### TECHNICAL SPECIFICATION

|                             |   |
|-----------------------------|---|
| Load application            | Load cell, force feedback, closed loop system   |
| Hardness scales             | Rockwell / Superficial Rockwell, Brinell, Vickers, HVT, HBT   |
| Load range                  | 1kgf to 250kgf  |
| Test loads                  | 1, 2, 2.5, 3, 5, 10, 15, 15.625, 20, 30, 31.25, 45, 50, 60, 62.5, 100, 125, 150, 187.5, 250kgf depending on model.      |
| Vickers test range          | HV1, HV 2, 3, 5, 10, 20, 30, 50, 100, 120kgf;<br>HVT 50, 100kgf   |
| Brinell test range          | HB1 1kgf - 30kgf;<br>HB2.5 6.25kgf - 187.5kgf;<br>HB5 25kgf - 250kgf;<br>HB10 100kgf - 200kgf<br>HBT2.5 5kgf - 187.5kgf |
| Rockwell scales             | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V   |
| Rockwell superficial scales | 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y   |
| Optical system              | High resolution 5Mp video camera mounted on built on Microscope   |
| Objectives                  | Interchangeable 2.5x, 5x and 10x magnification with LED ring light (CCD)  |
| Eyepiece                    | 10x magnification (15x optional)  |
| Scale resolution (depth)    | 0.1 micron  |
| Display                     | Large high definition industrial touch screen can also be operated by mouse and keyboard                                |
| Standards                   | Complies to, or exceeds, EN/ISO, ASTM and JIS   |
| Test cycles                 | Fully automatic, Load, Dwell, Unload  |
| Force control               | 1- 99 seconds   |
| Data output                 | USB-2.,RS-232 (RS,RSB,AS) RJ-45 LAN,W-LAN (LCD,CCD)   |
| Specimen accommodation      | Height 300mm<br>Throat 200mm  |

### Standard Delivery

- Objectives for 25x, 50x and 100x magnification
- Sliding testing table
- Flat anvil, hardened, Ø 60mm
- V-anvil hardened Ø 80mm
- Fuse 3A slow 2 pcs
- Power cable
- INNOVATEST® certificate
- Installation and user manual

### Optional Accessories

- V-Anvil 60mm
- Certified indenters
- Certified or factory reference hardness blocks
- Long indenters
- Goose neck indenter holder
- Large testing table 300 x 200mm with T-slot
- Custom testing tables
- Precision vices, V-blocks and special clamps
- Test blocks and indenters

### UNIVERSAL HARDNESS TESTER VERZUS 700 SERIES

| Code No  | Description  |
|----------|--|
| W-750CCD | Rockwell, Superficial Rockwell, Brinell, Vickers, HVT, HBT, Plastic ISO 2039/1 |

# INNOVATEST NEMESIS 5100 Universal Hardness Tester

The NEMESIS 5100 Universal hardness tester systems provides exceptional performance and are designed with enhancements that deliver unparalleled accuracy and reliability, improve ergonomics and an overall enhanced and pleasant experience for the operator. The IMPRESSIONS tester control and workflow software forms an integral component of the testing system.

## Features

- Scales: Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop
- Forces: 10gf - 3000kgf (multi load cell, closed loop)
- Camera: 18 Megapixels, Full HD camera system, with zoom and auto-focus
- Overview Camera: Full HD optical zoom stage overview camera
- Objectives: 0.7X, 2.5X, 5X, 10X, 20X, 40X, 60X, 100X
- 8 Position Turret 3 indenters, 3 objectives, Class 2 laser for positioning and integrated overview camera
- Illumination: Power LED
- Control: Fully integrated i7 Controller, Windows 10 operated, 15" industrial touch screen, IMPRESSIONS advanced workflow software, includes automatic measurement, stage control & pattern configurator, keyboard & mouse
- Z-Axis: Descending test head, with collision detection, CNC, motorized, ball bearing slide, with fast up down and, digital scroll wheel for fine adjustment
- XY Stage: Manual, motorized stages or/and anvils or work tables at choice
- Joystick: X-Y-Z control over integrated joystick
- Workpiece Acc: 150mm (H) X 230mm (D)
- Output: USB, LAN, Bluetooth
- Software: Large choice of software options, features, plug-ins and add-ons, Q-DAS certified



## INNOVATEST NEMESIS 5100

| Code No | Testing Range |
|---------|---------------|
| W-5101  | 10gf - 250gf  |
| W-5102  | 100gf - 250gf |
| W-5103  | 10gf - 3000gf |

## INNOVATEST NEMESIS 5100 Universal Hardness Tester



### TECHNICAL SPECIFICATION

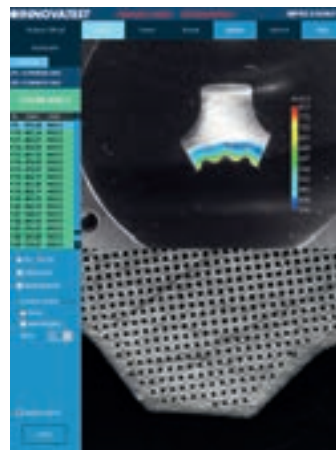
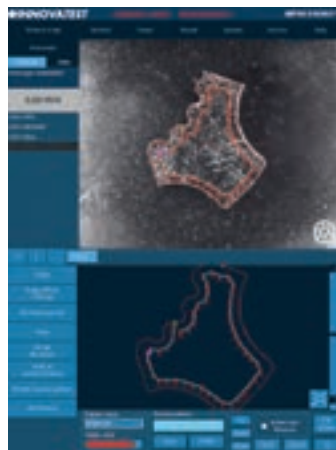
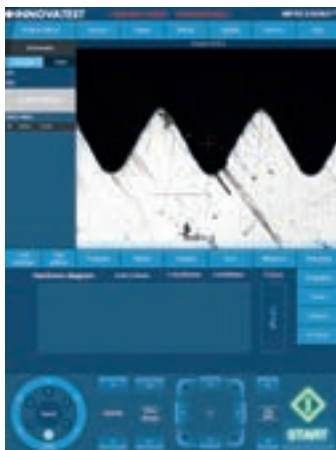
|                       |  |
|-----------------------|--|
| Hardness scale        | Rockwell, Superficial Rockwell, Vickers, Knoop, Brinell  |
| Load application      | multi load cell closed loop  |
| Load range            | 10gf up to 300Kgf  |
| Motorized turret      | 8 positions; 3 indenter positions, 3 objectives positions, overview camera, class 2 laser for positioning  |
| Optical system        | High definition, 18Mpx machine Vision system   |
| Objectives            | Long working distance 0.7x, 2.5x, 5x, 10x, 20x, 40x  |
| Overview camera Cam 2 | Full HD, Full Color, Optical zoom system, variable FOV 50 x 35mm - 200 x 180mm   |
| Electronic system     | High performance embedded controller, i7, mSSD 120 GB, MS Windows® 10 operated   |
| Software              | IMPRESSIONS™ V2, work flow system & tester control   |
| Test loads            | Superficial Rockwell scales; Pre Load 3kgf, Main Load 15kgf, 30kgf, 45kgf  |
| Vickers               | HV0.010, HV0.015, HV0.020, HV0.025, HV0.050, HV0.1, HVO.2, HVO.3, HVO.5, HV1, HV2, HV2.5, HV3, HV4, HV5, HV10, HV20, HV25, HV30, HV40, HV50, HV100, HV120, HV150;  |
| Knoop                 | HK0.01, HK0.02, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1, HK2, HK5, HK10, HK20, HK30, HK50   |
| Brinell               | HBW1/1kgf, HBW1/2.5kgf, HBW1/5kgf, HBW1/10kgf, HBW1/30kgf; HBW2.5/6.25kgf, HBW2.5/15.625kgf, HBW2.5/31.25kgf, HBW2.5/62.5kgf, HBW2.5/187.5kgf; HBW5/25kgf, HBW5/62.5kgf, HBW5/125kgf, HBW5/187.5kgf, HBW5/250kgf; HBW10/100kgf, HBW10/250kgf, HBW10/750kgf, HBW10/1000kgf, HBW10/1500kgf, HBW10/3000kgf; All test forces are also available for the HBT scales |
| Indenters             | Certified indenters (ISO/ASTM) available at choice   |
| Test cycles           | Fully automatic, automatic and manual  |
| Standards             | Complies to or exceeds, ISO, ASTM, JIS (Nadcap) standards  |
| Test force tolerance  | <0.25% for test force 100g to 250kg, <0.5% for test force below 100g   |
| Display resolution    | 0.01 HV, HK, HB  |
| Hardness conversion   | Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb & Tensile  |
| Statistics            | Total test, max, min, average, range, standard deviation, All in real time after each test   |
| Data storage capacity | Internal and external mSSD, SSD or HDD   |
| Connectivity          | 5 USB ports, RJ45 Ethernet LAN, W-LAN, RS-232, Blue Tooth, 5 Axis CNC & motorized XY- stage connector, Dual HDMI screen connectors   |
| Dwell time setting    | Default 10 seconds, user defined. Up to 999 seconds  |
| Printer               | A4, A3 full color laser printer (optional)   |
| CNC Support           | 5 Axis CNC controller (for motorized stages) or stage accessories  |
| Operating temperature | 10°C to 35°C, non-condensing   |
| Humidity              | 10% to 90% non-condensing  |
| Machine dimensions    | 695mm x 425mm x 1100mm   |
| Machine weight        | 240kg  |
| Power consumption     | 100W   |
| Power supply          | 100VAC to 240VAC, 50/60Hz, single phase  |

# INNOVATEST NEMESIS 9100 Universal Hardness Tester

The NEMESIS 9100 Series Universal Hardness testing systems provide exceptional performance and are designed with enhancements that deliver unparalleled accuracy and reliability, improved ergonomics and an overall enhanced and pleasant experience for the operator. The IMPRESSIONS<sup>®</sup> tester control and work flow software, forms an integral component of the testing system. Decreasing set up time and increasing testing efficiency through the use of programmable test patterns and specific designed software applications, developed upon the request of demanding users. NEMESIS 9100 hardness testing instruments are routinely used for testing metals and plastics, in the aerospace and automotive industry, laboratories for sample evaluation, or to conduct common but versatile testing tasks.

## Features

- Servo driven force actuator allows test forces from 200gf up to 3000kgf, currently unique on the world market.
- Multi Load Cell, Closed Loop force application system, error <0,25%
- Descending test head, with fixed work piece position
- 8-position turret with standard built-in laser positioning system
- 3 indenter positions, 3 LWD objectives installed (included)
- 18 Mega pixels, 4K+, full color, integrated camera system
- Quick change anvil post
- CNC motorized XY-stages, variable stage dimensions and travel w ays
- Full XY-stage overview camera, optical zoom system, with variable field of view
- TTL power LED, Dual source power LED bank, stage illumination
- Z-axis with ball bearing spindle
- Integrated high performance system controller, i7 processor, 120GB mSSD storage
- Industrial 15" touch screen, option for second screen 15" to 55" or projector
- Top-class replaceable body parts, shock proof ABS covers





# INNOVATEST NEMESIS 9100 Universal Hardness Tester

## TECHNICAL SPECIFICATIONS

|  | W-9101 Universal      | W-9102 Universal      | W-9103 Universal       |
|--|-----------------------|-----------------------|------------------------|
| <b>Scales / Test Loads/Force</b>                   | <b>1kgf to 250kgf</b> | <b>1kgf to 750kgf</b> | <b>5kgf to 3000kgf</b> |
| Rockwell, A, B, C, D, E, F, G, H, K, L, M, P, R, V | All scales            | All scales            | All scales             |
| Superficial Rockwell, N, T, W, X, Y                | All scales            | All scales            | No                     |
| Macro Rockwell HRM                                 | Yes                   | Yes                   | Yes                    |
| Vickers HV   | 1kgf to 120kgf        | 1kgf to 120kgf        | 5kgf to 120kgf         |
| Knoop  | All scales            | All scales            | No                     |
| HVT  | 50, 100kgf            | 50, 100kgf            | 50, 100kgf             |
| Brinell  | 1kgf to 250kgf        | 1kgf to 750kgf        | 5kgf to 3000kgf        |
| HBT  | 5/250                 | 5/250                 | 5/250                  |
| H (ball indentation)                               | Up to 250kgf          | Up to 750kgf          | Up to 3000kgf          |

### Force Application System

|  |          |          |          |
|--|----------|----------|----------|
| Linear force actuator                                | Standard | Standard | Standard |
| Multi-load cell, closed loop, force feed back system | Standard | Standard | Standard |
| Motorised heavy duty TURRET with 8 positions         | Standard | Standard | Standard |
| Indenter positions                                   | 3        | 3        | 3        |
| Objective positions                                  | 3        | 3        | 3        |
| IMPRESSIONS software, automatic illumination system  | Standard | Standard | Standard |

### Optical Measuring System

|   |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|
| 18 mega pixels HD machine vision system               | Standard                 | Standard                 | Standard                 |
| Full HD Full Colour, Optical Zoom                     | FOV50 x 37mm-200mmx160mm | FOV50 x 37mm-200mmx160mm | FOV50 x 37mm-200mmx160mm |
| Auto focus  | Standard                 | Standard                 | Standard                 |
| Manual focus  | Standard                 | Standard                 | Standard                 |
| Fully automatic indent measuring                      | Standard                 | Standard                 | Standard                 |
| Manual on screen indent measuring                     | Standard                 | Standard                 | Standard                 |
| Dual view working area overview camera                | Optional                 | Optional                 | Optional                 |
| External Electronic Brinell microscope and objectives | No                       | No                       | No                       |

### Depth Measurement System

|  |          |          |          |
|--|----------|----------|----------|
| Heidenhain™ high resolution scale & reading head | Standard | Standard | Standard |
|--|----------|----------|----------|

### Hardware & User Interface

|   |          |          |          |
|---|----------|----------|----------|
| Built-in industrial Pentium PC and harddrive      | Standard | Standard | Standard |
| Adjustable 15" full color capacitive touch screen | Standard | Standard | Standard |
| MS Windows 10 operated                            | Standard | Standard | Standard |
| IMPRESSIONS V2 workflow and tester control        | Standard | Standard | Standard |
| Automatic image and file storage                  | Standard | Standard | Standard |
| Forms 9100 set of customised certificates         | Standard | Standard | Standard |
| Z-Axis Control and Collision Detector             | Standard | Standard | Standard |
| Universal motorised X-Y stage controls            | Standard | Standard | Standard |

### Connectivity

|  |          |          |          |
|--|----------|----------|----------|
| External 15" portrait mode capacitive touch screen | Standard | Standard | Standard |
| External keyboard & mouse connections              | Standard | Standard | Standard |
| LAN (local area network connection)                | Standard | Standard | Standard |
| WLAN (Wireless network connection)                 | Standard | Standard | Standard |
| BlueTooth  | Standard | Standard | Standard |
| 5 USB ports  | Standard | Standard | Standard |
| Bi-directional RS-232                              | Standard | Standard | Standard |
| Printer / USB-2 output                             | Standard | Standard | Standard |
| Built-in motorized X-Y stage driver                | Standard | Standard | Standard |

## LOAD RANGE

| Code No | Load Range     | Weight |
|---------|----------------|--------|
| W-9101  | 1kgf - 250kgf  | 280kg  |
| W-9102  | 1kgf - 750kgf  | 280kg  |
| W-9103  | 5kgf - 3000kgf | 280kg  |

# INNOVATEST NEXUS 7700 Universal Hardness Tester

The traditional swivel system (indenter/objective) universal hardness tester previously equipped with a matt screen, has a modern video indent measuring system with 18 Megapixels camera, an ultra-fast Windows i7 controller, automatic measurement and can be used for all hardness procedures; Brinell, Vickers, Knoop, HVT and HBT according to DIN, ISO standards. The NEXUS 7700 also covers all Rockwell and Superficial Rockwell hardness scales. The tester can be equipped with an automatic motorized spindle which makes it possible to position your workpiece without any effort. In combination with a manual or motorized CNC XY-stage the tester offers the option of running case depth hardness programs, predefined testing patterns and/or other specific or special tasks defined by the user. Perfectly suitable for testing hardness of castings and forgings, wide application within the automotive and aerospace industry or laboratory and workshop testing.

## Features

- Scales: Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop
- Test Forces: 0.5kgf - 250kgf
- Camera: 18 Megapixels, full HD camera system with zoom and autofocus
- Load App. System: Fully automatic, load cell, closed loop, force feedback
- Control: Fully integrated Windows Controller, SSD drive, Windows 10 operated, IMPRESSION advanced workflow software, includes automatic measurement, keyboard & mouse
- Display: 12" full colour touch screen
- Advanced Output: Multi USB, CSV files, single readings, reports, printer, Q-DAS certified
- Software: No of tests, mean, standard deviation, min, max, range, CP, CPk, individual readings list, storage memory, dwell time, test force setting, scale selection, calibration etc
- Illumination: Adjustable workpiece illumination
- Spindle: Manual or motorised
- Clamp to protect indenter and fix workpiece to anvil or stage
- XY-Stage: Manual, motorised stages or/and anvils or work tables at choice
- Workpiece acc: 340mm (H) x 205mm (D)



## UNIVERSAL HARDNESS TESTER NEXUS 7700 SERIES

| Code   | Force           | Hardness Scale  |
|--------|-----------------|---|
| W-7700 | 0.5kgf - 250kgf | Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop |



## INNOVATEST NEXUS 8100 Universal Hardness Tester

The NEXUS 8100 Series, from Innovatest can be used for all hardness procedures according to standards Rockwell, Superficial Rockwell, Brinell, Vickers and Knoop. But it is also capable of ball and indentation hardness testing for thermoplastics and the new Vickers depth (HVT) and Brinell depth (HBT) procedures. The NEXUS 8100 universal hardness testers include all standard hardness testing methods between 200gf - 3000kgf.



### Features

**Scales:** Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop, HVT & HBT, Plastic ISO 2039/1, Carbon

**Test forces:** 200gf - 3000kgf

**Camera:** 18 Megapixels, Full HD camera system, with zoom and autofocus

**Overview camera:** Full HD optical zoom stage overview camera

**8 position turret:** 3 indenters, 3 objectives, Class 2 laser for positioning and optional integrated overview camera

**Objectives:** 0.7X, 2.5X, 5X, 10X, 20X, 40X, 60X, 100X  
Fully automatic, Load cell, closed loop, force feedback

**Load app. system control:** Fully integrated Windows Controller, SSD hard disk, Windows 10 operated, IMPRESSIONS™ advanced workflow software, includes automatic measurement, keyboard & mouse

**Display:** 15" full colour touch screen

**Advanced output:** Multi USB, CSV files, single readings, reports, printer, Q-DAS certified

**Software:** No. of tests, Mean, St. Deviation, Min., Max., Range, CP, CPk, individual readings list, storage memory, dwell time, test force setting, scale selection, calibration etc

**Illumination:** Power LED

**Spindle:** Manual or motorised, ball bearing slide, with fast up down and digital scroll wheel for fine adjustment

**XY-Stage:** Manual or motorised stages or/and anvils or work tables at choice.

**Workpiece acc.:** W-8100 - 350mm (H) x 260mm (D)  
W-8100XL - 550mm (H) x 285mm(D)

### Standard Delivery

- Flat anvil, hardened, ø80mm
- V-anvil, hardened, ø80mm
- Testing table, hardened, ø200mm
- Ringlight for (Brinell) dark field illumination
- Power cable
- Wireless mouse and keyboard
- Four adjustable feet
- INNOVATEST® calibration certificate
- Installation and user manual



### THE NEXUS 8100 RANGE

| Code No  | Load Range      | Hardness Scale  |
|----------|-----------------|---|
| W-8100   | 200gf - 3000kgf | Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop, HVT & HBT, Plastic ISO 2039/1, Carbon. |
| W-8100XL | 200gf - 3000kgf | Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop, HVT & HBT, Plastic ISO 2039/1, Carbon. |

Please ask for our full product catalogue to have an overview of all possible accessories and software applications.

## INNOVATEST Universal Hardness Tester Nemesis 9600 Series

The NEMESIS 9600 range is a heavy-duty floor type universal hardness tester most suitable for harsh testing conditions of very large parts. This floor type frame reaches a height of 2 meters and offers a workspace of not less than 650mm height and a throat depth of 395mm from spindle center. The heavy duty motorized spindle with over 800kg lifting capacity allows to position the test piece on the required working height. Rockwell, Vickers and Brinell, but also pure depth test methods such as HVT and HBT are part of the standard test procedures of the NEMESIS 9600. The second Z-axis has a 150mm stroke descending test head which gives unique flexibility.

### Features

- Scales: Rockwell , Superficial Rockwell, Brinell, Vickers, Knoop, HVT & HBT, Plastic ISO 2039/1, Carbon
- Test Forces: 200gf - 3000kgf
- Camera: 18 Megapixel, Full HD camera system with zoom and autofocus
- Overview Camera: Full HD optical zoom stage overview camera
- 8 Position Turret: 3 indentors, 3 objectives, Class 2 laser for positioning and optional integrated overview camera
- Objectives: 0.7X, 2.5X, 5X, 10X, 20X, 40X, 60X, 100X
- Load App. System: Fully automatic, load cell, closed loop, force feedback. Fully integrated Windows Controller, SSD
- Control: Windows operated IMPRESSIONS™ advanced workflow software, includes automatic measurement, keyboard & mouse
- Display: 15" full colour touch screen
- Advanced Output: Multi USB, CSV files, single readings, reports, printer, Q-DAS certified
- Software: No. of tests, Mean, Standard Deviation, Min-Max, Range, CP, CPk, individual readings list, storage memory, dwell time, test force setting, scale selection, calibration etc
- Illumination: Power LED
- CNC motorized, ball bearing slide, with fast up down and digital scroll wheel for fine adjustment
- XY-Stage: Manual, motorized stages or/and anvils or work tables at choice
- Workpiece Acc: 650mm (H) x 395mm (D)



### NEMESIS 9600 SERIES

| Code No | Scale   | Force           |
|---------|---|-----------------|
| W-9600  | Rockwell, Superficial Rockwell, Brinell, Vickers, Knoop, HVT, HBT, Plastic ISO 2039/1, Carbon | 200gf - 3000kgf |



## INNOVATEST NEMESIS 9800 Series Universal Hardness Tester

This custom made-made universal hardness tester with a force range of 1kgf - 3000kgf covers all hardness scales: Brinell, Vickers Knoop, Rockwell, Superficial Rockwell, HVT & HBT, Ball indentation for plastic ISO 2039/1. The motorised descending test head can be equipped with 6, 7 or 8 position turret and has 3 standard indenters and 3 objectives. The IMPRESSIONS full tester and configuration control can be easily operated by means of the 15" industrial HD touch screen. Due to the enormous workpiece accommodation of 1500mm (H) x 1500mm (D), the NEMESIS 9800 is perfectly suitable for heavy and very large parts. The second Z-axis has a 150mm/300mm stroke descending test head offering unique flexibility.

### Features

- Brinell, Vickers, Knoop, Rockwell, Superficial Rockwell, HVT & HBT, Ball indentation for plastic ISO 2039/1
- Load cell, force feedback, closed loop system
- Load range 1kgf - 250kgf (9801), 3kgf until 750kgf (9802), 10kgf until 3000kgf (9803)
- Rockwell Scales: A, B, C, D, E, F, G, H, K, L, M, P, R, S, V, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
- Vickers Scales: HV/10kgf, 20kgf, 30kgf, 50kgf, 100kgf, 120kgf;
- Brinell Scales: HB1/10kgf, 30kgf; HB2.5/15.625kgf, 31.25kgf, 62.5kgf, 187.5kgf; HB5/25kgf, 62.5kgf, 125kgf, 250kgf, 750kgf; HB10/100kgf, 250kgf, 500kgf, 750kgf, 1000kgf, 1500kgf, 3000kgf;
- HVT Scales: HVT/5kgf - 120kgf;
- HBT Scales: HBT/5kgf - 3000kgf;
- Ball indentation for plastic ISO 2039/1 (scales depending on model)
- Motorized test head movement
- Descending test head with 6, 7 or 8 position turret, standard 3 indenters, 3 objectives
- Automatic hydraulic clamping of 3-axis
- 15" Industrial HD Touch screen, Embedded Powerful Fanless System Controller, 2x 80GB SSD data storage drive Windows 7 Embedded, RJ45 LAN, WLAN, USB, RS-232
- IMPRESSIONS™, full tester & configuration control, graphic indent simulation, test program setting for user defined test programs, large test results storage, 3 simultaneous conversions to other hardness scales, limit settings, advanced test report generator, CSV export, graphics display engine & many more functions
- Indent ZOOM function
- High accuracy depth measuring system
- Built-in driver pack for X-Y or Jominy stages
- Workpiece accommodation: maximum test height 1600mm, maximum depth 1500mm, 2 times 180° rotation
- Meets or exceeds ISO, ASTM and JIS standards
- Wireless mouse and keyboard



### NEMESIS 9600 SERIES

| Code No | Scale   | Force           |
|---------|---|-----------------|
| W-9800  | Brinell, Vickers, Rockwell, Superficial Rockwell, Knoop, HVT, HBT, Plastic ISO 2039/1 | 200gf - 3000kgf |

## INNOVATEST IMPRESSIONS Video Measuring System

IMPRESSIONS is the new advanced user operating system, developed by Innovatest, that will be adopted on all future developments. The software incorporates manual and automatic measurement for all scales, image editing, file storing, image storing, report printing, turret operation, manual or automatic focusing and many other advanced functions.

All data can be copied or exported in to MS applications like Word, Excel, or a report generator that emails test results directly to your workstation, or server. All data can be accessed over the LAN or WLAN connections.

### Standard Delivery

For manual X-Y stage - IMPRESSIONS software, CCD camera and C-mount included software for manual and automatic measurement of indentations, Indent zoom function, automatic light adjustment, LCD industrial DVI touch screen included (IMP-2, IMP-3, IMP-4).

For motorised XY stage & auto focus - IMPRESSIONS software, motorised X-Y stage and motorised Z-axis. CCD camera and C-mount included. Software for manual and fully automatic measurement of indentations. Indent zoom function, automatic indent focus, automatic light adjustment, coordinate multi pattern testing module, motorised X-Y stage, LCD industrial touch screen included, virtual mouse function. (IMP-5 and IMP-6).



### IMPRESSIONS VIDEO MEASURING SYSTEM

| Code No  | Description  |
|----------|--|
| W-IMP2   | IMPRESSIONS software for manual X-Y stage  |
| W-IMP3   | IMPRESSIONS software with 1 analogue micrometer and 1 digital micrometer on XY stage   |
| W-IMP4   | IMPRESSIONS software with 2 digital micrometers on manual XY stage   |
| W-IMP5MV | IMPRESSIONS software with 3Kg motorised XY stage and coordinate multi pattern testing module (for micro Vickers)                         |
| W-IMP5V  | IMPRESSIONS software with 30Kg motorised XY stage and coordinate multi pattern testing module (for macro Vickers)                        |
| W-IMP6MV | IMPRESSIONS software with 3Kg motorised XY stage with Z axis auto focus and coordinate multi pattern testing module (for micro Vickers)  |
| W-IMP6V  | IMPRESSIONS software with 30kg motorised XY stage with Z axis auto focus and coordinate multi pattern testing module (for macro Vickers) |

## Hardness Reference Blocks For All Scales

With official calibration certificates UKAS, DKD or ASTM.

CV Instruments hardness reference blocks are used for annual verification and calibration of hardness testing machines, as well as for periodical check and sometimes for overtaking of hardness scales on a hardness testing machine. That's why hardness reference blocks are a necessary help of industrial Quality Management. Only the use of high quality, precise hardness reference blocks calibrated to applicable standards can ensure the functionality and relative reliability and accuracy of measurement of a hardness testing machine.

The hardness reference blocks used for indirect verification should conform largely to the workpiece to be tested, in terms of material characteristics and hardness range. For this reason a hardness reference block made of aluminium was developed for the lower hardness range which can not be covered by steel, using new materials technology methods.

When using hardness reference blocks it is irrelevant whether the value of the nominal hardness to be delivered corresponds exactly to the actual calibration value observed, since scale adaptation should be carried out with at least two hardness values.

A hardness reference block shall only be used as according to the standards to that method and test condition for which it was calibrated.

CV Instruments certified hardness reference blocks are available as follows and all conform to the international standards as mentioned above.

Hardness reference "soft" blocks made of aluminium.

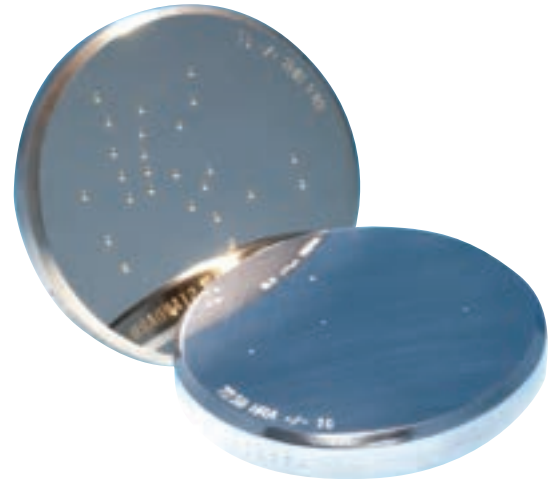
These CV Instruments reference blocks are available with DKD/MPA certificate only.

For several years there has been a need for "soft" blocks.

Using new materials technology methods, it is now possible to produce blocks made of aluminium.

They are available in lower nominal values in Rockwell, Brinell and Vickers scales.

Ask for our separate sales list.



### TECHNICAL SPECIFICATION

**All CV Instruments hardness reference block certificates are based on following international standards:**

|                  |                   |                   |
|------------------|-------------------|-------------------|
| Brinell          | DIN-EN-ISO 6506-3 | ASTM E 10         |
| Vickers          | DIN-EN-ISO 6507-3 | ASTM E 92 / E 384 |
| Rockwell         | DIN-EN-ISO 6508-3 | ASTM E 18         |
| Knoop            | ISO 4545-3        | ASTM E 384        |
| Rockwell carbide | DIN 30999         | ISO 3738          |
| Martens hardness | DIN 50359         | ISO DIS 14577     |

**CV Instruments certified hardness reference blocks are available as follows and all conform to the international standards as mentioned above.**

| Scale                             | UKAS | DKD | DKD/MPA | ASTM | CV  |
|-----------------------------------|------|-----|---------|------|-----|
| Regular Rockwell (all scales)     | Yes  | Yes | Yes     | Yes  | Yes |
| Superficial Rockwell (all scales) | Yes  | Yes | Yes     | Yes  | Yes |
| Brinell (all scales)              | Yes  | Yes | Yes     | Yes  | Yes |
| Macro Vickers (all scales)        | Yes  | Yes | Yes     | Yes  | Yes |
| Micro Vickers (all scales)        | Yes  | Yes | Yes     | Yes  | Yes |
| Knoop                             | Yes  | Yes | Yes     | Yes  |     |
| Martens hardness                  | Yes  | Yes | Yes     | Yes  |     |

Order your blocks based on nominal values.

Please ask for our separate product list of nominal hardness values available per hardness scale and type of certificate.

## CV Portable Analogue Hardness Tester - CV Instrumatic

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

### The Instrument

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

### Operation and Use

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

### Features

- Accurate and easy to use
- No batteries required
- UKAS certified test block supplied
- Optional bench stand with V base for round parts
- Precision Instrument
- Able to test even thin materials due to low penetration of indenter (0.25mm and above)
- Bench stand available for testing small components
- No. 3 - general purpose



### PORTABLE ANALOGUE HARDNESS TESTER

| Code No | Description           | Scale           | Range (mm) | Scale           | Range (mm) | Scale      | Range (mm) | Scale      | Range (mm) |
|---------|-----------------------|-----------------|------------|-----------------|------------|------------|------------|------------|------------|
| POR0002 | No. 2                 | Rockwell A      | 40-85      | Vickers Pyramid | 50-100     | Brinell    | 20-70      | -          | -          |
| POR0003 | No. 3                 | Vickers Pyramid | 100-1000   | Brinell         | 100-400    | Rockwell B | 50-99      | Rockwell C | 20-70      |
| POR0006 | No. 6                 | Brinell         | 40-300     | Vickers Pyramid | 40-300     | -          | -          | -          | -          |
| PBS0001 | Precision Bench Stand |                 |            |                 |            |            |            |            |            |

## CV Portable Digital Hardness Tester

The Bowers CV Rangemaster Plus Hardness Tester represents an ideal solution to the problems associated with portable hardness testing. Its clear digital display, ease of use and ability to operate in all major international scales make it the most comprehensive unit of its type currently available.



### Features

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



### TECHNICAL SPECIFICATION

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

### CV RANGEMASTER PLUS HARDNESS TESTER

| Code No | Description                                 |
|---------|---|
| RANP001 | Rangemaster with UKAS certified test blocks |
| PBS0001 | Precision Bench Stand                       |
| RAN0004 | RS232 PC Connection Cable                   |

### Standard Delivery

- Main unit
- 2 UKAS certified test blocks
- Case
- Adjusting keys
- CV Instruments certificate
- Manual

### Optional Accessories

- Bench stand
- RS-232 cable

## Universal Portable Hardness Tester - TH-1100 Series

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

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

### Features

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

### TECHNICAL SPECIFICATION

|   |   |
|---|---|
| Standard impact device                    | D integrated  |
| Hardness scales                           | HLD, HB, HRC, HRA, HRB, HV, HS                            |
| Measuring range/materials                 | See table below   |
| Tolerance                                 | 0.5% at 800HLD  |
| Memory                                    | 99 data group files                                       |
| Output                                    | No  |
| Min. surface roughness of workpiece       | 1.6 $\mu$ (Ra)  |
| Max. workpiece hardness                   | 960HLD  |
| Min. radius of workpiece (convex/concave) | Rmin = 50mm (with support ring Rmin = 10mm)               |
| Min. workpiece weight                     | 2~5kg on stable support<br>0.05~2kg with compact coupling |
| Min. workpiece thickness coupled          | 5mm   |
| Min. thickness of hardened layers         | 0.8mm   |
| Charging time                             | 3 hours   |
| Continuous working time                   | 16 hours  |
| Power                                     | Rechargeable Li battery                                   |
| Operating temperature                     | 0°C to 40°C   |
| Overall dimensions                        | 145 x 35 x 30mm   |
| Weight                                    | 110g  |



### TH-1100

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

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

### UNIVERSAL PORTABLE TESTER - TH-1100 SERIES

| Code No  | Description                                |
|----------|--|
| W-TH1100 | Universal Hardness Tester (Leeb Principle) |

### Standard Delivery

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

### Optional Accessories

- Support rings
- UKAS certified test blocks





# Portable Hardness Tester - TH-170 Series

RS232

Handheld dynamic metal hardness tester with integrated Impact device D.

## Features

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

## TH-170

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

## TH-172

| Material             | HLD     | HB     | HRC   | HV      | HS     | HS     | HS     |
|----------------------|---------|--------|-------|---------|--------|--------|--------|
| Steel & cast steel   | 350-960 | 80-683 | 20-69 | 80-996  | 31-102 | 32-100 | 32-100 |
| Cold work tool steel | 350-900 | -      | 20-68 | 100-941 | -      | -      | -      |

## TH-174

| Material           | HLDL    | HB     | HRB    | HRC   | HV     | HS    | HS     |
|--------------------|---------|--------|--------|-------|--------|-------|--------|
| Steel & cast steel | 560-950 | 81-646 | 37-100 | 21-68 | 80-950 | 80-96 | 32-100 |

## TECHNICAL SPECIFICATION

|  |  |
|--|--|
| Hardness parameter                         | HRC, HRB, HRA, HV, HB, HS, HLD or HLC or HLDL  |
| Accuracy                                   | Within $\pm 6$ HLD (TH-170), Within $\pm 12$ HLC (TH-172), Within $\pm 12$ HLDL (TH-174)   |
| Data memory                                | 270 average data in 9 files  |
| Output                                     | RS-232   |
| Min. Surface Roughness of Workpiece        | 1.6 $\mu$ m (Ra) (TH-170/174), 0.4 $\mu$ m (Ra) (TH-172)   |
| Impact device                              | D (standard) integrated (TH-170), C integrated (TH-172) or DL integrated (TH-174)  |
| Needle front section of DL-device (TH-174) | Diameter = 4.2mm, Length = 50mm  |
| Workplace max. hardness value              | 900HLD (TH-170), 960HLC (TH-172), 950HLDL (TH-174)   |
| Workplace radius (convex/concave)          | Rmin = 50mm (with support ring Rmin = 10mm)  |
| Workplace minimum weight                   | 2kg-5kg on solid support (TH-170/174)<br>0.5kg-1.5kg on solid support (TH-172)<br>(0.05kg-2kg with couplant paste) (TH-170/174)<br>(0.02kg-0.5kg with couplant paste) (TH-172) |
| Workplace min thickness coupled            | 5mm (TH-170/134), 1mm (TH-172)   |
| Workplace min. case hardened depth         | 0.8mm (TH-170/134), 0.2mm (TH-172)   |
| Power                                      | AAA Batteries (x2)   |
| Charger                                    | 9V, 200mA (1.8VA)  |
| Operating temperature                      | 0°C to 40°C  |
| Overall dimensions                         | 155mm x 24mm x 55mm (TH-170/172) 210mm x 24mm x 55mm (TH-174)  |
| Dimensions DL impact device (TH-174)       | LxD 50mm x 4mm diameter  |
| Weight                                     | 180g (TH-170/172) or 200g (TH-174)   |

## PORTABLE HARDNESS TESTER - TH-170 SERIES

| Code No | Description                             |
|---------|---|
| W-TH170 | Universal type                          |
| W-TH172 | Low impact force (for low weight parts) |
| W-TH174 | For narrow or confined spaces           |



## Standard Delivery

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

## Optional Accessories

- Support rings for convex and concave surfaces
- UKAS certified test blocks
- Dataview software TH-170

## Portable Hardness Tester - TH-110

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

### Features

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



### TECHNICAL SPECIFICATION

|   |  |
|---|--|
| Hardness scales                           | HL, HRC, HRB, HV, HB, HS   |
| Tensile strength U.T.S range (steel only) | b from 374 to 2652   |
| Accuracy                                  | Within $\pm 0.5\%$ at 800HL                                      |
| Printer                                   | Thermal printer showing all test results, settings and histogram |
| Statistics                                | Average value, min-max, upper-lower limits                       |
| Impact device                             | D (standard)   |
| Optional impact devices                   | DC/D+15/DL/G/C/E   |
| Workpiece max. hardness value             | 900HLD   |
| Workpiece radius (convex/concave)         | Rmin = 50mm (with support ring Rmin = 10mm)                      |
| Min. Workpiece weight                     | 2-5kg on stable support<br>0.05-2kg with compact coupling        |
| Workpiece min. case hardened depth        | 0.8mm  |
| Power                                     | Rechargeable Li battery, 6V (1pc)                                |
| Charger                                   | 6V, 500mA (1.8VA)  |
| Charger time                              | 2.5-4 hours  |
| Operating temperature                     | 0 to 40°C  |
| Overall dimensions                        | 235mm x 90mm x 47mm  |
| Weight                                    | 615gr (including impact device and printer)                      |

### PORTABLE HARDNESS TESTER

| Code No | Description                                |
|---------|--|
| W-TH110 | Universal Hardness Tester (Leeb Principle) |

### Standard Delivery

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

### Optional Accessories

- Special impact devices
- UKAS certified test blocks
- Support rings for convex and concave surfaces

## Leeb Hardness Tester with External Probe

This is the most recent Leeb portable hardness tester from Innovatest. The digital display shows hardness values in all common hardness scales, making this a versatile product. This precision measuring instrument is equipped with re-chargeable batteries providing over 20 hours continuous operation.

### Features

- New design with built-in thermal printer
- Easy to operate menu
- Test results appear directly on the large display
- 2.8 inch colour TFT LCD screen
- Data storage for 1000 groups of data including single measurement, average value, impact direction, measuring times, material and hardness scales
- Meets or exceeds ASTM and DIN standards
- Display scales HRC, HRB, HV, NB, HS and conversion to tensile strength
- Display shows information for storage, battery level, electronic column, type of impact device and help function
- Upper and lower limit settings, alarms for exceeding values, especially suitable for batch testing
- Highly accurate readings
- Correction for impact direction
- 7 different impact devices available for different applications

### Standard Delivery

- Instrument with impact device type D
- Printer (on top)
- Harness test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Support ring small
- INNOVATEST certificate
- Manual
- Carrying case

### Optional Accessories

- Special impact devices
- DKD Reference hardness block
- Support rings for convex, concave and spherical surfaces



### LEEB HARDNESS TESTER WITH EXTERNAL PROBE

| Code No | Description                              |
|---------|--|
| W-5310  | Leeb Hardness Tester with External Probe |

## Ultrasonic Portable Hardness Tester 'alphaDUR 2'

The alphaDUR 2 is the next generation portable and laboratory use ultrasonic hardness tester. The instrument covers several new advanced features that can be selected from a menu-operated full colour display.

### TECHNICAL SPECIFICATION

|                       |  |                   |                       |
|-----------------------|--|-------------------|-----------------------|
| Measuring principle   | UCI method (ultrasonic contact impedance principle)              |                   |                       |
| Standards             | Conforms to DIN 50159, ASTM A 1038-05 and VDI/VDE directive 2616 |                   |                       |
| Indenter type         | Vickers diamond (angle 136°)                                     |                   |                       |
| Measuring range       | Vickers  | HV                | 10-3000 (direct)      |
|                       | Rockwell   | HRC               | 20-68 (conversion)    |
|                       | Brinell  | HB                | 76-447 (conversion)   |
|                       | UTS  | N/mm <sup>2</sup> | 255-2180 (conversion) |
| Reproducibility       | HV +/- 1%, HRC +/- 0.5, HB +/- 1%                                |                   |                       |
| Test probes available | 3N, 10N, 20N, 30N, 49N, 98N (30N standard)                       |                   |                       |
| Display               | Large backlit LCD, displays hardness HV, HRC, HB and UTS         |                   |                       |
| Calibration           | 20 preset calibrations for different materials (user definable)  |                   |                       |
| Memory                | 1000 readings, expandable to 30,000                              |                   |                       |
| Statistics            | Mean, min, max, std dev, Go-No-Go%                               |                   |                       |
| Interface             | Serial RS-232, RS-485 and parallel printer                       |                   |                       |
| Power                 | Mains / rechargeable battery                                     |                   |                       |

Note: Minimum sample thickness approx 5mm



### PORTABLE HARDNESS TESTER - HV400

| Code No    | Description                               |
|------------|---|
| W-HV400    | UCI Vickers Portable Tester without probe |
| W-HV400/08 | 30N Probe (standard)                      |
| W-HV400/10 | 49N Probe                                 |
| W-HV400/62 | Precision Bench Stand                     |
| W-HVGUIDE  | Guide Support                             |

### Standard Delivery

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

### Optional Accessories

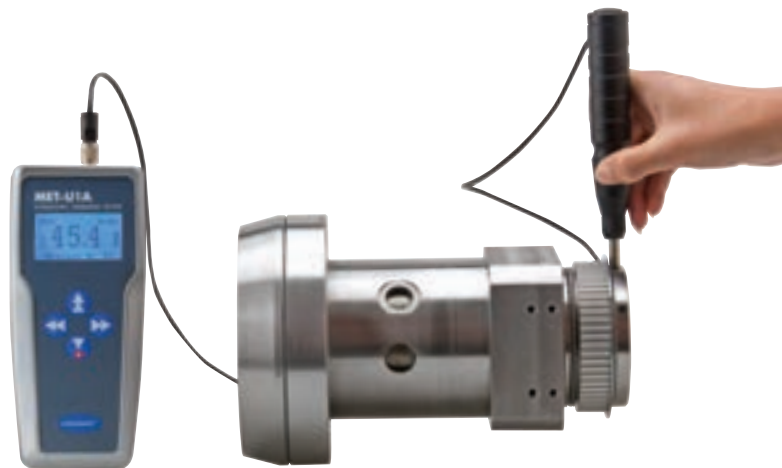
- Probe SL type (slim nose)
  - Memory for 30,000 readings
  - Bench Stand TH-4S
  - Guide Support
- Call for full specification and accessory list.

## Ultrasonic Portable Hardness Tester MET-U1A

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

### Features

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



### PORTABLE HARDNESS TESTER - MET-U1A

| Code No      | Description                         |
|--------------|-------------------------------------|
| W-MET-U1A    | Ultrasonic Portable Hardness Tester |
| W-MET-U1A/10 | Stand for MET-U1A probe             |

### Standard Delivery

- Main unit
- U1 ultrasonic probe
- Power unit
- Battery: NiMH
- Carrying case
- Instruments certificate
- User and installation manual

### Optional Accessories

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

## Portable Magnetic Rockwell Tester - W-INMR/01

Magnetic base hardness tester designed according to the principle of Rockwell hardness testing.

### Features

- The test head can be fixed to the surface of iron and steel components by magnetic force. Support to the test piece is not required as the 350kg+ magnetic base will hold the unit firmly in position
- The testing accuracy complies to ISO 6508 or ASTM E18 and is comparable to a Rockwell bench hardness tester
- Testing can be done regardless of the shape of the component as long as there is a flat surface for positioning of the magnetic base
- Able to test large-size workpieces which are assembled, unable to cut or inconvenient to move such as large-size moulds, steel plates, steel tubes, steel structures, pressure vessels, metallic pipe lines or the slide ways of machine tools

### Optional Accessories

- Rockwell indenters
- Rockwell balls



### TECHNICAL SPECIFICATION

|                        |   |
|------------------------|---|
| Initial test force     | 10kg  |
| Rockwell test force    | 60kg, 100kg or 150kg                              |
| Indenter               | 120° diamond cone<br>1.588mm carbide ball         |
| Force applying method  | By screw  |
| Maximum magnetic force | >350kg  |
| Test range             | Rockwell hardness HRC, HRB, HRA etc.<br>15 scales |
| Resolution             | Rockwell hardness 0.5HR                           |
| Accuracy               | In accordance with ISO 6508                       |
| Minimum specimen size  | 60mm x 180mm                                      |
| Net weight             | 4.9kg   |
| Package gross weight   | 7.4kg   |

### PORTABLE MAGNETIC ROCKWELL TESTER

| Code No          | Description                                |
|------------------|--|
| <b>W-INMR/01</b> | Analogue Magnetic Portable Hardness Tester |
| <b>W-MRD/01</b>  | Digital Magnetic Portable Hardness Tester  |

## Portable Brinell Hardness Tester

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

### Features

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



### TECHNICAL SPECIFICATION

|                         |  |
|-------------------------|--|
| Test force              | 1580kg   |
| Tolerance of test force | <0.5%  |
| Accuracy                | In accordance with ISO 6506  |
| Indenter                | Ø 7.26mm steel spherical surface indenter (range: 100-400HB)<br>Ø 4.0mm carbide spherical surface indenter (Optional) (range: 400-650HB) |
| Net weight              | C clamp: 4.2kg<br>Hammer impact: 0.8kg<br>Bench: 5.1kg   |

### PORTABLE BRINELL HARDNESS TESTER

| Code No            | Description              |
|--------------------|--------------------------|
| <b>W-HB1500</b>    | Brinell Hardness Tester  |
| <b>W-HB1500/01</b> | Shear Pins (Pack of 250) |
| <b>W-HB1500/02</b> | 4.0mm Carbide Indentor   |



## 'King' Brinell Portable Hardness Tester

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

### Features

- Wide measuring range to 3000kgf
- Simple handling and low test expenditure
- High accuracy
- Conforms to ASTM and ISO Brinell Standards
- API approved

### Standard Delivery

- Main unit
- 10mm Brinell Ball (If a UKAS certificate is required, the TCB100UK Carbide Ball will need to be ordered)
- Flat, dome and V-anvils

### Optional Accessories

- Chain adapter
- Test blocks
- Reverse direction adapters
- Low pressure test head
- Video measurement microscope system
- 20x Microscope for King Brinell (W-WHB-MIC)



### TECHNICAL SPECIFICATION

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

### BRINELL PORTABLE HARDNESS TESTER

| Code No   | Description                     |
|-----------|---------------------------------|
| W-WHB-120 | King Brinell Tester             |
| W-WHB-MIC | 20X Microscope for King Brinell |



## 'King' Brinell Portable Hardness Tester Accessories

- **Standard test head**

Calibrated accurate to 1/2 of 1% load.  
Releases at 3000kg automatically.  
Capable of incremental loads

Code No: W-WHB-B1  
3000kg



- **Standard test head with long ram**

Same features as standard test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges

Code No: W-WHB-B3  
3000kg



- **Low pressure test head**

Applied load and indicator dial are coordinated for softer metals.  
Can be calibrated to release at loads of 62-1/2kg, 125kg, 250kg, 500kg, or 1000kg

Code No: W-WHB-B2  
1000kg



- **Low pressure test head with long ram**

Same features as low pressure test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges

Code No: W-WHB-B4  
1000kg



- **Adapter to hold test head upright without base**

For testing large flats it enables test heads to be used under large drill presses, boring mills, arbor presses and beams that are capable of withstanding 3000kg load

Code No: W-WHB-C4



- **Chain adapter**

Used for large cylinders it fits onto a standard test head and wraps around specimens that are too big for regular tester. High strength chrome/molybdenum steel arms hold the chain to the test head and allow it to stay rigid while the chain takes the full thrust of the load. Supplied with 4' chain

Code No: W-WHB-C2



- **Base**

14" base with 14" test height opening and 4" throat is standard. Optional 6" throat with either 14" or 20" test height opening available, 20" base also available with 4" throat and 20" test height opening

Code No: W-WHB-C1



- **2.5mm and 5mm ball adapter**

Used on softer materials or where a smaller impression is desired



- **Stage micrometer**

Used to check calibration of Brinell Microscope by placing the microscope on the stage micrometer and aligning the grid on the stage micrometer with the grid on the microscope. If the grids do not match perfectly, the microscope is out of calibration and should be re-calibrated.  
Meets ASTM50, and is traceable to NIST standards

Code No: W-WHB-D7



- **Brinell microscope**

Constructed from stainless steel, the rugged and optically reliable Brinell microscope is the most versatile on the market today. Featuring a 20x pre-focused lens, the microscope has a narrow nosepiece which easily fits into tight recesses, resulting in less grinding on castings, billets and dies. For added stability when performing flat work, a slip-on base adapter is included. A side opening in the microscope allows plenty of natural light for viewing, and a cordless movable pen light can be used in dim conditions. Calibrated on equipment traceable to NIST standards, the Brinell microscope meets ASTM 5-10 specifications. It is ready to use and comes equipped with a handy storage case

Code No: W-WHB-MIC



## Webster Type Portable Hardness Tester

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

### Features

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



### WEBSTER TYPE HARDNESS TESTER

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

### TECHNICAL SPECIFICATION

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



## CV Shore Durometers - Analogue / Digital

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

### Features: Analogue

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

### CV SHORE DUROMETERS - ANALOGUE / DIGITAL

| Code No | Description                                      |
|---------|--|
| SHA0001 | Analogue Shore 'A' Scale                         |
| SHD0002 | Analogue Shore 'D' Scale                         |
| DSAS001 | Digital 'A' Scale Durometer, Sylvac RS232 output |
| DSDS001 | Digital 'D' Scale Durometer, Sylvac RS232 output |
| SHA0003 | Shore 'A/D' Bench Stand                          |

### Features: Digital

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



### TECHNICAL SPECIFICATION - DIGITAL

| Scale             | Shore A                                    | Shore D                                    |
|-------------------|--|--|
| Resolution        | 0.1  | 0.1  |
| Standards         | Conforms to ASTM D2240 and ISO 868         | Conforms to ASTM D2240 and ISO 868         |
| Display Range     | 0-100                                      | 0-100                                      |
| Pressure foot     | Ø 18mm                                     | Ø 18mm                                     |
| Indenter          | Blunt taper                                | Sharp point                                |
| Tip angle         | 35°  | 30°  |
| Indenter diameter | 1.25mm                                     | 1.25mm                                     |
| Battery           | Lithium 3V, CR2032                         | Lithium 3V, CR2032                         |
| Data output       | RS-232 combined with external power supply | RS-232 combined with external power supply |

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

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



## Surface Roughness Standards

Ideal for use in the drafting room, engineering department or small shop.

### Features

- Made from solid electroformed nickel
- Markings in AA (microinches) and metric in Ra (micrometers)
- Each type of surface finish is truly and consistently reproduced to give the operator a realistic idea of the feel, appearance and texture of the machined component
- Conforms to S.A.E. and military specifications for visual and tactile inspection
- Set contains 30 Specimens, each 7/8" x 3/8"



### SURFACE ROUGHNESS STANDARDS

| Code No | Description   |
|---------|---|
| 10-7524 | 3 Specimens Flat Lapping 2, 4 and 8μ" AA<br>3 Specimens Reaming 16, 32 and 63μ" AA<br>6 Specimens Grinding 2, 4, 8, 16, 32 and 63μ" AA<br>6 Specimens Horizontal Milling 16, 32, 63, 125, 250 and 500μ" AA<br>6 Specimens Vertical Milling 16, 32, 63, 125, 250 and 500μ" AA<br>6 Specimens Turning 16, 32, 63, 125, 250 and 500μ" AA |

## Surface Roughness Tester - MTR110

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

### Features

- Back-light LCD
- Dynamic Test Display: progress of cut-off length during testing
- Li-ion rechargeable batteries
- Protection slide on pick-up
- Auto-off after 90 seconds
- Pocket-size and economically priced
- Both Ra and Rz parameters in one instrument
- Large measuring range suitable for most materials
- Piezo-electric pick-up stylus for external surfaces
- Includes steel test piece
- Includes charger unit
- Measurements of shafts above 40mm diameter using the Vee groove in base



### SURFACE ROUGHNESS TESTER

| Code No   | Description              |
|-----------|--------------------------|
| MTR110/UK | Surface Roughness Tester |

Please visit [www.bowersgroup.co.uk](http://www.bowersgroup.co.uk) for full technical specification.

## Innovatest/TIME 3100 Dual Display Surface Roughness Tester

Portable surface roughness tester from Innovatest, offering a large measuring range suitable for most materials, including flat, outer cylinder and sloping surface.

### Features

- Pocket-size and economical price
- Large measuring range suitable for most materials
- Measures flat, outer cylinder and sloping surfaces
- Both Ra and Rz parameters in one instrument
- Features external calibration at keyboard
- Standard conforms to ISO and DIN
- Rechargeable batteries that can work whilst charging

### Standard Delivery

- Instrument
- Protection cover for tracer
- Roughness test plate Ra
- Charger
- Carrying case
- Manual
- INNOVATEST certificate



### DUAL DISPLAY SURFACE ROUGHNESS TESTER

| Code No | Description                           |
|---------|---------------------------------------|
| W-3100  | Dual Display Surface Roughness Tester |

### Optional Accessories

- UKAS certified roughness test plates

## Innovatest/TIME 3220/3221 Surface Roughness Tester

The Surface Roughness Tester is designed for shop floor, industrial and inspection room applications, and offers a versatile solution for all your surface finish measurement requirements.

Specific accessories such as a height support, V-groove support widen the standard field of application. Connectivity via RS232 and USB allow connection to PC or portable devices. Ideal for a wide range of industries including precision bearings, automotive and aerospace engineering, this product has the key attributes that are most important for quality control in today's precision industries;

- Advanced & wide parameter options to suit your application
- V-shaped bottom, means the system can be used on flat or curved surfaces
- Built to last, solid ABS housing
- Large memory plus printer output

### Features

- Large range of parameters and graphical measuring system
- High resolution industrial touch screen
- Digital and analogue filtering methods (2RC, GAUSS)
- Complies to ISO, ASTM, JIS standards
- Can be connected to W-TA230 printer, prints all parameters and graphs
- Built-in standard RS232 interface and USB interface
- Automatic switch off
- Integrated design, simple to use



### SURFACE ROUGHNESS TESTER

| Code No | Description                                   |
|---------|---|
| W-3221  | Surface Roughness Tester - Fixed Tracer       |
| W-3220  | Surface Roughness Tester Remote - Motor Drive |

## Surface Roughness Tester - R-135

Handheld surface roughness tester for external surfaces and grooves.

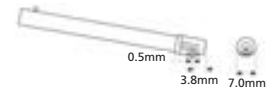
The R-135 is a portable, battery-powered instrument for checking surface roughness, with the measured values displayed on a digital readout display. The instrument can be used in laboratory, inspection area, workshop, or wherever on-site surface roughness testing is required.

### Features

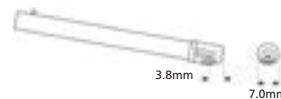
- Pocket-sized and economically priced!
- External and internal finish testing with swivable tracer
- Ra and Rz parameters in one instrument and all available after each individual test
- Standard 9V battery (not included)
- Three cut-off 0.25mm, 0.8mm and 2.5mm, adjustable to 1-3-5 times
- Pi'zo-electric pick-up stylus for external surfaces with diamond tip of 2 micron according to the latest ISO standards
- With data output



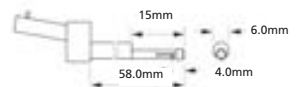
Parallel chisel probe for gauging sharp edges or small O.D., perpendicular for axis of traverse



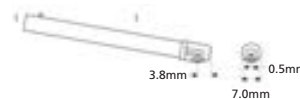
Standard probe for most applications



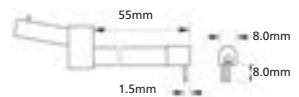
Small bore probe, minimum inside diameter 5.0mm, up to depth of 15.0mm



Transverse chisel probe for gauging sharp edges or small O.D., aligned to axis of traverse



Groove bottom probe for measuring the bottoms of O-ring grooves, recesses and holes up to 8.0mm depth



### TECHNICAL SPECIFICATION

|                                 |   |
|---------------------------------|---|
| Measuring ranges                | Ra-- 0.03µm ~ 6.35µm (1µ"~250µ")  |
| Rz-- 0.2µm ~ 25.3µm (8µ"~999µ") |   |
| Display resolution              | 0.01µm / 1µ"  |
| Cut-off                         | 0.25mm / 0.001", 2RC filter, select 1-3-5 times<br>0.8mm / 0.03", 2RC filter, select 1-3-5 times<br>2.5mm / 0.01", 2RC filter, select 2 times |
| Display                         | 3-digit LCD   |
| Accuracy                        | Meets ISO and DIN standards   |
| Probe Type                      | Piezoelectric   |
| Maximum stylus force            | 15.0mN / 1500mgf  |
| Stylus tip radius               | Diamond, 2 micron   |
| Power                           | 9V alkaline battery (not included)  |
| Battery capacity                | Approx. 3000 measurements   |
| Output                          | RS-232 to pc or printer (only IPX-104)  |

### CV SURFACE ROUGHNESS TESTER

| Code No     | Description                              |
|-------------|--|
| W-R135      | Surface Roughness Tester + RS-232 output |
| W-R130/3200 | Stand for R-135                          |
| W-R130/4101 | Data cable to PC or Printer              |

### Standard Delivery

- Main unit
- Protection cover
- Roughness test plate Ra
- Carrying case
- Manual
- RS-232
- Certificate

### Optional Accessories

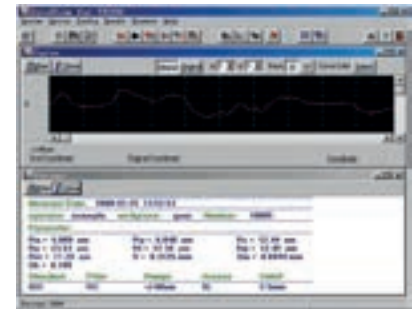
- Tracers for special applications
- Stand for stable testing
- Mini-printer with cable
- Data cable to MS-Hyperterminal





## CV Surface Roughness Tester - TR-200

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



DataView PC Software

### TECHNICAL SPECIFICATION

|                                 |  |
|---------------------------------|--|
| Roughness parameter             | Ra, Rz, Ry, Rq, Rt, Rp, Rmax, Rv, Rs, Rsm, Rsk, Rmr  |
| Assessed profiles               | Primary profile (P), Roughness profile (R)<br>Tp curve (material ratio Mr)   |
| Profile recording magnification | Vv: 200x - 20000x Vh: 20x, 50x, 200x   |
| Standard                        | Conforms ISO / DIN / JIS / ANSI (menu selectable)  |
| Measuring system                | Metric $\mu\text{m}$ , imperial $\mu\text{inch}$   |
| Display resolution              | 0.001 $\mu\text{m}$ / 0.04 $\mu\text{inch}$  |
| Display features                | Detector stylus position indicator<br>Battery level indicator, Direct printing,<br>Direct display of parameters and profiles           |
| Data output                     | RS-232 port  |
| Measuring range                 | Ra, Rq : 0.0-40.0 $\mu\text{m}$<br>Rz, Ry, Rp, Rt, R3z, : 0.02-160 $\mu\text{m}$<br>Sm, S : 2-4000 $\mu\text{m}$<br>Tp : 1-100% (% Ry) |
| Cut-off lengths                 | 0.25mm / 0.8mm / 2.5mm   |
| Evaluation length Ln            | 1-5 cut-off  |

### Standard Delivery

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

### Optional Accessories

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

### CV SURFACE ROUGHNESS TESTER

| Code No    | Description                                |
|------------|--|
| W-TR200    | TR-200 Surface Roughness Tester            |
| W-TA-220   | Printer for TR200                          |
| W-TS-100   | Tracer, standard                           |
| W-TS-110   | Tracer, narrow skid, special               |
| W-TS-120   | Tracer, with skid, bores from 2mm          |
| W-TSEA     | Extension arm, 50mm x 10mm                 |
| W-TS-130   | Tracer, deep grooves <3mm                  |
| W-TS-131   | Tracer, deep grooves <10mm                 |
| W-TSEB     | Extension arm, 90°, 70mm x 25mm            |
| W-200/0320 | DataView Software - Windows XP             |
| W-200/0505 | Granite platform TA610 with 'L' attachment |
| W-200/0510 | 'L' attachment for TR200                   |

W-TS-100



W-TSEA



W-TSEB



## Diavite DH8 High Precision Surface Roughness Meter

New high precision surface roughness meter for universal use in workshops and inspection rooms. VH model for use with probes with skids only. VHF model for use with probes with and without skids.



### Features

- Automatic calibration
- Memory for 50 measurements
- 5 measuring lengths, all selectable between 0.5 and 15.0mm
- Selectable measuring speed
- Calibration for max. 8 tracers
- 8 measuring programs
- Choice of many types of tracers to solve nearly all measuring tasks, also customer specific ones
- User friendly comprehensive multilingual menu guidance
- Tolerance indication for measuring values exceeding permissible allowance set
- Key lock for It, Ic and R to prevent any settings being changed by mistake during measuring procedure
- USB output for data transfer (Option: Bluetooth)
- Choice of capable software programmes DIASOFT (optional)
- Numerous accessories for many applications, needed for working with skid less tracers
- Rechargeable battery for mobile applications



### DIAVITE DH8 HIGH PRECISION SURFACE ROUGHNESS METER

| Code No   | Description                           |
|-----------|---------------------------------------|
| 13-3053   | Diavite DH8 Surface finish tester VH  |
| 13-3051   | Diavite DH8 Surface finish tester VHF |
| 13-3074   | Stand with alu base                   |
| 13-3074HG | Stand with black granite base         |
| 13-3030   | Extension - 100mm                     |

## Diavite Tracers

The flexible application of a surface roughness meter can be reached using a Diavite tracer, of which there are several to choose from. For DH-8 and COMPACT II, 17 different tracers are available, and thanks to the integrated reference flat in the VHF traversing unit, very precise measurements are no longer a problem - even using skid-less tracers.



### TRACER WITH SKID

#### Standard tracer

SH

Smallest bore: Ø 8mm  
Max. measuring depth: 27mm  
Included in the delivery



13-3022

#### Slot tracer

NH

Max. depth of slot:  
15mm and 20mm  
Min. width of slot: 3mm

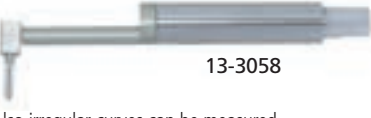


13-3025

#### Concave-convex tracer

KKH

For measuring concave and convex work pieces having a minimum radius of 5mm. Also irregular curves can be measured. Use minimum cut-off and length of traverse.



13-3058

#### Bore tracer

BH

Smallest bore: Ø 2.5mm  
Max. measuring depth: 20mm



13-3056

#### Axis and knives tracer

AH

For measuring small axis, knives, edges and wires.



13-3054

#### Gear tooth flanks tracer

ZH

Tracer with skid for tooth flanks up to module 2.



13-3028

### SKIDLESS TRACER

#### Bore tracer

BZFH

Smallest bore: Ø 1.5mm  
Max. measuring depth: 15mm  
Gear tooth flanks: from module 0.75

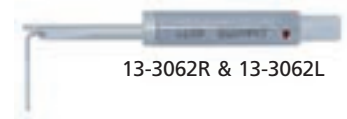


13-3060

#### Transversal tracer

WFH

For measuring slots inside of flanks.

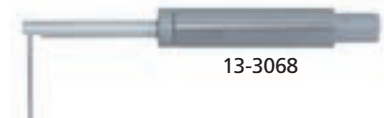


13-3062R & 13-3062L

#### Slot tracer

NFH

Max. depth of slot: 25mm  
Min. width of slot: 1.5mm



13-3068

#### Small bore tracer

BZFH-06

Smallest bore: Ø 0.8mm  
Max. measuring depth: 15mm  
Gear tooth flanks: from module 0.5

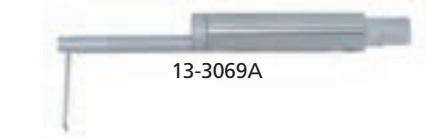


13-3067

#### Slot tracer

NFH-06

Max. depth of slot: 10mm  
Min. width of slot: 1.0mm



13-3069A

#### Axis and knives tracer

AFH

For measuring small axis, knives, edges and wires.



13-3063

## Diavite Accessories & Applications

Measuring support with aluminium (13-3074) or granite, (13-3074HG) base plate column 250mm.



13-3076  
Adaptor for motor units  
- MSA 13-3076



13-3074



13-3074HG

## ACCRETECH HandySurf+ Portable Surface Measurement

The detachable drive unit enables measurement in a wide range of positions and the 6 button input and new user interface creates an intuitive operator experience.

With a 16mm Evaluation Length, 0.7 nanometer Resolution, 370µm Z-range and all-new 2.4" colour screen, the next generation Handysurf+ has sophistication and ease of use in equal measures.

### HandySurf E-35+

- Standard type measurements
- Horizontal, inclined, vertical, ceiling surfaces

### HandySurf E-40+

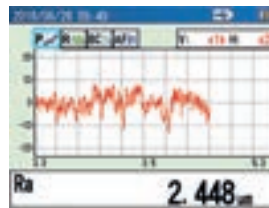
- Retracting stylus type
- Reduces damage to stylus on rough surfaces by raising the pickup before and after measurement

### HandySurf E-45+

- Transverse trace type
- The pickup moves sideways for use in narrow areas, such as crankshaft pins and journals

### Additional Features

- Multiple analysis functions
- Profile curve, roughness curve, waviness, roughness motif
- USB connection for USB memory, printer and PC communication
- Optional mini-printer available



### ACCRETECH HANDYSURF

| Code No   | Description                     |
|-----------|---------------------------------|
| 15-E35+   | Standard unit with 5µm stylus   |
| 15-E35/2+ | Standard unit with 2µm stylus   |
| 15-E40+   | Retracting unit with 5µm stylus |
| 15-E40/2+ | Retracting unit with 5µm stylus |
| 15-E45+   | Transverse unit 5µm only        |

## Surfcom Touch

Entry-level model for surface measurements for various production applications, especially suitable for small and medium-sized companies.

### Features

- Excellent price-performance ratio
- Simple and self-explanatory user interface with 7-inch touch display
- Depending on the application, up to three different feed units can be combined with the evaluation unit
- Automatic detection of the feed unit
- User-friendly, multilingual user software
- USB/Micro USB interface for extended data storage and transfer to the evaluation software (supportware II)
- Evaluation unit with integrated printer
- High-performance battery for mobile use



### SURFCOM TOUCH

| Code No        | Description                          |
|----------------|--------------------------------------|
| 15-S-TCH3582   | Surfcom Touch 35B, R2µm with printer |
| 15-S-TCH40A2   | Surfcom Touch 40A, R2µm with printer |
| 15-S-TCH45A    | Surfcom Touch 45A, R5µm with printer |
| 15-S-TCH50A    | Surfcom Touch 50A, R2µm with printer |
| 15-S-TCH550-11 | Surfcom Touch 550, bench top         |



## ACCRETECH SURFCOM Nex Series

Adoption of the patented hybrid multi-sensor technology allows for the single purpose function by a single detector or the multipurpose functions by combining multiple detectors. The SURFCOM Nex series offers detector types for measurement functions, roughness, contour and roughness & contour simultaneously. Wide flexibility of allowing for modular selection of a combination from detectors, driver unit and measuring stands in accordance with users specific requirements.

### Features

- High accuracy due to noiseless precision linear motor drive unit
- NEX 100 Hybrid detector with dual sensing technology
- The combination of a wide-range high-accuracy sensor and a narrow-range high resolution sensor allows for simultaneous measurements. This new operating principle enables you to measure surface roughness and contour at the same time, thus no longer requiring the change of detectors and increasing measurement efficiency
- Optional variable tilt to x-axis
- Capacities up to:-
  - 60mm Contour Z-Axis
  - 1000µm Roughness Z-Axis
  - 200mm X-Axis stroke length
- 1000 x 450mm base granite size
- 650mm column stroke

### Detector types

#### Hybrid detector with dual sensor technology – E-DT-CR14A

- An integrated measuring instrument with newly developed dual sensory technology capable of measuring roughness and contour simultaneously

#### Contour detector – E-DT-CH18A

- General purpose detector equipped with a newly developed high-precision scale. The Z-axis measurement range is 60mm
- Stress-free replacement is possible with the newly developed Quick-change arm mechanism
- Upward/downward measurements are also available

#### High accuracy contour detector with automatic measuring force adjustment mechanism - E-DT-CH19A

- High accuracy type detector equipped with a new laser diffraction linear scale
- The full range measurement resolution is 0.02µm
- Features an automatic adjustment mechanism of measuring force as well as the Z-axis measurement range of 60mm and Quick-change arm mechanism
- Upward/downward measurements are also available

#### Pickup for roughness measurement - E-DT-SS01A

- A pickup with compact design for high magnification and wide range measurements
- Its outer diameter is 14mm, measurement range is 1000µm and maximum measurement magnification is 500,000 times
- Used for pickup upward measurements (with the auto-stop function) and horizontal trace measurement



DX model



Hybrid detector with dual sensor technology - E-DT-CR14A



Pickup for roughness measurement - E-DT-SS01A

### ACCRETECH SURFCOM NEX SERIES

| Code No            | Description   |
|--------------------|---|
| 15-S-NEX100SD-12-N | Hybrid detector   |
| 15-S-NEX130SD-12-N | Hybrid detector, General Purpose Contour                          |
| 15-S-NEX140SD-12-N | Hybrid detector, High-accuracy Contour                            |
| 15-S-NEX101SD-12-N | Hybrid detector, High-accuracy Roughness                          |
| 15-S-NEX131SD-12-N | Hybrid detector, General Purpose Contour, High-accuracy Roughness |
| 15-S-NEX141SD-12-N | Hybrid detector, High-accuracy Contour, High-accuracy Roughness   |
| 15-S-NEX030SD-12-N | General Purpose Contour   |
| 15-S-NEX040SD-12-N | High-accuracy Contour   |
| 15-S-NEX001SD-12-N | High-accuracy Roughness   |
| 15-S-NEX031SD-12-N | General Purpose Contour, High-accuracy Roughness                  |
| 15-S-NEX041SD-12-N | High-accuracy Contour, High-accuracy Roughness                    |

For full technical specification details contact [accretech@bowersgroup.co.uk](mailto:accretech@bowersgroup.co.uk)

## TECHNICAL SPECIFICATION

### Measuring Unit

| Model            |                                       |   | 12  | 13 | 14   | SURFCOM NEX                                   |                               |         |  |
|------------------|---------------------------------------|---|---|----|--|---|-------------------------------|---------|--|
|                  |                                       |   | 15  | 22 | 23   | 24  | 25                            |         |  |
| Tracing driver   | X-axis<br>(L: measuring length: (mm)) | Sensing method                            | Linear Scale  |    |  |   |                               |         |  |
|                  |                                       | Straightness accuracy                     | When hybrid detector with dual sensor technology is used (µm)         |    |  | (0.05 + 1.0L/1000) *When standard arm is used |                               |         |  |
|                  |                                       |   | When high-accuracy detector for contour measurement is used (µm/mm)   |    |  | 1.0/100                                       |                               | 2.0/200 |  |
|                  |                                       |   | When general-purpose detector for contour measurement is used (µm/mm) |    |  | 1.0/100                                       |                               | 2.0/200 |  |
|                  |                                       |   | When pickup for roughness measurement is used (µm)                    |    |  | (0.05 + 1.0L/1000)                            |                               |         |  |
|                  |                                       | X-axis indication accuracy (µm) : Lateral |   |    | ±(1.0 + 1.0L/100)  |   |                               |         |  |
|                  |                                       | Resolution (µm)                           |   |    | 0.016  |   |                               |         |  |
|                  |                                       | Speed (mm/s)                              |   |    | Moving speed   |   | 0.03 to 60                    |         |  |
|                  |                                       |   |   |    | Measuring speed  |   | 0.03 to 20                    |         |  |
|                  |                                       | Tilt angle (°)                            |   |    | When hybrid detector with dual sensor technology is used |   | ±10 (Optional tilting device) |         |  |
| Other than above |                                       |   |   |    | ±15 (Optional tilting device)                            |   |                               |         |  |
| Measuring stand  | Column                                | Speed (mm/s)                              | Travel speed  |    |  |   |                               |         |  |
|                  | Base                                  | Material                                  | Max. 10 Gabbro  |    |  |   |                               |         |  |

### Detector

|  |  |   |  |  |  |  |  |  |
|--|--|---|--|--|--|--|--|--|
| Hybrid detector with dual sensor technology (E-DT-CR14A) | Measuring range                                | Z-axis (mm): Vertical direction   | 5.0 (Standard arm), 10.0 (2x arm)  |  |  |  |  |  |
|  |  | Roughness   | Sensing method   | Differential inductance                          |  |  |  |  |
|  |  |   | Measuring range (mm)   | 0.05 to 5.0                                      |  |  |  |  |
|  | Contour measurement (H: Measuring height (mm)) | Resolution (nm)   | 1.0 to 100   |  |  |  |  |  |
|  |  | Sensing method  | High accuracy scale  |  |  |  |  |  |
|  | Stylus   | Measuring range (mm)  | Measuring range (mm)   | 5.0  |  |  |  |  |
|  |  |   | Resolution (µm)  | 0.015 (Full range)                               |  |  |  |  |
|  |  | Indication accuracy (µm): Vertical direction                                      | Function   | ±(1.0 +  2H /100) *When LH = 50mm stylus is used |  |  |  |  |
|  |  |   | Model  | DM84071 (LH = 50mm, Standard arm)                |  |  |  |  |
|  | For Roughness and Contour                      | Measuring force (mN)  | Stylus material  | 0.75   |  |  |  |  |
| Stylus material  |  |   | Diamond  |  |  |  |  |  |
| Stylus shape   |  |   | 2 µmR/60° conical  |  |  |  |  |  |
| For Contour  | Measuring force (mN)                           | Model   | DM48775 (LH = 100mm, 2x arm)   |  |  |  |  |  |
|  |  | Stylus material   | 4.0  |  |  |  |  |  |
|  |  | Stylus shape  | Cemented carbide   |  |  |  |  |  |
| Replacement method                                       | Stylus shape                                   | Stylus material   | 25 µmR/24° conical   |  |  |  |  |  |
|  |  | Stylus shape  | Replaceable  |  |  |  |  |  |
| Common Function  |  | Downward measurements / Upper limit detection safety mechanism / Retract function |  |  |  |  |  |  |
| General-purpose contour detector (E-DT-CH18A)            | Measuring range                                | Z-axis (mm): Vertical direction   | 60.0   |  |  |  |  |  |
|  |  | Sensing method  | Laser optical diffraction scale  |  |  |  |  |  |
|  | Contour measurement (H: Measuring height (mm)) | Measuring range (mm)  | 60.0   |  |  |  |  |  |
|  |  | Resolution (µm)   | 0.04 (Full range)  |  |  |  |  |  |
|  | Indication accuracy (µm): Vertical direction   | Function  | ±(1.5 +  2H /100)  |  |  |  |  |  |
|  |  | Function  | Downward/upward measurements / Lower/upper limit detection safety mechanism / Retract function |  |  |  |  |  |
|  | Stylus Tip                                     | For Contour   | Model  | DM45505  |  |  |  |  |
|  |  |   | Replacement method   | Replaceable                                      |  |  |  |  |
|  |  |   | Measuring force (mN)   | 10 to 30   |  |  |  |  |
|  |  |   | Stylus Material  | Cemented carbide                                 |  |  |  |  |
| Stylus shape   |  |   | 25 µmR/24° conical   |  |  |  |  |  |
| High-accuracy contour detector (E-DT-CH19A)              | Measuring range                                | Z-axis (mm): Vertical direction   | 60.0   |  |  |  |  |  |
|  |  | Sensing method  | Laser optical diffraction scale  |  |  |  |  |  |
|  | Contour measurement (H: Measuring height (mm)) | Measuring range (mm)  | 60.0   |  |  |  |  |  |
|  |  | Resolution (µm)   | 0.04 (Full range)  |  |  |  |  |  |
|  | Indication accuracy (µm): Vertical direction   | Function  | ±(1.5 +  2H /100)  |  |  |  |  |  |
|  |  | Function  | Downward/upward measurements / Lower/upper limit detection safety mechanism / Retract function |  |  |  |  |  |
|  | Stylus Tip                                     | For Contour   | Model  | DM45505  |  |  |  |  |
|  |  |   | Replacement method   | Replaceable                                      |  |  |  |  |
|  |  |   | Measuring force (mN)   | 10 to 30   |  |  |  |  |
|  |  |   | Stylus Material  | Cemented carbide                                 |  |  |  |  |
| Stylus shape   |  |   | 25 µmR/24° conical   |  |  |  |  |  |
| Pickup for roughness measurement (E-DT-SS01A)            | Measuring range                                | Z-axis (mm): Vertical direction   | 1000   |  |  |  |  |  |
|  |  | Sensing method  | Differential inductance  |  |  |  |  |  |
|  | Roughness measurement                          | Measuring range (µm)  | 6.4 to 1000  |  |  |  |  |  |
|  |  | Resolution (nm)   | 0.1 to 20  |  |  |  |  |  |
|  | Function                                       | Function  | Downward/upward measurements / Upper limit detection safety mechanism                          |  |  |  |  |  |
|  |  |   | Model  | DM43801  |  |  |  |  |
|  | Stylus   | For Roughness   | Replacement method   | Replaceable                                      |  |  |  |  |
|  |  |   | Measuring force (mN)   | 0.75   |  |  |  |  |
|  |  |   | Stylus Material  | Diamond  |  |  |  |  |
|  |  |   | Stylus shape   | 2 µmR/60° conical                                |  |  |  |  |

### Other

|                                      |                             |   |  |  |  |  |
|--------------------------------------|-----------------------------|---|--|--|--|--|
| Power supply                         | Voltage (V), Frequency (Hz) | Single-phase AC100 to 240, 50/60        |  |  |  |  |
|                                      | Power consumption (VA)      | Max. 670                                |  |  |  |  |
| Air supply (For antivibration table) | Supply pressure (MPa)       | 0.45 to 0.7                             |  |  |  |  |
|                                      | Working pressure (MPa)      | 0.4                                     |  |  |  |  |
|                                      | Air consumption (L/min)     | 0.1 (Max. 10)                           |  |  |  |  |
|                                      | Supply position             | Main body back side                     |  |  |  |  |
| Setting environment                  | Temperature                 | *Air supply connecting port diameter    | R c1/4 male screw (outside diameter Ø 6mm one-touch pipe joint for tube) |  |  |  |
|                                      |                             | Temperature of accuracy guarantee (°C)  | 20 ± 5 (temperature change rate ±0.5°C/hour and 0.1°C/measurement time.) |  |  |  |
|                                      |                             | Temperature of operation guarantee (°C) | 10 to 30   |  |  |  |
|                                      | Humidity                    | Storage temperature (°C)                | 5 to 40  |  |  |  |
|                                      |                             | Humidity of operation guarantee (%)     | 40 to 80 (without condensation)  |  |  |  |
|                                      | Storage humidity (%)        | 80 or lower (without condensation)      |  |  |  |  |

\*Power and air supply and a connecting hose are required before the delivery.

\*The power supply must be grounded (Type D grounding).

\*The temperature change rate for guaranteed accuracy is limited to ±0.5°C/hour and 0.1°C/measurement time.

\*Contents of the specification may be changed without any notice due to product modifications.



# ACCRETECH SURFCOM Crest

World class leader in speed and resolution!

ACCRETECH's flagship measuring machine adopts a newly developed, highly stable optical path laser interferometer having a resolution of 0.31 nm. This system features a dynamic range as well as a resolution ratio of 42,000,000:1. This means that in a single trace you can evaluate contour profiles in wide ranges and also hidden fine surfaces.

## Linear Motor Drive

- Linear motor drive ensures high accuracy and high-speed movement
- Also, low vibration ensures more stable measurement at high magnifications

## Roughness and Contour Analysed in a Single Measurement

- Measurement efficiency improved and high accuracy is maintained at the same time

## Wide Range

- Wide measuring range of 200mm (horizontal direction) and 13mm (vertical direction)
- Motorised tilting unit capable of tilting to 45° also available (SURFCOM-CREST-T)



## TECHNICAL SPECIFICATION

| Item                   | SURFCOM CREST   |  |
|------------------------|---|--|
| Measuring range        | Z-axis (vertical)   | 13mm/50mm arm, 26mm/100mm arm  |
|                        | X-axis (horizontal)   | 200mm  |
| Accuracy               | Z-axis indication accuracy (vertical)   | $\pm 0.2 +  H /1000 \mu\text{m}$ H: Measuring height (mm)  |
|                        | Resolution  | 0.31nm/50mm arm  |
|                        | X-axis indication accuracy (horizontal)   | $\pm 0.2 + L/1000 \mu\text{m}$ L: Measuring length (mm)  |
|                        | Resolution  | 0.54nm   |
| Straightness accuracy* | 0.05+3 L/10000 $\mu\text{m}$ L: Measuring length (mm)                             |  |
| System accuracy*       | System noise**  | Ra $\leq$ 2nm/0.4mm  |
|                        |   | Ra $\leq$ 10nm/0.4mm   |
|                        | Form error***   | Pt $\leq$ 0.1 $\mu\text{m}$ ( $\varnothing$ 30mm or smaller)                                     |
|                        | Maximum Radius measurement****  | $\leq \pm 1.0 \mu\text{m}$ ( $\varnothing$ 30mm or smaller)                                      |
|                        | Permissible Distance measurement*****   | $\leq \pm (1+L/150) \mu\text{m}$ L: Measuring length (mm)  |
|                        | error Angle measurement*****  | $\leq \pm 0.5\text{min}$ (-45 -+45deg.)  |
| Sensing method         | Z-axis (vertical)   | Highly stable optical path type laser interferometer   |
|                        | X-axis (horizontal)   | Optical diffraction scale  |
| Drive speed            | Column up/down speed (Z-axis)   | to 200mm/s   |
|                        | Drive unit measuring speed (X-axis)   | 0.03 to 3mm/s (during roughness measurement),<br>0.03 to 20mm/s (during contour measurement)     |
|                        | Drive unit movement speed (X-axis)  | 0.02 to 60mm/s   |
| Drive unit tilt        | $\pm 45^\circ$ (T type)   |  |
| Sensor unit            | Stylus  | Replaceable  |
|                        | Measuring Force   | 0.75mN   |
|                        | Stylus radius   | 2 $\mu\text{m}$ R standard accessory (50mm arm)  |
|                        | Stylus material   | Diamond  |
|                        | Functions   | Retract function   |
| Dimensions and weight  | Power requirements  | Single-phase AC100 to 240 V $\pm 10\%$ , 50/60 Hz  |
|                        | Air Source  | Supply Pressure: 0.45 to 0.7MPa, Working Pressure: 0.4MPa,<br>Air Consumption Volume Max: 8L/min |
|                        | Installation dimensions (W x D x H)   | 1405mm x 1050mm x 1851mm   |
|                        | Weight  | 700kg  |
|                        | * at using DM84071 (Standard accessories)   | **** $\pm 45\text{deg.}$ , 0.3mm/s, Gauge uncertainty is included                                |
|                        | ** 0.03mm/s, Gaussian filter: c=0.08mm, s=2.5 $\mu\text{m}$                       | ***** 0.3mm/s, Gauge uncertainty is included   |
|                        | *** $\pm 45\text{deg.}$ , 0.3mm/s, Least square circle, Gaussian filter: s=0.08mm | ***** The length of one side slope is 5mm or more, 0.3mm/s,<br>Gauge uncertainty is included     |

## ACCRETECH SURFCOM CREST

| Code No            | Description             | Range  |
|--------------------|-------------------------|--|
| 15-SURFCOMCREST-DX | ACCRETECH SURFCOM Crest | Z-axis (vertical): 13mm/50mm arm, 26mm/100mm arm<br>X-axis (horizontal): 200mm |

For full technical specification details contact [accretech@bowersgroup.co.uk](mailto:accretech@bowersgroup.co.uk)

## ACCRETECH RONDCOM Touch with Tablet - Compact Roundness Measuring Instrument

The RONDCOM Touch offers high-accuracy roundness measurement in the workshop. Due to its compact form, it can easily be used on virtually any work bench. Operation is simple and intuitive using the TOUCH Screen interface..

- Software-assisted work piece alignment
- Supported work piece dimensions up to an external diameter of 150mm
- Rotation accuracy: (0.04+6H/10,000) μm

### Features

- Simple - TOUCH operation
- High Accuracy – precision air bearing turntable
- Effective – measurement control at your fingertips
- Modern and practical – Wireless operation (Bluetooth and Wi-Fi): Measurement, Analysis and Printing without cables
- ACCTee measuring software with help functions for centering and leveling
- Workpieces up to max. 15kg



### Standard configuration and accessories

- Measuring unit
- Set of data processor (Tablet PC)
- Measurement and analysis integrated software ACCTee tablet version
- Standard detector and holder
- Stylus
- Regulator set (attached to main unit)
- Block gauge for magnification calibration (1.47mm, 1.49mm)

### ACCRETECH RONDCOM TOUCH WITH TABLET

| Code No      | Description               | Range (mm) | Height (mm) |
|--------------|---------------------------|------------|-------------|
| R-Tch-Tablet | RONDCOM Touch with Tablet | 150        | 160         |

## ACCRETECH RONDCOM 31 and 41 Roundness Measuring Instruments

The RONDCOM 31 and 41 instruments are designed for the fast, easy and accurate implementation of form measuring tasks such as the measurement of polar parameters, roundness, flatness, coaxiality, concentricity, etc.

### Features

- Software-assisted workpiece alignment
- Supported workpiece dimensions up to an external diameter of 250mm
- Rotation accuracy: (0.04+6H/10,000) μm
- Z-Axis accuracy: 0.5μm/100mm (RONDCOM 41)

### Other features

- High quality axes with air bearing turntable, optional 500mm Z column
- Measuring range and probe force fully adjustable
- CNC analysis with printout
- ACCTee measurement software with help functions for centering and leveling
- Workpieces up to max. 25kg

### ACCRETECH RONDCOM 31 AND 41

| Code No  | Description                       | Range            |
|----------|-----------------------------------|------------------|
| 15-R31-N | Motor controlled roundness tester | d=250mm, z=200mm |
| 15-R41-N | Motor controlled roundness tester | d=250mm, z=300mm |

For full technical specification details contact [accretech@bowersgroup.co.uk](mailto:accretech@bowersgroup.co.uk)



## ACCRETECH RONDCOM Nex Series

Top class, high accuracy roundness and cylindrical profile measuring instrument.

### Rotational accuracy

(0.02µm +3.2 x H/10000)

### Available in Manual and CNC versions

Nex100 Manual tilt to measure face flatness

Nex200/300 CNC detector provides fully automated detector tilt and position

### R-Axis taper following function

Measure straightness of taper and taper angle

### Bench mounted SD Version or Self-contained DX Versions available on all models

RS Version to include Roughness available

### Measuring Capacities up to

360mm Inside Diameter

300mm Outside Diameter

500mm Measuring height

580mm Loading Diameter

30kg Loading weight

### Patented offset type CNC and manual detector holder

Patented design allows measurement on a wide variety of workpieces while avoiding R-Axis interference. NEX100 system enables outer diameter and flatness on upper face by manual tilt on the holder. NEX200/300 provides full CNC automation on the detector position to be able to switch between inner/outer diameter, upper/lower faces, taper faces etc. allowing maximum efficiency on measurement programming.



SD Version



DX Option

### ACCRETECH RONDCOM NEX SERIES

| Code No            | Description                   | Height         |
|--------------------|-------------------------------|----------------|
| 15-R-NEX100SD-11-N | Manual table, manual detector | 300mm (column) |
| 15-R-NEX100SD-12-N | Manual table, manual detector | 500mm (column) |
| 15-R-NEX200SD-11-N | Manual table, CNC detector    | 300mm (column) |
| 15-R-NEX200SD-12-N | Manual table, CNC detector    | 500mm (column) |
| 15-R-NEX300SD-11-N | CNC table, CNC detector       | 300mm (column) |
| 15-R-NEX300SD-12-N | CNC table, CNC detector       | 500mm (column) |

For full technical specification details contact [accretech@bowersgroup.co.uk](mailto:accretech@bowersgroup.co.uk)

## CV Ultrasonic Thickness Gauge - TT-100 Series

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

### Features

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

### Applications

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



### TECHNICAL SPECIFICATION

| Four models:               | TT-100, TT-120, TT-130  |
|----------------------------|---|
| Measuring range            | 4.0-80.00mm with ZW5P transducer (TT-120)                     |
| Measuring range (in steel) | 1.2-225.0mm with 5MHz transducer (TT-100, TT-130)             |
| Measuring restriction      | Minimum 3mm thickness, 20mm dia                               |
| Transducer frequency       | Standard 5 MHz, diameter probe 10mm                           |
| Display resolution         | 0.1mm (0.01mm for model TT-130)                               |
| Measuring accuracy         | +/- 0.1mm (+/- 0.02mm for model TT-130)                       |
| Measuring units            | mm  |
| Sound velocity range       | 1000-9999m/s  |
| Working temperature        | All standard -15°C to + 150°C,<br>Model TT120 up to 300°C max |

#### Applications:

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

### ULTRASONIC THICKNESS GAUGE - TT-100

| Code No | Description  |
|---------|--|
| W-TT100 | Universal / 0.1mm reading / incl. transducers (5MHz) |
| W-TT120 | High temp., reading 0.1mm / incl. special transducer |
| W-TT130 | Universal / 0.01mm reading / incl. transducer (5MHz) |

### Standard Delivery

- Transducer 5MHz
- Transducer ZW5P (TT-120)
- Integrated steel calibration plate 4.0mm
- Ultrasonic couplant
- Operation manual
- Carrying case

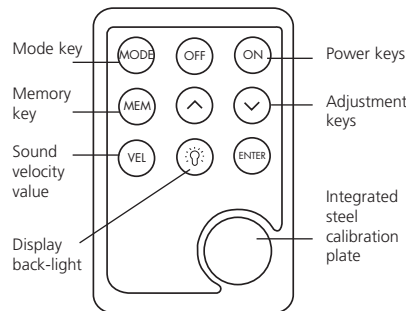
## CV Ultrasonic Thickness Gauge - TT-300 Series

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



### Features

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



### TECHNICAL SPECIFICATION

|                      |   |
|----------------------|---|
| Measuring range      | 1.2-225.0mm (steel) with 5MHz transducer<br>5.0-80.0mm (steel-high temp (300°C)) 5MHz transducer<br>5.0-40.0mm (cast iron) 2MHz probe |
| Transducer frequency | Standard 5 MHz, diameter probe 10mm   |
| Display resolution   | Menu selectable, low 0.1mm, high 0.01mm   |
| Measurement accuracy | 0.75-9.99mm: ±0.05mm<br>10-99.99mm: (0.5%H+0.01)mm<br>100mm - 300mm: (1%H+0.1)mm  |
| Measuring units      | mm/inch selectable  |
| Sound velocity range | 1000-9999m/s  |
| Display              | LCD with back-light   |
| Display Min. mode    | Display current thickness or minimum thickness (menu selectable)  |
| Alarm function       | Minimum / Maximum limits exceeding alarm  |
| Calibration setting  | Automatic zero setting, two-point calibration possible  |
| Data output          | RS-232 serial port,<br>Baud rate selectable to printer or pc  |
| Memory               | Storage of 500 thickness readings   |
| Surface temperature  | Standard -10°C to +60°C<br>(high temperature see TT-320)  |
| Battery indicator    | Low battery indicator   |
| Power supply         | 2 pcs AA batteries 1.5V   |
| Operation time       | With back-light 60 hours continuously<br>Without back-light 100 hours continuously  |
| Dimensions           | 152 x 74 x 35mm   |
| Weight               | 370g  |



### Standard Delivery

- Main unit
- Integrated steel calibration plate
- Transducer 5MHz
- Transducer ZW5P (TT-320)
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

### Optional Accessories

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



### ULTRASONIC THICKNESS GAUGE - TT-300

| Code No | Description                                    |
|---------|--|
| W-TT300 | Universal, 0.01mm resolution, 5MHz probe (std) |
| W-TT320 | High temperature version, (300°C) 5MHz probe   |
| W-TT340 | Castings version, 2MHz probe                   |

## Coating Thickness Gauge - TT-210



### Features

- Easy to use
- Integrated probe FN
- Automatic substrate recognition
- Automatic calculation: Mean/Max/Min/No./S.Dev
- Upper-lower limit setting and sound alarm
- Data output RS-232 to printer TA-220S or PC
- Storage function for 500 measuring results
- Measurement modes: continuous/single
- Battery operated

### Standard Delivery

- Calibration foil set
- AAA 1.5V battery (2 pcs)
- Manual
- Certificate
- Carrying case

### Optional Accessories

- Printer TA-220S with cable



### COATING THICKNESS GAUGE - TT-210 SERIES

| Code No | Description                             |
|---------|---|
| W-TT210 | Handheld gauge with integrated FN probe |

## Coating Thickness Gauge TT-270 Series

The measuring methods of the TT-270 are magnetic induction (F) and eddy current (N). When a F series probe is connected, the unit measures non-magnetic coating on ferro substrates, when a N series probe is connected, the unit measures non-conductive coating on non-ferro substrates.

### Features

- Several types of probes are available for various applications: F400, F1, F1/90, F10, N1, CN02
- Measurement modes: continuous / single
- Automatic calculation: Mean values / Max. values / Min. values / No. of test, S.Dev.
- Memory for maximum 640 readings
- Working modes: direct mode (DIRECT) and Batch mode (APPL)
- With backlight display
- Integrated printer
- Battery low indication
- Switch off modes: manual and auto

### Standard Delivery

- Controller unit & integrated printer
- Probe F1 or N1
- Charger
- Substrate & calibration foil set
- Printer paper
- Manual
- Quality certificate

### Optional Accessories

- Various probes for different applications



### COATING THICKNESS GAUGE - TT-270 SERIES

| Code No   | Description  |
|-----------|--|
| W-TT270F  | Coating thickness gauge with integrated printer and F1 probe |
| W-TT270N  | Coating thickness gauge with integrated printer and N1 probe |
| W-TT270FN | Coating thickness gauge with integrated printer and FN probe |



## Multi-Functional Digital Force Gauge

With integrated load cell and external load cell.

### Features

- High accuracy +/- 0.5% of full scale
- Peak hold function
- Tolerance setting
- Calculation of average values
- Lbf, kgf and Newton units
- RS232 digital output
- Clear LCD display showing all functions and parameters
- Supplied with standard accessories and software
- Optional stands available



13-03650



13-03652



### TECHNICAL SPECIFICATION

|                       |                                     |
|-----------------------|-------------------------------------|
| Measurement unit      | Lbf, kgf or Newtons                 |
| Accuracy              | +/-0.5% of full scale               |
| Resolution            | Depending on range, see table below |
| Output                | RS232                               |
| Memory                | 10 readings to calculate average    |
| Power                 | Rechargeable Ni-Hi batteries        |
| Battery life          | 20 hours of use                     |
| Operating temperature | 20°C +/- 10°C                       |
| Dimensions            | 225mm x 65mm x 35mm                 |
| Weight of main unit   | 650g                                |

### DIGITAL PUSH-PULL FORCE GAUGE

| Code No  | Description        | Maximum Scale Newtons | Minimum Scale Newtons |
|----------|--------------------|-----------------------|-----------------------|
| 13-03611 | SH-2               | 2                     | 0.001                 |
| 13-03612 | SH-5               | 5                     | 0.001                 |
| 13-03613 | SH-10              | 10                    | 0.005                 |
| 13-03614 | SH-20              | 20                    | 0.01                  |
| 13-03615 | SH-50              | 50                    | 0.01                  |
| 13-03616 | SH-100             | 100                   | 0.05                  |
| 13-03617 | SH-200             | 200                   | 0.1                   |
| 13-03618 | SH-500             | 500                   | 0.1                   |
| 13-03650 | Stand (Mechanical) |                       |                       |
| 13-03652 | Stand (Motorised)  |                       |                       |

### STANDS SPECIFICATION

| 13-03650                  |                     |
|---------------------------|---------------------|
| Dimension                 | 152x233x425 (LxWxH) |
| Weight                    | 10.6Kg              |
| Capacity                  | 500N                |
| Stroke                    | 70mm                |
| 13-03652                  |                     |
| Dimension                 | 245x430x570 (LxWxH) |
| Weight                    | 24.2Kg              |
| Test speed: 50-245mm/min  | Capacity: 200N      |
| Test speed: 200-500mm/min | Capacity: 500N      |
| Stroke                    | 250mm               |
| Accuracy of speed         | 10%                 |
| Resolution of speed       | 5 mm/min            |
| Max Cycle Times           | 9999                |

### Standard Delivery

- Main unit
- AC adaptor
- 5 measuring tips
- 4 M3 x 8 mounting screws
- CD-ROM with PC software
- Extension shaft
- Inspex certificate
- Instruction manual

### Optional Accessories

- Various stands
- UKAS calibration certificate
- RS232 serial cable

## Baty R14 - Profile Projector

The Baty R14 bench mount profile projector with its 340mm screen combines high accuracy non-contact measurement and inspection with a large 175mm x 100mm measuring range.

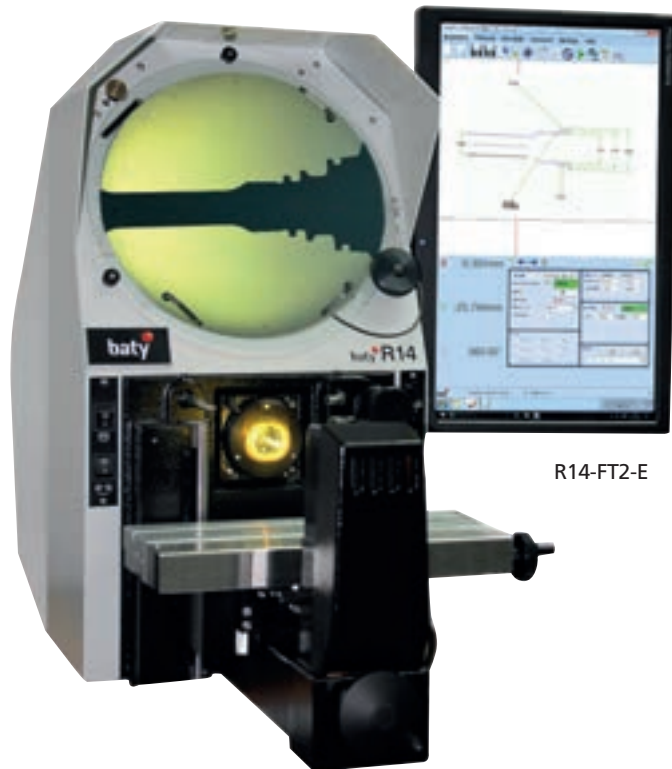
Choice of digital readouts and optional automatic profile edge detection ensures that you can have the projector that fits your requirements. The horizontal light path configuration is ideally suited to turned machined parts that can be secured to the workstage using a range of optional accessories from the Baty fixture family. The compact and robust lightweight chassis makes the R14 ideal for workshop environments.

### Features

- 340mm (14") screen with 90° crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice: 10x, 20x, 25x, 50x and 100x
- Surface illumination (fibre optic)
- Helix adjustment of light source  $\pm 7^\circ$  for accurate thread form projection
- Workstage with machined slot for holding accessories
- Workstage measuring range of 175mm (7") x 100mm (4")
- Digital angle measurement to 1 minute
- 0.5 micron resolution

### Available Options

- Internally fitted automatic edge sensor
- Swing over lamphouse to allow clear access to the workstage
- Various display units are available to suit individual requirements
- Cabinet stand ensures a solid base and provides storage

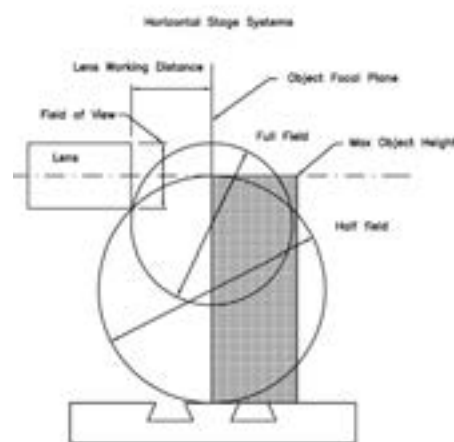


R14-FT2-E

| Projector Type   | R14        |     |     |     |      |
|------------------|------------|-----|-----|-----|------|
| Magnification    | 10x        | 20x | 25x | 50x | 100x |
| Field of view    | 35         | 18  | 14  | 7   | 4    |
| Working Distance | 82         | 38  | 24  | 15  | 31   |
| Maximum          | half field | 103 | 103 | 80  | 45   |
| Working Diameter | full field | 120 | 109 | 56  | 31   |

### LENS SYSTEMS

| Code No | Description                      |
|---------|----------------------------------|
| 122-600 | Lens system - magnification 10x  |
| 122-601 | Lens system - magnification 20x  |
| 122-602 | Lens system - magnification 25x  |
| 122-603 | Lens system - magnification 50x  |
| 122-604 | Lens system - magnification 100x |



### BATY R14

| Code No   | Description   | Functions   |
|-----------|---|---|
| R14-FT2-E | Horizontal projector with Fusion 2D touch screen DRO & optical edge detection | Windows 22" touch screen with full reporting and optical edge detection |
| R14-FT2   | Horizontal projector with Fusion 2D touch screen DRO                          | As FT2-E without optical edge detection                                 |
| R14-XLS   | Horizontal projector with Acu-rite DC102 readout                              | Basic X,Y and rotation measurement                                      |
| R14-GXL   | Horizontal projector with Quadra Chek-2023 touch screen display               | Geometric measurement functions and tolerancing                         |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Baty R400 - Profile Projector

The Baty R400 bench mount profile projector with its 400mm screen combines high accuracy non-contact measurement and inspection with a large 300mm x 150mm measuring range.

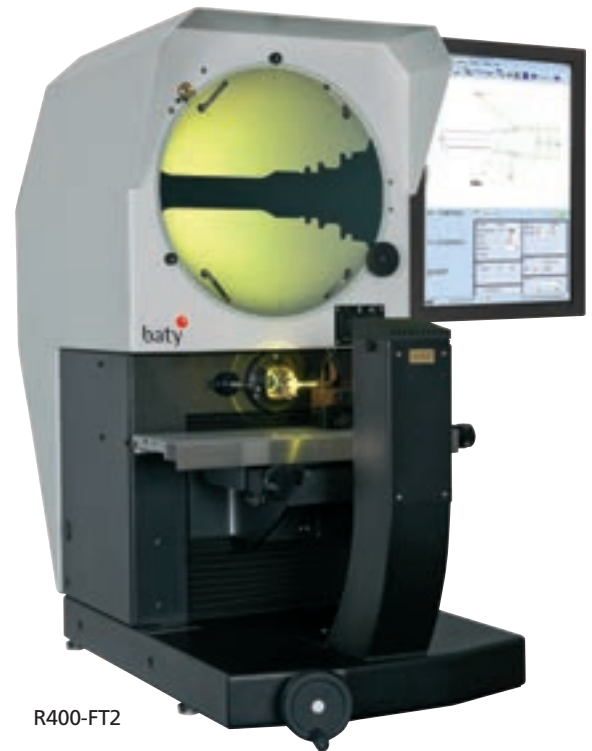
Choice of digital readouts and optional automatic profile edge detection ensures that you can have the projector that fits your requirements. The horizontal light path configuration is ideally suited to turned machined parts that can be secured to the workstage using a range of optional accessories from the Baty fixture family. The robust design of the R400 makes it suitable for both the shop floor and the standards room.

### Features

- 400mm (16") screen with 90° crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice: 10x, 20x, 25x, 50x and 100x
- Surface illumination (fibre optic)
- Helix adjustment of light source for accurate thread form projection
- Workstage with two machined slots for holding accessories
- Workstage measuring range of 300mm (12") x 150mm (6")
- Digital angle measurement to 1 minute
- 0.5 micron resolution

### Available Options

- Internally fitted automatic edge sensor (FT2-E model only)
- Swing over lamphouse to allow clear access to the workstage
- Various display units to suit individual requirements
- Cabinet stand ensures a solid base and provides storage
- Other options include foot switch control



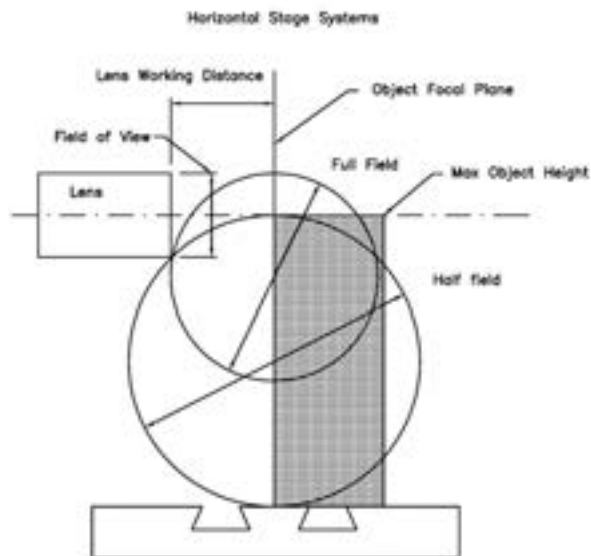
R400-FT2

| Projector Type   | R400 |     |     |     |      |
|------------------|------|-----|-----|-----|------|
| Magnification    | 10x  | 20x | 25x | 50x | 100x |
| Field of view    | 40   | 20  | 16  | 8   | 4    |
| Working Distance | 80   | 82  | 70  | 53  | 43   |
| Maximum          | 184  | 185 | 185 | 185 | 143  |
| Working Diameter | 179  | 176 | 181 | 147 | 122  |

all dimensions in mm

### LENS SYSTEMS

| Code No   | Description                      |
|-----------|----------------------------------|
| RH400-087 | Lens system - magnification 10x  |
| RH400-088 | Lens system - magnification 20x  |
| RH400-089 | Lens system - magnification 25x  |
| RH400-090 | Lens system - magnification 50x  |
| RH400-091 | Lens system - magnification 100x |



### BATY R400

| Code No    | Description   | Functions   |
|------------|---|---|
| R400-FT2-E | Horizontal projector with Fusion 2D touch screen DRO & optical edge detection | Windows 22" touch screen with full reporting and optical edge detection |
| R400-FT2   | Horizontal projector with Fusion 2D touch screen DRO                          | As FT2-E without optical edge detection                                 |
| R400-XLS   | Horizontal projector with Acu-rite DC102 readout                              | Basic X, Y and rotation measurement                                     |
| R400-GXL   | Horizontal projector with Quadra Chek-2023 touch screen display               | Geometric measurement functions and tolerancing                         |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Baty R600 - Profile Projector

The Baty R600 with its 600mm (24") screen and high specification presents the capability to make simple comparative non-contact measurement through to complex programmed measuring sequences with SPC capability and automatic edge detection.

The horizontal light beam configuration is ideally suited to large machined or turned workpieces for mounting in vee blocks and centres.

### Features

- 600mm (24") screen with 90° cross lines and chart clips
- Heavy duty workstage with 450mm x 200mm (18" x 8") measuring range and 2 machine slots for workpiece holders
- Angular rotation of  $\pm 15^\circ$  on workstage for measuring threadforms or cutting tools
- Vertical 200mm (8") Y axis power driven with joystick control
- Lens magnification choice - 5x (single lens mount), 10x, 20x, 25x, 50x, 100x
- 4 position rotating lens turret for ease of lens changing (excluding 5x)
- Profile illumination with halogen lamp and green filter
- Screen hood and curtains for use in bright ambient light conditions
- Surface illumination (fibre optic)
- Digital angle measurement
- 0.5 micron resolution



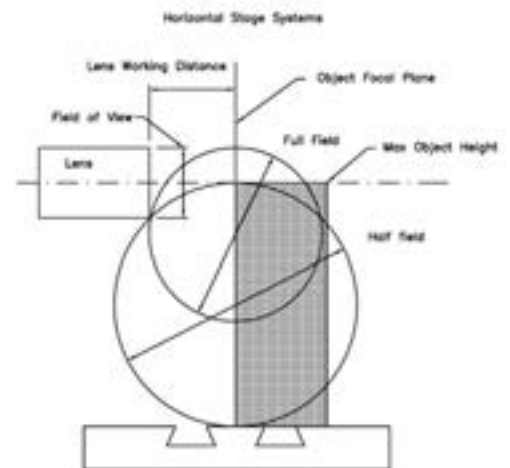
R600-FT2-IES  
(Internal Edge Sensor)

### Available Options

- Horizontal axis motorisation via joystick control
- Internally fitted automatic edge sensor to allow the use of overlay charts on an unobstructed screen
- Various display units are available to suit individual requirements
- SPC to add to your quality control without the purchase of a separate system (FT2 / FT2-E only)
- 5x lens system as a single lens mount only

| Projector Type   | R600        |             |             |             |             |            |
|------------------|-------------|-------------|-------------|-------------|-------------|------------|
| Magnification    | 5x          | 10x         | 20x         | 25x         | 50x         | 100x       |
| Field of view    | 120 (4.72)  | 60 (2.36)   | 30 (1.18)   | 24 (.94)    | 12 (.47)    | 6 (1.72)   |
| Working Distance | 245 (9.64)  | 135 (5.31)  | 132 (5.19)  | 106 (4.17)  | 93 (3.15)   | 50 (1.96)  |
| Maximum          | 292 (9.64)  | 343 (13.50) | 343 (13.50) | 343 (13.50) | 343 (13.50) | 195 (7.75) |
| Working Diameter | 406 (18.98) | 343 (13.50) | 343 (13.50) | 343 (13.50) | 343 (13.50) | 235 (9.25) |

all dimensions in mm / (inches)



### LENS SYSTEMS

| Code No  | Description                      |
|----------|----------------------------------|
| 202-1850 | Lens system - magnification 5x   |
| 54-650   | Lens system - magnification 10x  |
| 202-1852 | Lens system - magnification 20x  |
| 202-1853 | Lens system - magnification 25x  |
| 202-1854 | Lens system - magnification 50x  |
| 202-1855 | Lens system - magnification 100x |

### BATY R600

| Code No    | Description   | Functions   |
|------------|---|---|
| R600-FT2-E | Horizontal projector with Fusion 2D touch screen DRO & optical edge detection | Windows 22" touch screen with full reporting and optical edge detection |
| R600-FT2   | Horizontal projector with Fusion 2D touch screen DRO                          | As FT2-E without optical edge detection                                 |
| R600-XLS   | Horizontal projector with Acu-rite DC102 readout                              | Basic X, Y and rotation measurement                                     |
| R600-GXL   | Horizontal projector with Quadra Chek-2023 touch screen display               | Geometric measurement functions and tolerancing                         |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Baty SM300 - Profile Projector

300mm screen vertical light path projector with multi-function readout unit and printer.

Robust design with full geometric measuring functionality ideal for the shop floor.

### Features

- Top quality profile projector highly versatile and easy to operate
- Large travel range 150mm x 50mm (6" x 2") as standard
- Linear scale stage with 0.0005mm resolution
- Fine ground glass screen for clear image with cross hairs
- Screen complete with cross hair lines and chart clips
- Built-in profile and surface illumination
- 10x, 20x, 50x, 100x projection lenses available
- Display-readout unit GMR included in standard delivery

### Available Options

- Projection lens 10x with half reflecting mirror
- Projection lens 20x with half reflecting mirror
- Projection lens 50x with half reflecting mirror
- Projection lens 100x with half reflecting mirror
- Rotary table 360°
- Swivel centre support
- Holder with clamp
- V-block with clamp



SM300-GMR

|   | Projection capacity (unit mm) |      |      |      |
|---|-------------------------------|------|------|------|
| Magnification   | 10x                           | 20x  | 50x  | 100x |
| View field diameter   | 30                            | 15   | 6    | 3    |
| Working distance W  | 77.7                          | 44.3 | 24.5 | 25.3 |
| Max workpiece height H  | 80                            | 80   | 80   | 80   |
| Max workpiece diameter, edge line can be focused on screen centre D | 160                           | 130  | 55   | 60   |

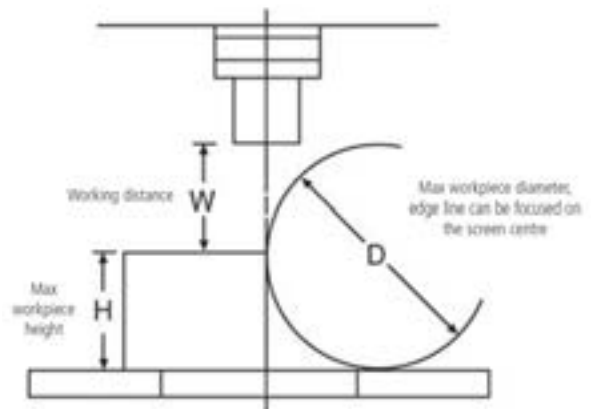
### LENS SYSTEMS

| Code No    | Description                      |
|------------|----------------------------------|
| SM300-10X  | Lens system - magnification 10x  |
| SM300-20X  | Lens system - magnification 20x  |
| SM300-50X  | Lens system - magnification 50x  |
| SM300-100X | Lens system - magnification 100x |

### BATY SM300

| Code No   | Description                               |
|-----------|---|
| SM300-GMR | Vertical projector with geometric readout |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)



## Baty SM350 - Profile Projector

This vertical 350mm / 14" screen bench projector features a large, heavy duty high precision workstage with 250mm x 125mm measuring range and 0.5 micron resolution. Another feature is the option of a three lens turret for instant lens changes without re-calibration.

### Features

- Fully usable 350mm screen
- Digital screen protractor
- Built in helix adjustment
- Sturdy all-steel design
- Heavy duty cross roller bearings
- Quick release 'X' and 'Y' travel
- Easy-view vertical screen
- Large stage travel 250mm (10") x 125mm (5")
- Rotating chart clips
- Fibre optic illumination for surface measurement
- 0.5 micron resolution

### Available Options

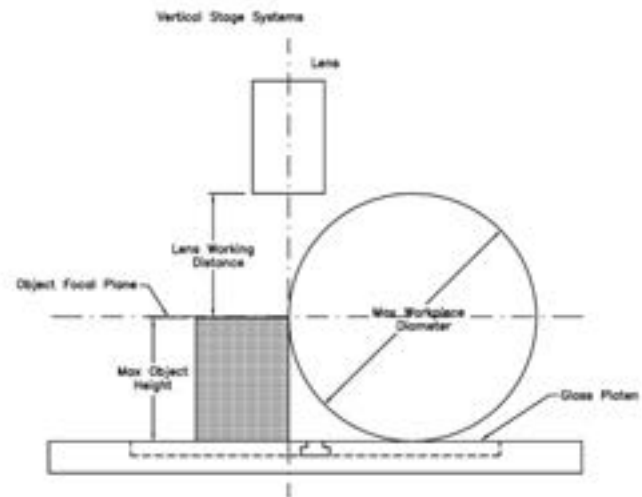
- Automatic screen-mounted edge sensing (FT2-E model only)
- Heavy duty cabinet stand
- 3-position rotating lens turret



SM350-FT2-E

| Projector Type              | SM350 |     |     |     |      |
|-----------------------------|-------|-----|-----|-----|------|
| Magnification               | 10x   | 20x | 25x | 50x | 100x |
| Field of view               | 35    | 17  | 14  | 7   | 3    |
| Working Distance            | 84    | 37  | 29  | 17  | 41   |
| Maximum half field          | 220   | 162 | 52  | 51  | 140  |
| Working Diameter full field | 171   | 130 | 75  | 37  | 97   |
| Maximum Height Object       | 114   | 113 | 106 | 111 | 103  |

all dimensions in mm



### LENS SYSTEMS

| Code No | Description                      |
|---------|----------------------------------|
| 122-600 | Lens system - magnification 10x  |
| 122-601 | Lens system - magnification 20x  |
| 122-602 | Lens system - magnification 25x  |
| 122-603 | Lens system - magnification 50x  |
| 122-604 | Lens system - magnification 100x |

### BATY SM350

| Code No     | Description   | Functions   |
|-------------|---|---|
| SM350-FT2-E | Vertical projector with Fusion 2D touch screen DRO & optical edge detection | Windows 22" touch screen with full reporting and optical edge detection |
| SM350-FT2   | Vertical projector with Fusion 2D touch screen DRO                          | As FT2-E without edge detection   |
| SM350-XLS   | Vertical projector with Acu-rite DC102 readout                              | Basic X, Y and rotation measurement                                     |
| SM350-GXL   | Vertical projector with Quadra Chek 2023 touch screen readout               | Geometric measurement functions and tolerancing                         |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Baty SM20 - Profile Projector

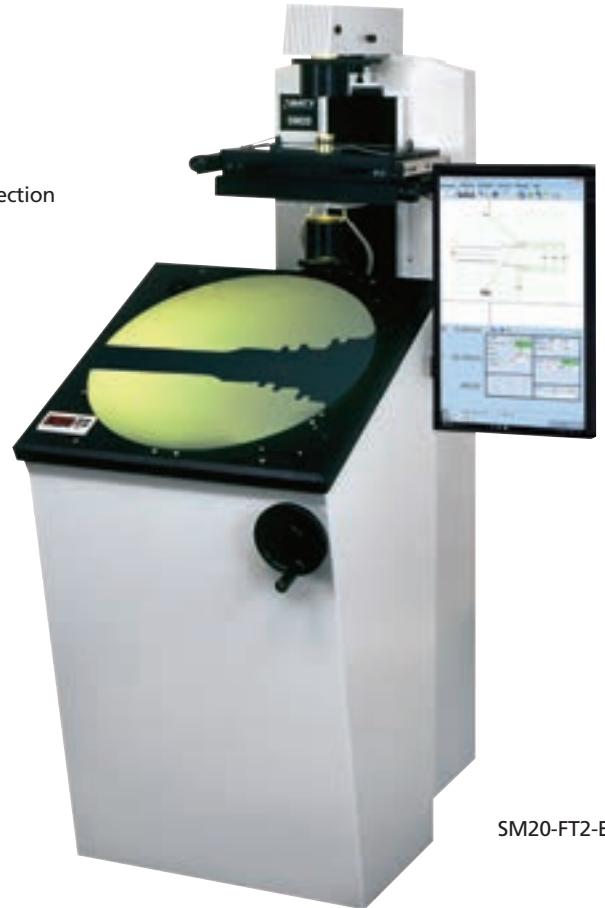
The Baty SM20 is a vertical light path floor standing profile projector with a 500mm / 20" screen which features a large heavy duty high precision workstage with 250mm x 125mm measuring range and a 0.5 micron resolution.

### Features

- 500mm screen with 90 degree crosslines and chart clips
- Angled screen for easy viewing
- Profile illumination with halogen lamp and green filter
- Surface illumination through twin fibre optics for bright full colour surface inspection
- Single lens mounting
- Lens magnification choice: 5x, 10x, 20x, 25x, 50x and 100x
- Helix adjustment of light source for accurate thread form projection
- Large stage travel 10" (250mm) x 5" (125mm)
- Digital angle measurement
- 0.5 micron resolution

### Available Options

- Screen hood and curtains with generous proportions for use in bright ambient light conditions
- Automatic edge sensor
- 3 position lens turret for easy lens changing
- SPC to add to your quality control without the purchase of a separate system (FT2 and FT2-E only)

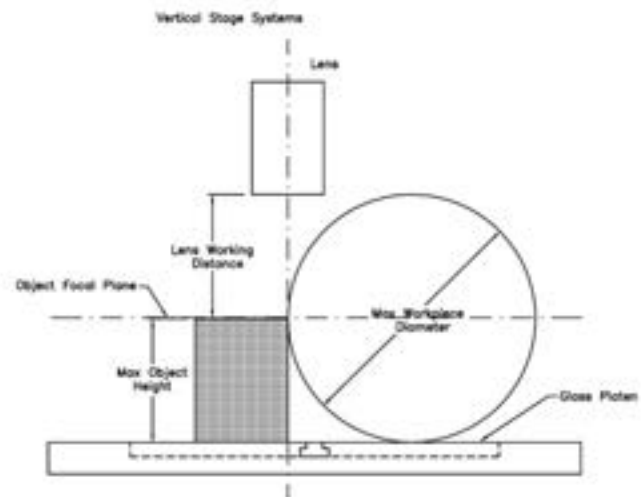


SM20-FT2-E

| Projector Type                           | SM20 |     |     |     |     |      |
|--|------|-----|-----|-----|-----|------|
| Magnification                            | 10x  | 20x | 25x | 25x | 50x | 100x |
| Condenser                                | L    | L   | L   | S   | S   | S    |
| Field of view                            | 50   | 25  | 20  | 20  | 10  | 5    |
| Max diameter                             | 200  | 200 | 200 | 200 | 180 | 85   |
| Max focal pane height (profile lighting) | 205  | 203 | 218 | 254 | 240 | 195  |
| Max end mill height (surface lighting)   | 150  | 153 | 153 | 153 | 150 | 150  |

### LENS SYSTEMS

| Code No  | Description                      |
|----------|----------------------------------|
| 202-1850 | Lens system - magnification 5x   |
| 54-650   | Lens system - magnification 10x  |
| 202-1852 | Lens system - magnification 20x  |
| 202-1853 | Lens system - magnification 25x  |
| 202-1854 | Lens system - magnification 50x  |
| 202-1855 | Lens system - magnification 100x |



### BATY SM20

| Code No    | Description   | Functions   |
|------------|---|---|
| SM20-FT2-E | Vertical projector with Fusion 2D touch screen DRO & optical edge detection | Windows 22" touch screen with full reporting and optical edge detection |
| SM20-FT2   | Vertical projector with Fusion 2D touch screen DRO                          | As FT2-E without optical edge detection                                 |
| SM20-XLS   | Vertical projector with Acu-rite DC102 readout                              | Basic X, Y and rotation measurement                                     |
| SM20-GXL   | Vertical projector with Quadra Chek 2023 touch screen readout               | Geometric measurement functions and tolerancing                         |

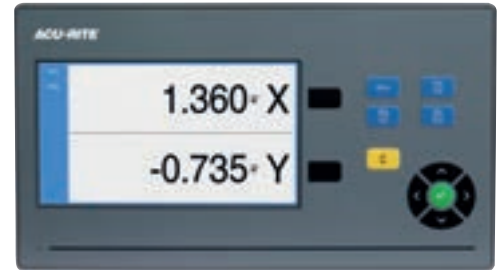
For more information contact [sales@baty.co.uk](mailto:sales@baty.co.uk) or visit [www.baty.co.uk](http://www.baty.co.uk)

## Baty Readout Options

The readout options from Baty include a fully programmable unit with geometrical functions and a software module allowing direct connection to a PC. All units are fully compatible with our full range of profile projectors, allowing for upgrades as required.

### XLS Readout

The new Acu-rite DRO-100 Series LCD display unit. A simple two axis digital readout for point to point X,Y or R,A measurements with absolute/incremental readings. Functions also include a zero reset, an instant inch/mm conversion and an instant radius/diameter conversion.



### GXL Readout

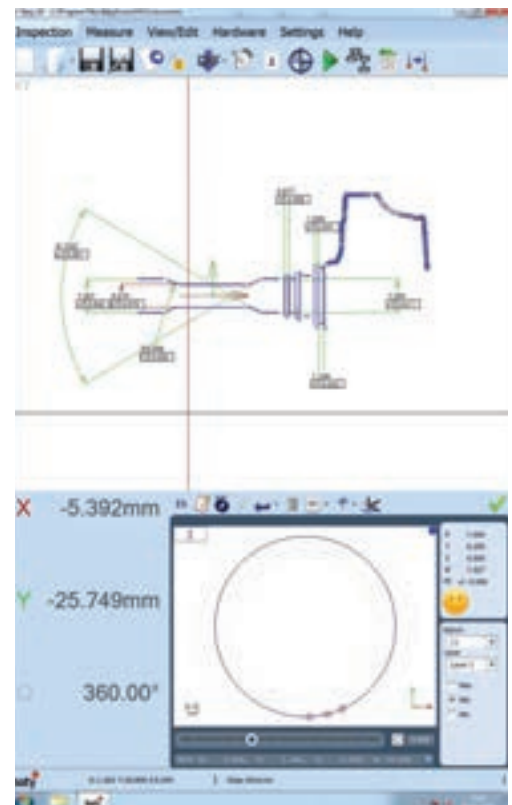
- Graphical display of measured feature
- Radius, angle, line, point, skew
- Inch, metric, polar, cart
- Data output to PC/printer
- Store inspection routines to prompt operator
- Tolerancing
- Multi-language menu
- On-screen help



### Fusion Touch Readout

**FT2:** Complete TOUCH SCREEN DRO with 2D Fusion touch software. Full geometric functionality, view of measured part can be printed as a fully dimensioned drawing. Full reporting capability includes, SPC, tabulated details with pass / fail analysis, auto link to Excel and auto sequence programming feature. Windows O/S and built in 22" portrait touch screen monitor

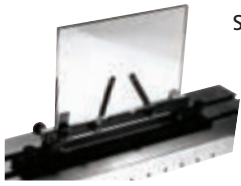
**FT2-E:** Complete TOUCH SCREEN DRO with 2D Fusion Touch software as above. Built-in optical edge detection allows data points to be taken 'on the fly' as the projected image is passed under the screen-mounted fibre optic sensor. An internally mounted edge sensor is available as an option on all 'R' series projectors.



For quotations or technical assistance contact  
[optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)



## Baty Options & Accessories - Profile Projector



SA-527

SA-250



52-602



SA-256 / SA-258



52-701 /  
52-604



SA-152



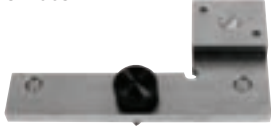
52-600 / 52-603



SA-260



52-605



SA-542 Large Vee Blocks  
and Centres



SA-543 Riser Blocks



Rotary Glass Stage  
SA-245-2



SA-370 Back Stop



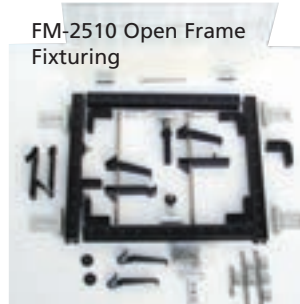
SA-196-EXT Dual Vee  
Blocks and Centres



SA-371 Side Stop



FM-2510 Open Frame  
Fixturing



### R14 / R400 ACCESSORIES

| Code No | Description                                       |
|---------|---|
| 52-371  | Protective cover – R14                            |
| 350-035 | Protective cover - R400/SM350                     |
| SA-328  | Cabinet stand                                     |
| SA-250  | Iris diaphragm                                    |
| SA-256  | Vee blocks  |
| SA-258  | Spring loaded centres                             |
| SA-259  | Riser blocks 38mm ( 1 1/2") for SA-256            |
| SA-152  | Vice stage and vice                               |
| SA-260  | Swivel vice                                       |
| SA-276  | Single vee and clamp (Vee parallel to optic axis) |
| SA-153  | Fixture base                                      |
| SA-527  | Glass plate work holder                           |

### R600 ACCESSORIES

| Code No | Description                   |
|---------|-------------------------------|
| SA-551  | Iris diaphragm for SM350/R600 |
| SA-542  | Large vee blocks and centres  |
| SA-543  | Riser blocks                  |
| SA-614  | Large vice stage and vice     |
| SA-527  | Glass plate work holder       |
| SA-617  | Heavy duty rotating vice      |
| SA-733  | Swing over lamphouse          |
| SA-606  | Screen chart rest bar         |

### FIXTURE FAMILY ACCESSORIES

| Code No | Description                               |
|---------|---|
| 52-600  | Self centering vice                       |
| 52-601  | Dual axis vee block and clamp to Ø 15mm   |
| 52-602  | Dual axis vee block and clamp to Ø 30mm   |
| 52-603  | Precision rotary base                     |
| 52-604  | Universal base                            |
| 52-605  | Precision ground steel alignment feature  |
| 52-701  | Dual axis vee block fitted with side base |

### SM350 / SM20 ACCESSORIES

| Code No    | Description                         |
|------------|-------------------------------------|
| SA-245-2   | Rotary glass stage                  |
| SA-370     | Back stop                           |
| SA-371     | Side stop                           |
| SA-196-EXT | Dual vee block and centres          |
| FM-2510    | Open frame fixturing for 2510 stage |
| SA-551     | Iris diaphragm for SM350/R600       |
| 350-035    | Protective cover - R400/SM350       |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Reprorubber - Metrology Grade Casting Material

Reprorubber offers numerous advantages over other hard-copy replicating materials:

- Quick casting – zero shrinkage
- No release agent required – will not stick to part
- Surface finish replication is exact with excellent optical properties easily checked on an optical comparator or video inspection machine
- Copies can be re-copied from original mould
- Replicas are permanent – will not leach out, ooze out, or gas out
- No more 16 hour cure time as with RTV silicones
- More accurate than all other RTV compounds

### Original Reprorubber® Thin Pour - Final Colour: LIGHT GREEN

For internal-shape applications where a thin pour will completely fill the cavity without voids. A complete replica casting is quickly formed.

- Manipulation time is approx 2 minutes and cure time is approximately 10 minutes
- Start to finish: approximately 12 minutes
- Kits include graduated mixing cups, wooden spatulas and instructions

### Original Reprorubber® Quick Setting Putty - Final Colour: LIGHT BLUE

Roll two equal-sized balls of catalyst putty and base putty and simply knead them together like dough. Excellent for external shapes.

Simply spread over master pushing down with fingers and wait for cure 8-10minutes. Manipulation time is 1 to 2 minutes. Therefore 12 minutes start to finish.

You can also cast internal shapes and cavities but some pressure should be applied such as a weighted object on top.

### New Reprorubber® Orange – Medium Body Pre-filled Cartridges - Final Colour: ORANGE

New Medium Body (Medium Viscosity – Medium Durometer) casting material ideal for both internal and external applications. Disposable pre-filled dual barrel 50ml cartridges can quickly dispense casting material utilising the REPRO-MIX II Gun System.

- Mix time: 15-30 seconds and cure time is 5-6 minutes
- Start to finish: 6-8 minutes

### Quick Dispense Cartridge System Kit

Contains everything you need to easily create highly accurate, zero shrinkage replicas.

Each kit includes 1 each:

- Reprorubber® II reusable dispensing gun
- 6 each 50ml pre-filled Reprorubber® disposable cartridges
- 15 disposable mixing nozzles
- 2 micro injector snap-on nozzles
- Deluxe fitted carrying case



16305

## Reprorubber - Metrology Grade Casting Material

### Applications - You can take impressions of:

- All metals
- Non metals
- Paper or cardboard items
- Wood, marble etc
- All plastics
- Rubber
- Ceramic and glass items

### Physical advantages over the hard-copy replicas:

- Replica is easy to remove – even if they are in under cuts or grooves
- Cross-sectioning of replica is easily accomplished with a knife or razor
- It can then be checked on an optical comparator or microscope
- Surface finish replication is exact with excellent optical properties
- Reprorubber copies can be re-copied (copy from a 'female mould' yields a male-shaped replica)
- Replicas are permanent – will not leach or ooze out nor gas out
- No more 16 hour cure time as with RTV silicones
- More accurate than all other RTV compounds
- Reprorubber putty will withstand up to 600°F (or more)

### Other Uses Include:

- Prototypes of rubber type components such as gaskets, washers, etc
- Making joints where flexibility is required
- As a mask for high temperature plasma spray of metallic coatings
- Fixturing where semi-rigid structure is desired

|                                    | <b>REPRORUBBER THIN POUR<br/>15-30 seconds</b> | <b>REPRORUBBER MEDIUM BODY ORANGE<br/>15-30 seconds</b> | <b>REPRORUBBER QUICK SETTING PUTTY<br/>Approximately 1 minute</b> |
|------------------------------------|--|---|---|
| Working Time (Manipulation Time)   | 2 minutes                                      | 2.5 minutes   | 1-2 minutes (from beginning of mix)                               |
| Setting Time (at room temperature) | 10-15 minutes                                  | 5-6 minutes   | 8-10 minutes  |
| Permanent Deformation              | 0.2%   | 0.3%  | 0.3%  |
| Dimensional Stability              | less than 0.50%                                | less than 0.40%   | less than 0.25%   |
| Tear Strength                      | 44 pounds per sq. inch                         | 300 pounds per sq. inch                                 | 105 pounds per sq. inch   |
| Elongation                         | 60% at break                                   | 70% at break  | 6.3% at break   |
| Durometer (Shore A-2)              | 30 (at 15 minutes)                             | 40 (at 10 minutes)                                      | 50 (at 7 minutes)   |
| Temperature Stability              | 1 week @ 23°C (72°F)                           | 1 week @ 23°C (72°F)                                    | 1 week @ 23°C (72°F)  |
| Detail Reproduction                | EXCELLENT                                      | EXCELLENT   | EXCELLENT   |

### REPRORUBBER

| Code No | Description |
|---------|-------------|
|---------|-------------|

#### Ordering Complete Kits:

|              |  |
|--------------|--|
| <b>16300</b> | Reprorubber Thin Pour (Green) Quick Dispense Cartridge System Kit Complete                           |
| <b>16305</b> | Reprorubber Orange (Medium Body) Quick Dispense Cartridge System Kit Complete                        |
| <b>16309</b> | Reprorubber Combo Kit Quick Dispense Cartridge System Kit, Includes 3 each Thin Pour & 3 each Orange |

#### Ordering Original Mix Your Own Kits:

##### Original Reprorubber® Thin Pour - Final Colour: LIGHT GREEN

|              |   |
|--------------|---|
| <b>16116</b> | Thin Pour 130ml Mix Your Own Trial Kit - Final Colour: Light Green  |
| <b>16135</b> | Thin Pour 380ml Mix Your Own Kit - Final Colour: Light Green        |
| <b>16137</b> | Case of 10 each 380ml Mix Your Own Kits - Final Colour: Light Green |

#### Ordering Original Mix Your Own Kits:

##### Original Reprorubber® Quick Setting Putty - Final Colour: LIGHT BLUE

|              |   |
|--------------|---|
| <b>16129</b> | 220ml Trial Quick Setting Putty Mix Your Own Kit - Final Colour: Light Blue |
| <b>16130</b> | 1 3/4 lb (520ml) Introductory Mix Your Own Kit - Final Colour: Light Blue   |
| <b>16131</b> | 7lb (2150ml) Economy Mix Your Own Kit - Final Colour: Light Blue            |

#### System Refills

|              |  |
|--------------|--|
| <b>16301</b> | Reprorubber Thin Pour (Green) 50ml Cartridge, 1 each           |
| <b>16302</b> | Reprorubber Thin Pour (Green) 50ml Cartridges, 6 pack          |
| <b>16306</b> | Reprorubber Orange (Medium Body) 50ml Cartridge, 1 each        |
| <b>16307</b> | Reprorubber Orange (Medium Body) 50ml Cartridges, 6 pack       |
| <b>16311</b> | Repro-Mix II Dispensing Gun (reusable)                         |
| <b>16313</b> | Repro-Mix II Helix Mixing Nozzles, 15 Pack                     |
| <b>16316</b> | Repro-Mix II Helix Mixing Nozzles, 100 Pack                    |
| <b>16315</b> | Quick Dispense Cartridge System Fitted Case (without contents) |
| <b>16314</b> | Micro Injector Snap-On Nozzle, Pack of 15                      |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)



16301



16306

## Baty Vision Systems - VuMaster 2D Manual / 2D CNC

The BATY VuMaster is a 2D vision system with a massive difference.

Due to its innovative absolute 2D scale system, the newly designed VuMaster does not have a conventional moving stage or encoders - just a floating measuring camera that moves anywhere in the measuring range. The result is fast, accurate, 'non contact' measurement over a much larger measuring range - 400mm x 300mm.

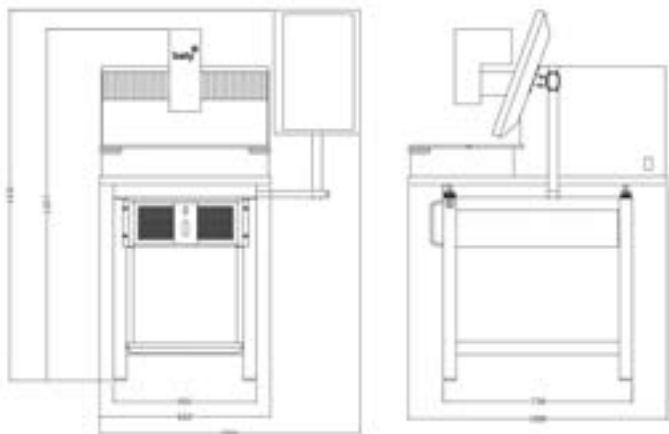
Because the camera moves and the part stays still, there is often no need for expensive and time consuming work holding devices.

VuMaster is either operated manually or inspection routines can be recorded and stored. When played back, these 'programs' either run automatically, (CNC). or guide the operator through a pre-defined inspection procedure recreating the same lighting conditions and using 'Video Edge Detection' to automatically 'capture' feature data.

Finally, a report is generated in the form of a fully dimensioned drawing of the measured part.

### Features

- Large 400mm x 300mm measuring range
- Sturdy construction with a granite base
- Supplied with the latest Mark 4 Fusion software
- Colourmap measuring technology
- Programmable collimated profile lighting
- Teach and repeat part programming
- Advanced video edge detection
- Digital zoom
- Supplied with stand, rack mount PC and 22" monitor
- Programmable segmented LED surface ring light
- Auto inspection playback
- CNC and Manual models available



### VUMASTER

| Code No     | Description                               |
|-------------|---|
| VM-4030-MAN | Manual VuMaster including 22" LCD monitor |
| VM-4030-CNC | CNC VuMaster including 22" LCD monitor    |

For more information contact [sales@baty.co.uk](mailto:sales@baty.co.uk) or visit [www.baty.co.uk](http://www.baty.co.uk)

## Baty Vision Systems - Venture Touch

The highly successful Venture Touch range combines both manual and CNC axis that cover two differing stage sizes.

### Venture Touch 3D

This advanced Vision system combines a manually operated X-Y measuring stage with a motorised Z axis. The advantage of this is that the servo motor driven Z axis can provide the all-important autofocus function for Z axis measurement without operator influence.

Suitable for the shop floor, the rugged design features a steel / granite base with fully integrated PC controller running Baty's all new 3 axis touch screen software - Fusion Touch. The full HD touch screen can be mounted on an adjustable arm and the software is arranged in a portrait layout for ease of use.

Fusion Touch software features full geometric functionality so circles, lines, arcs and points can be measured using dedicated tools. Data points are automatically taken along the edge of the feature using Video Edge Detection then all measurements are automatically saved should the inspection need to be replayed for a batch of parts.

All measured features appear in the part view where they can be dimensioned. The dimensional part view that can then be printed or exported to CAD Tolerances are set for each dimension so that the final inspection reports can classify each dimension as a pass or fail.

### Inspection playback

During this process the operator is guided through the inspection routine via the graphical part view. Once the stage has been positioned so that the feature appears in the camera's view, the Video Edge Detection tools take over and measure the feature automatically. If features are on different planes, the Z axis drives under CNC control to the correct position as defined by the original inspection. All lighting and magnification conditions are also recorded and re-created as each feature is visited. The end result is a highly repeatable process with no operator influence.

### Lighting

The programmable LED lighting is also controlled using the touch screen. Segmented surface illumination, co-axial, through the lens and profile lighting conditions which can be adjusted to ensure that the feature edge is perfectly illuminated.

### VENTURE TOUCH

| Code No          | Description   |
|------------------|---|
| VI-2510-Touch    | Venture Manual with motorised Z and autofocus, Fusion Touch software, 250 x 125 x 155 X, Y, Z measuring range |
| VI-3030-Touch-XT | Venture Manual with motorised Z and autofocus, Fusion Touch software, 300 x 300 x 300 X, Y, Z measuring range |
| VI-Vision-Stand  | All steel machine stand with granite top  |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)



### Standard Fusion Touch System features include:

- 22" HD touch screen monitor
- Motorised autofocus for accurate Z axis measurements
- Fully dimensioned part view
- CAD import / export
- Profile scanning and best fit to CAD master
- SPC batch information including control charts
- Auto output to excel
- 64 LED programmable segmented surface illumination
- Advanced video edge detection
- Heavy duty stage with cross roller rail guides
- TTL light and collimated profile illumination

### Optional

- Steel machine stand with granite top

### Venture Touch

As with all Ventures, a high precision zoom lens is featured as standard. This CNC version has 6 preset zoom positions which provide a magnification range from approx. 30x – 200x\* which can be extended with the use of auxiliary lenses. Each preset position is pre-calibrated enabling the user to quickly select the optimum magnification for each measurement and continue measuring.

## Baty Vision Systems - Venture 3D CNC

The Venture XT- CNC has Fusion 3D software, a 300mm x 300mm x 200mm XYZ stage and includes a controller and 2 x 19 inch monitors.

Venture CNC models take the power of fusion software one stage further by completely automating the inspection process. Now advanced features like scanning and best fitting can be done quickly without taking up the time of skilled operators.

CNC programming is a simple teach and repeat process. Just measure the part once and a full CNC program is created automatically. The zoom lens can also be controlled so that magnification and auto focus changes are all recorded into the program.

### CNC Functionality

The use of a touch probe is optimised on a CNC system. Measurements from data points taken using the touch probe can be combined with those taken using video edge detection for optimum speed and reduced inspection times.

A probe changer rack can be installed so that probe modules fitted with a variety of pre-calibrated styli can also be used in the same inspection. When a change of stylus is required, the system automatically puts the current probe module back in the rack and picks up the next to continue the inspection process.

When programming using the touch probe, use only the minimum points required to define each element. Then simply edit in the optimum number of points for each element. The new probe path is then automatically created when the program is played, cutting down both programming and inspection time. Alternatively, features can be programmed directly from an imported 3D CAD model.



### Standard CNC system features include:

- Teach and Repeat programming
- Programmable segmented LED lighting
- 6.5:1 zoom optics (with optional CNC control)
- Optional 12x zoom optics
- High resolution 0.5µm scales for increased accuracy
- Optional CAD import / export
- Auto program from CAD
- Adding DXF scanning and best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- 250mm x 125mm and 300mm x 300mm XY stages available



### VENTURE XT-CNC

| Code No        | Description   |
|----------------|---|
| VI-3030-CNC-XT | Venture XT CNC with Fusion 3D software, 300mm x 300mm x 200mm stage, incl controller and 2 x 19" monitors   |
| VI-2510-CNC    | Venture 2510 CNC with Fusion 3D software, 250mm x 125mm x 155mm stage, incl controller and 2 x 19" monitors |
| TP-20 Kit      | Touch probe kit incl ref ball, module and stylus  |

For more information contact [sales@baty.co.uk](mailto:sales@baty.co.uk) or visit [www.baty.co.uk](http://www.baty.co.uk)

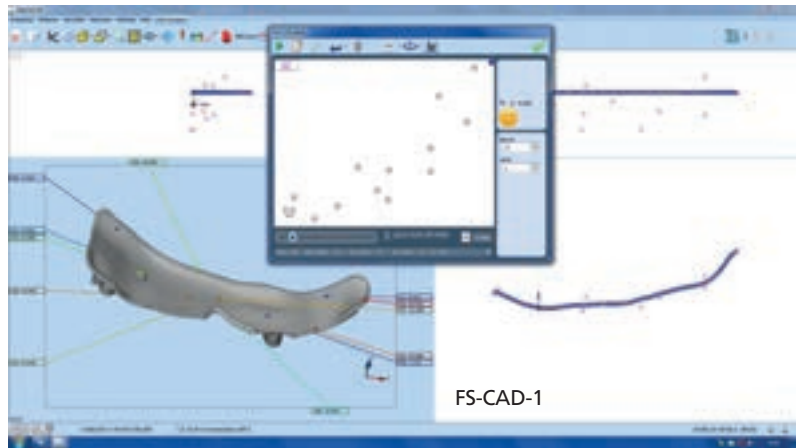
## Baty Vision Options & Accessories

### CAD

3D CAD models (STEP or IGES) can be imported and are shown in a floating window. After alignment to the CAD model, points are taken anywhere on the part surface and displayed on the CAD model. The points appear colour coded so as to indicate their distance from the nominal surface. These models can be used for off-line programming or CAD comparison.

### CAD Comparison

3D CAD models (STEP or IGES format) can be imported and displayed in a floating window. Following a simple part coordinate alignment to the CAD model, data points can be taken anywhere on the part surface. These data points are then displayed on the CAD model and classified according to their distance from the nominal surface for 3D profile analysis.



### SA-196

Cast vee blocks and extended centres for the 2510 and 3030 Venture models.

### UFB3030

Universal fixture base provides fixture mounting slots compatible with all projector accessories.

### Vision Stand

Rigid steel stand with granite top and integral PC / controller shelf for Venture 2510 and 3030 models.

### Glass Reference Standard

Calibration standard with nominal diameters for field of view measurement verification and pixel calibration.



SB-A-1371-0163



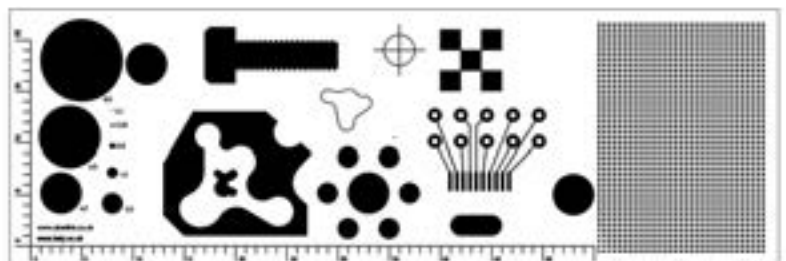
SA-196-EXT



VI-3030-UFB



VI-Vision-Stand



CAL-MAG-2

### VENTURE OPTIONS

| Code No         | Description                              |
|-----------------|--|
| AB3D-CAD-Comp   | CAD comparison software                  |
| AB3D-CAD-Prog   | CAD programming software                 |
| SB-A-1371-0163  | Probe module change rack - 6 port        |
| SA-196-EXT      | Dual vee block and centres               |
| VI-3030-UFB     | Universal fixture base                   |
| VI-Vision-Stand | All steel machine stand with granite top |
| CAL-MAG-2       | Glass calibration artefact               |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Baty Vision Systems - Venture Plus

The Venture Plus range includes all of the standard Venture features with a little more... measuring range, that is.

### Large Measurement Volume

The Venture Plus is available in four models:

**VP-6460-CNC** with 640mm x 600mm x 250mm measuring range

**VP-6490-CNC** with 640mm x 900mm x 250mm measuring range

**VP-100100-CNC** with 1000mm x 1000mm x 400mm measuring range

**VP-100150-CNC** with 1000mm x 1500mm x 400mm measuring range

The bridge type construction is all aluminium resulting in low inertia and low thermal mass. Air bearings are used on all axes and a granite Y beam is used for increased accuracy. This ensures that the machine will expand and contract uniformly with temperature changes ensuring minimal distortion and subsequent errors. Ambient temperature can be compensated for within the Fusion software making Venture Plus ideal for use on the shop floor.

Complete with our standard zoom optics and programmable, segmented LED surface lighting, Venture Plus offers the same level of camera based functionality as every other Venture.

The use of a touch probe is optimised on a CNC system. Measurements from data points taken using the touch probe can be combined with those taken using Video Edge Detection for optimum speed and reduced inspection times.

A probe changer rack can be installed so that probe modules fitted with a variety of pre-calibrated styli can also be used in the same inspection. When a change of stylus is required, the system automatically puts the current probe module back in the rack and picks up the next to continue the inspection process. This functionality can be combined with our sophisticated Edge Detection to offer the ultimate in large format multi-sensing Vision systems - Venture Plus.

### Standard CNC System features include:

- Teach and repeat programming
- Programmable segmented LED lighting
- High resolution 0.5µm scales for increased accuracy
- Optional CAD import / export
- Adding DXF scanning and best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- Renishaw TP20 touch probe joint
- Integrated machine stand

### Options include:

- Multi-function remote joystick with colour touch screen
- 12:1 zoom optics
- Renishaw SP25 scanning probe

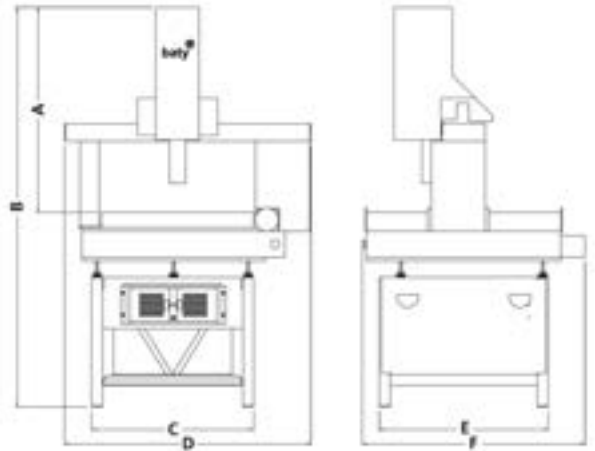




## Baty Vision Systems - Venture Plus

### Venture Plus additional features include:

- Rigid, low mass bridge construction
- Integral 6.5:1 CNC zoom optics
- Teach and repeat programming
- Programmable segmented LED lighting
- High resolution 0.5µm scales for increased accuracy
- Optional CAD import / export
- Adding DXF scanning and best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- Renishaw TP20 touch probe joint
- Integrated machine stand
- Includes PC controller
- CNC controlled collimated profile lighting
- 250/400mm Z axis measuring range
- Optional automatic temperature compensation



**VP-100100-CNC** with 1000mm x 1000mm x 400mm measuring range

**VP-100150-CNC** with 1000mm x 1500mm x 400mm measuring range



**VP-100100-CNC** with 1000 x 1000 x 400mm measuring range

### VENTURE PLUS

| Code No              | Description                        | Dimn - A | Dimn - B | Dimn - C | Dimn - D | Dimn - E | Dimn - F |
|----------------------|------------------------------------|----------|----------|----------|----------|----------|----------|
| <b>VP-6460-CNC</b>   | Venture Plus (640 x 600 x 250mm)   | 950mm    | 1851mm   | 750mm    | 1140mm   | 783mm    | 1030mm   |
| <b>VP-6490-CNC</b>   | Venture Plus (640 x 900 x 250mm)   | 950mm    | 1851mm   | 750mm    | 1140mm   | 1083mm   | 1330mm   |
| <b>VP-100100-CNC</b> | Venture Plus (1000 x 1000 x 400mm) | 1440mm   | 2250mm   | 1380mm   | 1470mm   | 1350mm   | 1470mm   |
| <b>VP-100150-CNC</b> | Venture Plus (1000 x 1000 x 400mm) | 1440mm   | 2250mm   | 1380mm   | 1470mm   | 1350mm   | 1470mm   |

For more information contact [optical@bowersgroup.co.uk](mailto:optical@bowersgroup.co.uk)

## Fusion Software

Fusion metrology software has been the foundation for Baty's camera based inspection systems for the last decade. The combination of ease of use, advanced edge detection and graphical reporting has established this remarkable software as the standard by which other vision packages are measured.



### Dimensioned Part View

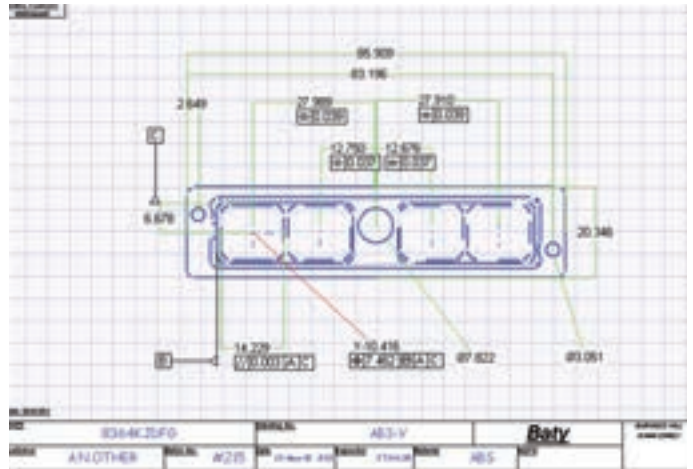
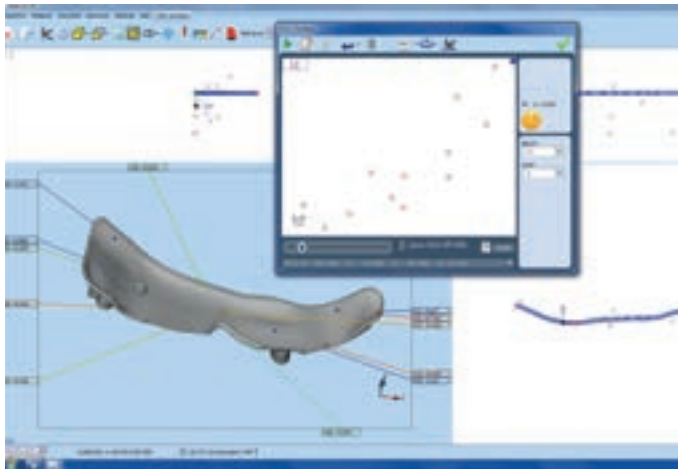
Measured results are displayed in the form of a fully dimensioned drawing. Dimensions within the specified tolerance are shown in green whilst dimensions out of tolerance are shown in red for immediate visual status of the measured part. Geometric tolerances can also be displayed using the standard drawing practice. The final dimensioned part view can then be printed as an engineering drawing with a traditional drawing frame containing company details, customer and part details, date and inspection name.

### SPC Included

Baty Fusion software will also display SPC batch information for multiple components. Information given includes maximum value in batch, minimum value, user definable sigma value, CP and CPK value, mean shift and also plots two different charts of the batch data.

### Easy Reporting

In addition to the graphical representation above, detailed reports can be instantly created showing the feature name, nominal dimension, actual, error, upper and lower limits and a green pass or red fail label for each measured dimension in tabulated format. Geometric tolerance details can also be displayed along with a thumbnail view of the part and batch/customer information. The entire report can be duplicated as an Excel workbook for email.



| Baty International |           |            |          |           |          |          |           |          |          |           |
|--------------------|-----------|------------|----------|-----------|----------|----------|-----------|----------|----------|-----------|
| Drawing No.        |           | Order No.  |          | Date      |          |          |           |          |          |           |
| Title              |           | Serial No. |          | Inspector |          |          |           |          |          |           |
| Customer           |           | Material   |          | Notes     |          |          |           |          |          |           |
| Feature            | Dimension | Min        | Max      | Mean      | Lower    | Upper    | Pass/Fail | Min      | Max      | Pass/Fail |
| 1. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 2. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 3. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 4. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 5. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 6. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 7. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 8. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 9. Ø110mm          | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 10. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 11. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 12. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 13. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 14. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 15. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 16. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 17. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 18. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 19. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |
| 20. Ø110mm         | Ø110mm    | Ø109.995   | Ø110.005 | Ø110.000  | Ø109.995 | Ø110.005 | Pass      | Ø109.995 | Ø110.005 | Pass      |

## Fusion Software

### Video Edge Detection

Video Edge Detection (VED) ensures a repeatable result without relying on the skill of the operator. Hundreds of data points can be taken in an instant to calculate standard geometric features. Standard VED tools include arc, circle, line, point, focus and curve.

### Image Stitching and Profile Scanning

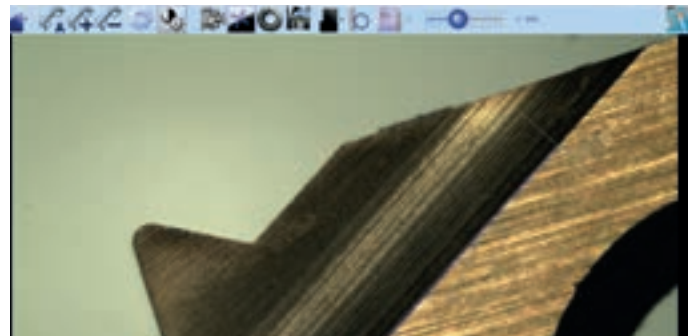
A camera image can be taken and stored every time the XY stage is paused. These images may be "stitched" together to allow the user to zoom out and view the entire component in the camera image view. Imported dxf files may be used as overlays which can be super imposed on top of the stitched image, providing a visual comparison of the entire part to the tolerance bands shown on the dxf. If a profile measurement is required the curve tool can be used to automatically trace the profile of the part. The resulting data-point cloud can then be viewed both in the part view, for reporting, as well as the stitched camera image. A profile dimension can easily be added to define the best fit profile error. Image stitching can also be used to quickly grab all of the features of a large 2D component. A CNC inspection routine can then be created by simply clicking on the feature to be measured using the "one click" feature or "all features in an area" tools.

### Touch Probe Compatible

Fusion metrology software is ready to accept touch probe measurements as well as optical and camera based. Offsets for each measuring system can be calculated enabling you to use a combination of non-contact measurements in the same inspection. An optional probe storage rack can also be used to allow automatic probe changes mid program. For touch probe scanning applications, Renishaw's SP25 scanning probe option can be specified.

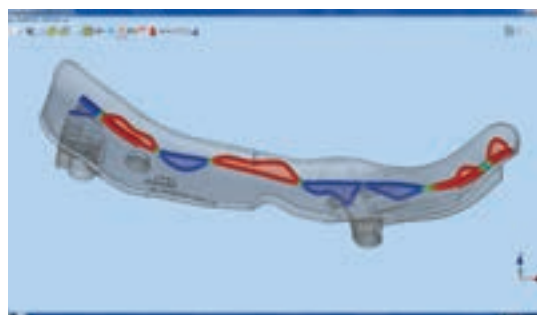
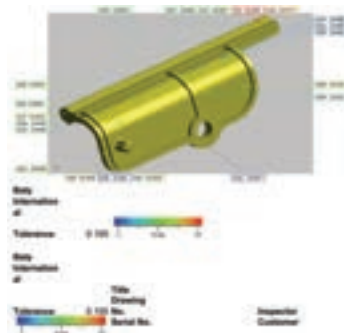
### CNC Operation

The CNC option enables fully automatic part inspection with teach and repeat programming and manual joystick control. Parts can be palletised for batch inspection and reports are generated automatically.



### CAD Option

Allows measurement data points taken anywhere on the part surface to be compared to a 3D IGES or STEP CAD model.



## Flexmaster Fixtures

Flexmaster components introduce new technology. Our self-wedging clamps offer near zero clamping force. Sliding t-nut tooling blocks provide an infinite variety of fixture solutions.

Even the corner joiners for our frame are dual purpose, providing ridges that allow backlighting to illuminate edges for inspection.

### Fixture frame assembly, includes the following:

- 4 off linear slide-frames with t-slots, and laser marked reference scales
- 4 off ridged two-way T-nuts for corner joining and part location
- 4 off sliding hold-down brackets with slots for 2 axis adjustment to mount t-slot frames to venture stage frame

### Fasteners

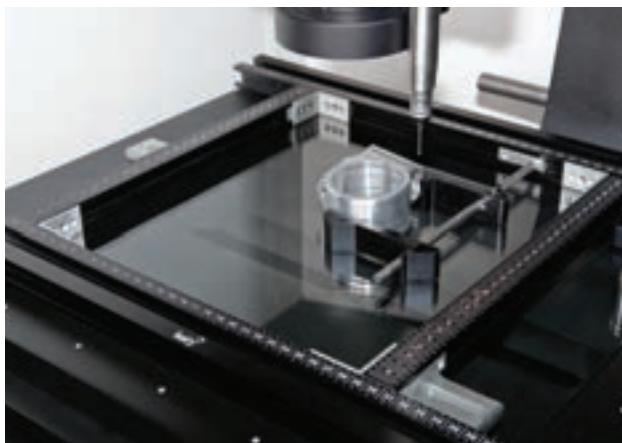
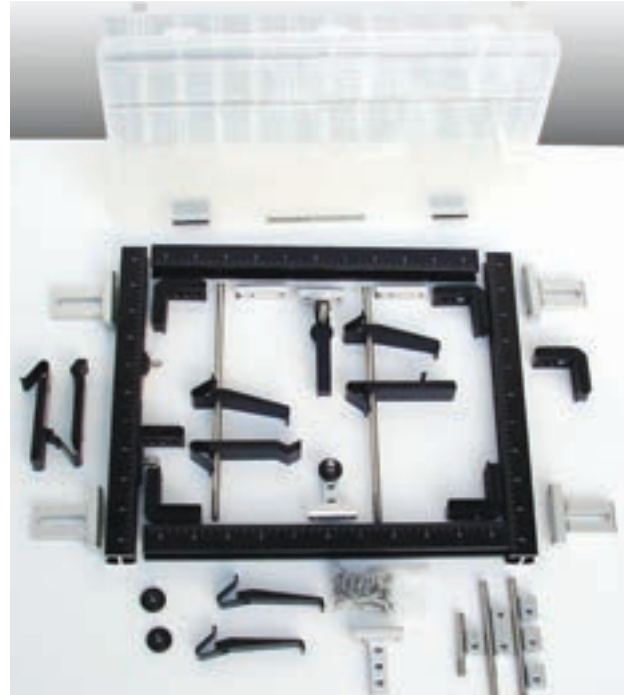
- 30 off stainless grub screws
- 3 off long T-nuts
- 6 off short T-nuts
- 2 off T-nuts with machined vee in end
- 12 off locknut with threaded ID.  
(For use with clamp rods, thumbscrew, and spherical locator pin)

### Clamps and Rods

- 2 off narrow 'soft-touch' self-wedging tail-spring clamp
- 2 off wide 'soft-touch' self-wedging tail-spring clamp
- 2 off self-wedging V-clamp
- 2 off ridged corner locator clamp
- 3 off stainless clamp rod.  
(Use with locknut to attach rods to slideframe, for self-wedging clamps)
- 3 off stainless clamp rod
- 2 off stainless clamp rod

### Locators

- 3 off sliding tool blocks with threaded holes for vertical clamp and adjustment
- 4 off adjustable rest button, stainless, spherical top
- 2 off additional ridged two-way t-nuts for part location
- 1 off case



## Baty Vision Systems - Technical Specification

### TECHNICAL SPECIFICATION

|                              | MANUAL SYSTEMS   |                         | SEMI AUTOMATIC  |
|------------------------------|--|-------------------------|---|
|                              | VM-4030<br>VuMaster  | VI-2510<br>Venture      | Venture-Touch-3030  |
| X Y Z measuring range (mm)   | 400 x 300  | 250 x 125 x 165         | 300 x 300 x 300   |
| Workstage area (mm)          | 420 x 320  | 414 x 262               | 464 x 462   |
| Max workpiece load (kg)      | 25   | 25                      | 25  |
| Drive type                   | Manual   | Manual                  | Manual XY CNC Z   |
| Bearings                     | Air bearings   | Cross roller rail guide | Cross roller rail guide   |
| Camera type                  | 2048 x 1590 pixel colour USB2 camera with 8 x 9mm chip and dynamic latch |                         |   |
| Optics / lighting            | Fixed objective telecentric lens<br>with programmable LED lighting       |                         | 6.5:1 detent zoom lens. Fully programmable<br>software controlled white LED segmented<br>surface lighting head with understage and<br>through the lens (TTL) lighting as standard |
| Resolution                   | 0.001mm  | 0.0005mm                |   |
| Accuracy                     | 7.5µm  | 2+L / 100               |   |
| Max field of view (FOV)      | 12mm   | 16mm*                   |   |
| Magnification                | 20x 350x   |                         | Optical zoom ratio 27x - 175x on 17" monitor<br>with digital zoom enhancement to over 1200x   |
| Touch probe option available | No   | Yes                     | No  |
| Probe type                   | N/A  | Renishaw TP20           | N/A   |
| Change rack compatible?      | N/A  | N/A                     | N/A   |

\*using optional 0.5x adapter lens

### CNC SYSTEMS

|                              | VM-4030<br>VuMaster  | VI-2510<br>Venture  | VI-3030<br>Venture XT CNC                            | VP-6460<br>Venture Plus                              | VP-6490<br>Venture Plus                              | VP-100150<br>Venture Plus                            |
|------------------------------|--|---|--|--|--|--|
|                              | X Y Z measuring range (mm)   | 400 x 300   | 250 x 125 x 165                                      | 300 x 300 x 200                                      | 640 x 600 x 250                                      | 640 x 900 x 250                                      |
| Workstage area (mm)          | 420 x 320  | 414 x 262   | 464 x 462  | 700 x 940  | 700 x 1240   | 1050 x 1850  |
| Max workpiece load (kg)      | 25   | 25  | 25   | 75   | 75   | 75   |
| Drive type                   | CNC / handwheel  | CNC / joystick  | CNC / joystick                                       | CNC / joystick                                       | CNC / joystick                                       | CNC / joystick                                       |
| Bearings                     | Air bearings   | Cross roller<br>rail guide  | Cross roller<br>rail guide                           | Air bearings   | Air bearings   | Air bearings   |
| Max drive speed              | 100mm / sec  | 200mm / sec   | 200mm / sec  | 350mm / sec  | 350mm / sec  | 350mm / sec  |
| Camera type                  | 2048 x 1590 pixel colour USB2 camera with 8 x 9mm chip and dynamic latch |   |  |  |  |  |
| Optics / lighting            | Fixed objective telecentric<br>lens with programmable<br>LED lighting    | 6.5:1 CNC zoom lens. Fully programmable software controlled white<br>LED segmented surface lighting head with understage and<br>through the lens (TTL) lighting as standard |  |  |  |  |
| Optional                     |  | 12:1 CNC<br>zoom lens<br>option for<br>increased FOV  | 12:1 CNC<br>zoom lens<br>option for<br>increased FOV | 12:1 CNC<br>zoom lens<br>option for<br>increased FOV | 12:1 CNC<br>zoom lens<br>option for<br>increased FOV | 12:1 CNC<br>zoom lens<br>option for<br>increased FOV |
| Resolution                   | 0.001mm  | 0.0005mm  | 0.0005mm   | 0.0005mm   | 0.0005mm   | 0.0005mm   |
| Accuracy                     | 7.5µm  | 2+L / 100   | 2+L / 100  | 2.4 + 0.4<br>/ 100 Volumetric                        | 2.4 + 0.4<br>/ 100 Volumetric                        | 3.8 + 0.4<br>/ 100 Volumetric                        |
| Max field of view (FOV)      | 12mm   | 16mm*   | 16mm*  | 16mm*  | 16mm*  | 16mm*  |
| Magnification                |  | 20x 350x  |  |  |  |  |
| Touch probe option available | No   | Yes   | Yes  | Yes  | Yes  | Yes  |
| Probe type                   | N/A  | Renishaw TP20   | Renishaw TP20  | Renishaw TP20  | Renishaw TP20  | Renishaw TP20  |
| Optional                     | N/A  | Renishaw SP25<br>scanning probe   | Renishaw SP25<br>scanning probe                      | Renishaw SP25<br>scanning probe                      | Renishaw SP25<br>scanning probe                      | Renishaw SP25<br>scanning probe                      |
| Change rack compatible?      | N/A  | Yes   | Yes  | Yes  | Yes  | Yes  |

\*using optional 0.5x adapter lens

## Sylvac Scan 52 Optical Measuring Machine for Turned Parts

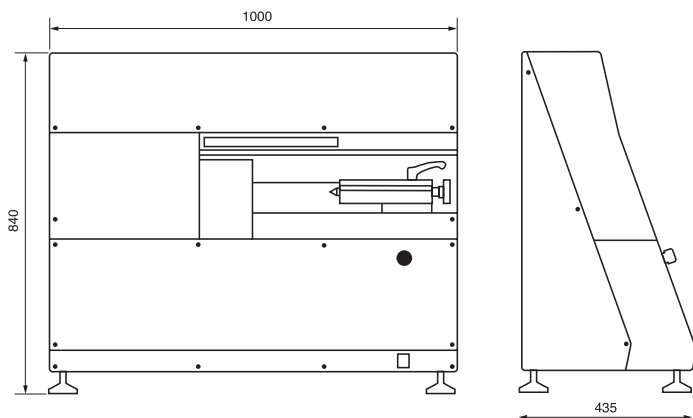
The Sylvac Scan is the first horizontal machine specially designed for workshop measurement close to the machine tool. The concept is to measure the parts in the same position as they are machined.

Suitable for first-off parts, control in process (SPC), sampling or 100% inspection, the Sylvac Scan 52 machines are set to revolutionise control in the workshop. It's this simple:

Place the workpiece on the Sylvac Scan 52 machine, press the button and get all of the values automatically and without pre-programming. Perfectly integrated in the workshop, our Sylvac Scan 52 machines replace conventional measuring systems including multi-gauging jigs thanks to their unsurpassed flexibility and time saving.

### Delivery includes:

- Instrument according to technical specifications
- 2 male centers
- Small diamond coated drive centre
- Small rotating (live) centre
- Computer
- Mouse
- Keyboard
- Windows multilingual operating system
- Screen
- Manual
- Reflex-Scan Software
- Rotary headstock (model 30-902-5521 only)



### SYLVAC SCAN 52 OPTICAL MEASURING MACHINE

| Code No     | Description            | Range - External (inch)            | Resolution (mm)                     | Repeatability (µm)            | Maximum Error (µm)                              |
|-------------|------------------------|------------------------------------|-------------------------------------|-------------------------------|---|
| 30-902-5520 | Sylvac Scan 52         | Diameter: 0.5 - 52,<br>Length: 300 | Diameter: 0.0001,<br>Length: 0.0005 | Diameter: 0.6,<br>Length: 2.5 | Diameter: (1.5 + D/100),<br>Length: (4 + L/100) |
| 30-902-5521 | Sylvac Scan 52, rotary | Diameter: 0.5 - 52,<br>Length: 300 | Diameter: 0.0001,<br>Length: 0.0005 | Diameter: 0.6,<br>Length: 2.5 | Diameter: (1.5 + D/100),<br>Length: (4 + L/100) |

## Sylvac Scan F60 Range

The Sylvac Scan F60 has been designed to measure the most demanding of cylindrical parts. With a brand new camera and optics, the F60 range offers superior image processing with fast inspection times.

The Sylvac Scan F60 range is designed for use on the shop floor with a new enclosure including a door and safety curtain, integrated calibration master, temperature sensors and LED status light.

The F60 uses the renowned Reflex One Click technology offering part recognition and auto measure, all with one button click.

Quick release tooling for making rapid part change overs, combined with sophisticated software giving immediate visual results, assist in providing essential efficiencies in a busy working environment.

### Features

- Concept Reflex SCAN patented for measuring cylindrical workpieces without pre-programming
- Part measurement from 0.2 – 64mm diameter and up to 500mm length
- Complete 2D smart scan (500mm) in < 5 seconds
- Reduce inspection time, scrap and increase productivity
- Exclusive helix tilting system for thread measurements (only on T models)
- Quick return of investment, typically < 6 months
- New software Reflex SCAN+: advanced programming and functions
- Quick release tooling

### Delivery includes:

- Instrument according to technical specifications
- 2 male centers
- Small diamond coated drive centre
- Small rotating (live) centre
- Computer
- Mouse
- Keyboard
- Windows multilingual operating system
- Screen
- Manual
- Reflex-Scan software



30-902-4062



30-902-4067

### SYLVAC SCAN F60 SERIES

| Code No     | Description       | Range (mm)                 | Resolution (mm) | Accuracy (µm)                                      | Repeatability (mm)       | Weight  |
|-------------|-------------------|----------------------------|-----------------|--|--------------------------|---------|
| 30-902-4060 | Sylvac Scan F60   | Diameter 64mm Length 300mm | 0.0001          | Diameter (1+D[mm]/100)µm<br>Length (3+L[mm]/200)µm | Diameter 0.5, Length 1.8 | 265 kgs |
| 30-902-4065 | Sylvac Scan F60T  | Diameter 64mm Length 300mm | 0.0001          | Diameter (1+D[mm]/100)µm<br>Length (3+L[mm]/200)µm | Diameter 0.5, Length 1.8 | 265 kgs |
| 30-902-4062 | Sylvac Scan F60L  | Diameter 64mm Length 500mm | 0.0001          | Diameter (1+D[mm]/100)µm<br>Length (3+L[mm]/200)µm | Diameter 0.5, Length 1.8 | 330 kgs |
| 30-902-4067 | Sylvac Scan F60LT | Diameter 64mm Length 500mm | 0.0001          | Diameter (1+D[mm]/100)µm<br>Length (3+L[mm]/200)µm | Diameter 0.5, Length 1.8 | 330 kgs |

## Sylvac Scan F60 Range

### FUNCTIONS

|   | SYLVAC Reflex SCAN | SYLVAC Reflex SCAN+ |
|---|--------------------|---------------------|
| Automatic measurement of the main features (diameters, lengths, angles, radius) | YES                | YES                 |
| Automatic parts / program recognition   | YES                | YES                 |
| Off-line programming  |                    | Option              |
| Advanced dust filtering   |                    | YES                 |
| Statistic view  |                    | YES                 |
| CAD import  |                    | YES                 |
| Reports editor  | YES                | YES                 |
| Data export   | YES                | YES                 |
| SPC basic calculations  | YES                | YES                 |
| Script function   |                    | Option              |
| SPC software  | On request         | On request          |
| Access management - security lever  | 1                  | Multiple            |

### GEOMETRICAL TOLERANCING - FEATURES SUMMARY

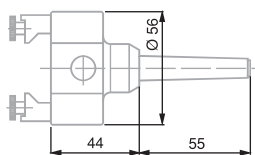
|   | SYLVAC Reflex SCAN | SYLVAC Reflex SCAN+ |
|---|--------------------|---------------------|
| Diameters   | YES                | YES                 |
| Lengths, heights, distances   | YES                | YES                 |
| Angles, chamfers  | YES                | YES                 |
| Radii   | YES                | YES                 |
| Threads (parallel)  | YES                | YES                 |
| Threads (root detail, taper, multi-starts, ball screws, worm screws, special threads) |                    | YES                 |
| Perpendicularity  |                    | YES                 |
| Form deviation  |                    | YES                 |
| 2 and 3D alignment of the parts (axis correction)                                     | YES                | YES                 |
| Rotational diameters  | YES                | YES advanced        |
| Run out   | YES                | YES advanced        |
| Concentricity   | YES                | YES                 |
| Roundness   | YES                | YES                 |
| Cylindricity  | YES                | YES                 |
| Across flats  | YES                | YES                 |
| Straightness  | YES                | YES                 |
| Interrupted parts (splines, turbines)   |                    | YES                 |



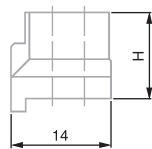
## Sylvac Scan F60 Range - Accessories

### TECHNICAL SPECIFICATION

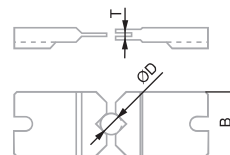
| Order Number | Morse 2<br>SYLVAC-SCAN 52/F60   | Notes   | Description  |
|--------------|---|---|--|
| 30-902-6220  | Morse 1   | External clamping for manual use. Requires 30-902-6360                | Two-jaw gripper  |
| 30-902-6231  | H=22  | In pairs  | Raising blocks for external jaws                           |
| 30-902-6141  | 0÷6mm T=1.5   | Yes   | For 30-902-6620  |
| 30-902-6142  | 0÷6mm T=3   | Yes   | For 30-902-6620  |
| 30-902-6143  | 6÷12mm T=3  | Yes   | For 30-902-6620  |
| 30-902-6144  | 12÷18mm T=6   | Yes   | For 30-902-6620  |
| 30-902-6145  | 18÷24mm T=9   | Yes   | For 30-902-6620  |
| 30-902-6152  | 0÷6mm T=6   | Yes   | For 30-902-6620  |
| 30-902-6153  | 0÷6mm T=15  | Yes   | For 30-902-6620  |
| 30-902-6140  | 6÷12mm T=15   | Yes   | For 30-902-6620  |
| 30-902-6154  | Set of jaws including:<br>30-902-6141<br>30-902-6142<br>30-902-6143<br>30-902-6144<br>30-902-6145 | Yes   | For 30-902-6220  |
| 30-902-6251  | Yes   | -   | Center adapter with a 6mm dia. coupling bore               |
| 30-902-6360  | Yes   | -   | Reduction sleeve. Morse 2 to 1                             |
| 30-902-6202  | Yes   | 2 items provided with SYLVAC-SCAN F60 and SYLVAC-SCAN 52 Reflex-Click | Extra male center. 17.78mm                                 |
| 30-902-6161  | Yes   | -   | Rotation center. Morse 2                                   |
| 30-902-6162  | Yes   | -   | Rotation center with a B18 male taper plus a Morse 2 shank |
| 30-902-6380  | Yes   | -   | Rotation center. Morse 2                                   |
| 30-902-6204  | Yes   | Requires 30-902-6251  | Female center. 10mm dia.                                   |
| 30-902-6205  | Yes   | Requires 30-902-6251  | Female centre  |
| 30-902-6300  | Yes   | -   | 3-jaw chuck, clamping range 1-15 mm                        |
| 30-902-6301  | Yes   | Clamping capacity: outside 2-50mm, inside 23-50mm                     | 3- jaw chuck Morse 2, clamping range 2-50mm                |
| 30-902-6210  | Yes   | Diamond Coated  | Drive centre, 40mm diameter                                |
| 30-902-6340  | Yes   | -   | Female centre, 40mm diameter                               |



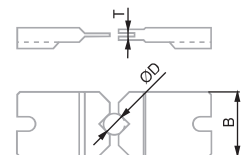
30-902-6220



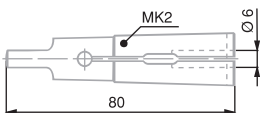
30-902-6231



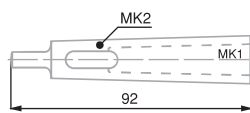
From 30-902-6141 to 30-902-6140



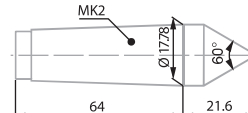
30-902-6154 set of anvils



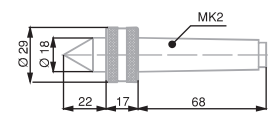
30-902-6251



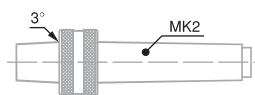
30-902-6360



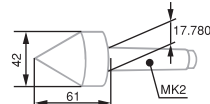
30-902-6202



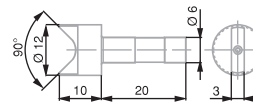
30-902-6161



30-902-6162



30-902-6380



30-902-6204

## Moore & Wright Traditional Mini Level

### Features

- Ultra compact dimensions and a single vial
- Machined from a solid block of carbon steel
- Supplied on retail card



### METRIC / IMPERIAL MINI LEVELS

| Code No   | Length (mm) | Length (inch) | Width (mm) | Width (inch) | Height (mm) | Height (inch) | Accuracy (inch)         |
|-----------|-------------|---------------|------------|--------------|-------------|---------------|-------------------------|
| ELT-001XR | 51          | 2.0           | 19         | 0.75         | 19          | 0.75          | ± 1° / 0.0035" per foot |

## Moore & Wright Traditional Engineers' Level

### Features

- Main vial sensitivity of 1 minute
- Each level is fitted with a main, cross and plumb vial
- Main vial protected by rotating shroud
- Vial solution maintains colour and fluidity under all workshop conditions
- Precision ground cast base with vee groove for location on cylindrical work



ELS



ELM

### METRIC / IMPERIAL ENGINEERS' LEVEL

| Code No | Length (mm) | Length (inch) | Width (mm) | Width (inch) | Height (mm) | Height (inch) | Resolution (mm) | Resolution (inch) |
|---------|-------------|---------------|------------|--------------|-------------|---------------|-----------------|-------------------|
| ELS     | 165         | 6.5           | 34         | 1.34         | 46          | 1.81          | 0.3mm per metre | 0.0035" per foot  |
| ELM     | 310         | 12            | 36         | 1.42         | 58          | 2.28          | 0.3mm per metre | 0.0035" per foot  |



## Moore & Wright Digital Mini-Mag Level 570 Series

### Features

- Measuring range 360° (4 x 90°)
- Embedded magnets on two sides
- Standard 9V battery
- Dimensions: L60mm x H60mm x W35mm



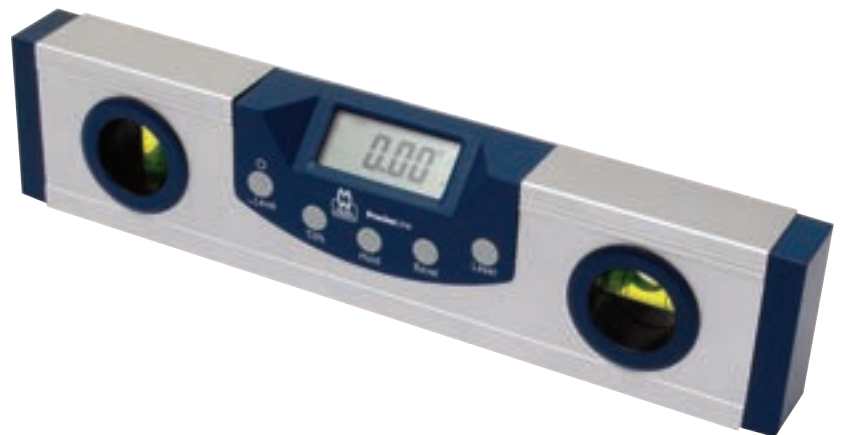
### DIGITAL MINI-MAG LEVEL

| Code No  | Description    |
|----------|----------------|
| MW570-01 | Mini-Mag Level |

## Digital Level 580 Series

### Features

- Precision navigational level sensor
- CNC machined super flat edge
- Heavy duty aluminium alloy body, chrome finish
- Laser accurately extends level capabilities
- Strong magnets on underside
- Measuring: 4x90°
- Battery: standard 9V



### DIGITAL LEVEL

| Code No  | Accuracy ° | Size        | Resolution |
|----------|------------|-------------|------------|
| MW580-01 | ±0.2°      | 150mm / 6"  | 0.05°      |
| MW580-02 | ±0.2°      | 225mm / 9"  | 0.05°      |
| MW580-03 | ±0.2°      | 600mm / 24" | 0.05°      |

## WYLER Bubble Spirit Levels

A wide range of WYLER Bubble Spirit Levels are available, designed to be fitted onto machines and other applications where a clear visual indication of levelling is required.



### Adjustable Micrometer Spirit Level No. 68

Used to measure the flatness of surfaces, inclinations, taper or concentricity. With prismatic base, hardened and ground for measuring shafts and flat surfaces. The micrometer has a knurled knob for setting zero. Height 80mm, length 150mm and sensitivity 0.02mm/m.

| Code No | Sensitivity (mm/m) |
|---------|--------------------|
| 60-6242 | 0.02               |



### Micrometric Spirit Level No. 53

For measurement of irregular plane surfaces. Permits direct reading of the inclination in 0.001" on the scale of the micrometer. Finer displacements are obtainable from the displacement of the bubble. Support at each end means that uneven surfaces are bridged.

| Code No | Sensitivity (mm/m) |
|---------|--------------------|
| 60-6243 | 0.02               |
| 60-6244 | 0.05               |



### Shaft Spirit Level No. A63. Prismatic base. Size 30 x 35mm. Wide viewing slots.

| Code No  | Size of Base (mm) | Code No  | Size of Base (mm) | Code No  | Size of Base (mm) | Sensitivity (mm/m) |
|----------|-------------------|----------|-------------------|----------|-------------------|--------------------|
| 60-6290  | 100               | 60-6292  | 150               | 60-6294  | 200               | 0.05               |
| 60-6290A | 100               | 60-6292A | 150               | 60-6294A | 200               | 0.1                |
| 60-6290B | 100               | 60-6292B | 150               | 60-6294B | 200               | 0.3                |
| 60-6291  | 100               | 60-6293  | 150               | 60-6295  | 200               | 1.0                |



### Tubular Spirit Level No. 59. With flat base, 80 x 9 (16mm dia), 100 x 10 (20mm dia), 150 x 10 (20mm dia.) and 200 x 11 (22mm dia.)

| Code No   | Size of Base (mm) | Code No   | Size of Base (mm) | Code No   | Size of Base (mm) | Code No   | Size of Base (mm) | Sensitivity (mm/m) |
|-----------|-------------------|-----------|-------------------|-----------|-------------------|-----------|-------------------|--------------------|
|           |                   |           |                   | 60-62109  | 150               | 60-62111  | 200               | 0.05               |
| 60-62105  | 80                | 60-62107  | 100               | 60-62109A | 150               | 60-62111A | 200               | 0.1                |
| 60-62105A | 80                | 60-62107A | 100               | 60-62109B | 150               | 60-62111B | 200               | 0.3                |
| 60-62106  | 80                | 60-62108  | 100               | 60-62110  | 150               | 60-62112  | 200               | 1.0                |



### Cross Level No. 78

| Code No   | Diameter (mm) | Code No   | Diameter (mm) | Sensitivity (mm/m) |
|-----------|---------------|-----------|---------------|--------------------|
|           |               | 60-62167  | 150           | 0.02               |
|           |               | 60-62168  | 150           | 0.05               |
| 60-62166  | 80            | 60-62169  | 150           | 0.1                |
| 60-62166A | 80            | 60-62169A | 150           | 0.3                |



**Circular Level No. 76.** The Cross Spirit Level 76 is specially designed for the simultaneous measuring or levelling of surfaces on machines, apparatus, etc. The main advantage of this spirit level is that the inclination of both axis (X- and Y-axis) is visualised at the same time. This enables a quick levelling of a measuring object in a very easy way.

| Code No  | Diameter (mm) | Code No   | Diameter (mm) | Code No   | Diameter (mm) | Code No   | Diameter (mm) | Sensitivity (mm/m) |
|----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|--------------------|
| 60-62170 | 40            | 60-62170A | 50            | 60-62170B | 60            | 60-62170C | 80            | 2.5                |
|          |               | 60-62171  | 50            | 60-62173  | 60            | 60-62175  | 80            | 1.0                |
|          |               |           |               | 60-62172  | 60            | 60-62174  | 80            | 0.3                |



Note: Other models available, see [www.wylerag.com](http://www.wylerag.com) for more information



## WYLER Spirit Levels - 58S/55S Series

WYLER Conventional Spirit Levels are manufactured to the highest of standards using artificially aged materials. With precise prismatic bases the new "Spirit" branded models offer an especially rigid vial adjustment system.



### Frame Spirit Level No. 58S

With two prismatic and two flat base surfaces for checking horizontal and vertical surfaces, plane or cylindrical. Magnetic inserts available.



#### LEVEL NO. 58S

| Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Sensitivity (mm/m) |
|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|--------------------|
| 60-6207 | 100               | 60-6212 | 150               | 60-6217 | 200               | 60-6222 | 250               | 60-6227 | 300               | 0.02               |
| 60-6208 | 100               | 60-6213 | 150               | 60-6218 | 200               | 60-6223 | 250               | 60-6228 | 300               | 0.05               |
| 60-6209 | 100               | 60-6214 | 150               | 60-6219 | 200               | 60-6224 | 250               | 60-6229 | 300               | 0.1                |

### Horizontal Spirit Level No. 55S

With prismatic base for checking horizontal surfaces, plane and cylindrical. Magnetic inserts available.



#### LEVEL SENSITIVITIES

|            |                             |
|------------|-----------------------------|
| 2 seconds  | 0.0001" in 10" or 0.01mm/m. |
| 4 seconds  | 0.0002" in 10" or 0.02mm/m. |
| 10 seconds | 0.0005" in 10" or 0.05mm/m. |
| 20 seconds | 0.001" in 10" or 0.10mm/m.  |

#### LEVEL NO. 55S

| Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Code No | Size of Base (mm) | Sensitivity (mm/m) |
|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|--------------------|
| 60-6252 | 100               | 60-6257 | 150               | 60-6262 | 200               | 60-6267 | 250               | 60-6272 | 300               | 60-6277 | 500               | 0.02               |
| 60-6253 | 100               | 60-6258 | 150               | 60-6263 | 200               | 60-6268 | 250               | 60-6273 | 300               | 60-6278 | 500               | 0.05               |
| 60-6254 | 100               | 60-6259 | 150               | 60-6264 | 200               | 60-6269 | 250               | 60-6274 | 300               | 60-6279 | 500               | 0.1                |

## Frame Angular Levels

These levels are ideal for checking both horizontal and vertical surfaces. Their prismatic base makes them suitable for both cylindrical and flat surfaces.

### Magnetic Spirit Level No. A48

This level has strong magnetic inserts in its 150mm long vertical base. They provide a positive hold on both flat and cylindrical vertical surfaces.

Magnetic inserts in horizontal base available.

#### MAGNETIC SPIRIT LEVEL NO. A48

| Code No  | Sensitivity (mm/m) | Size of Base (mm) |
|----------|--------------------|-------------------|
| 60-6201  | 0.02               | 150               |
| 60-6201B | 0.05               | 150               |
| 60-6201C | 0.1                | 150               |



## WYLER Digital Inclinometers - Clinotronic PLUS and Clinotronic S



The Clinotronic PLUS builds on the success of its popular predecessor the Clinotronic. This robust shop-floor proof inclinometer features four machined faces permitting the measurement of angles through 360°, its three simple button operation and high visibility display allow easy access to its many operating modes including absolute and relative modes. The Clinotronic PLUS now comes with an inbuilt Infra Red receiver Lab Excel Software and cables as standard, this allows the use of an Infra Red transmitter (optional) to remotely transmit data to the Labview software (included).



### TECHNICAL SPECIFICATION

| Clinotronic PLUS |                         |
|------------------|-------------------------|
| Measuring range  | +/- 45 deg              |
| Settle time      | ca.5 seconds            |
| Sensitivity      | 0.02 mm/m               |
| Working temp.    | 0 to 40° C              |
| Output           | RS 485                  |
| Battery          | Standard AA 1.5V        |
| Housing          | Aluminium hard anodised |
| Dimensions       | 100 x 75 x 30mm         |
| Weight           | 400g                    |

### CLINOTRONIC PLUS

| Code No          | Description                                   |
|------------------|---|
| 60-6180          | Clinotronic Plus                              |
| 60-6199          | Clinotronic Plus with magnets on all faces    |
| 60-015-PLUS-PG45 | Clinotronic Plus with M3 threads on all faces |
| 60-6181          | IR Zapper                                     |

## WYLER Digital Inclinometers - Clinotronic S

The Clinotronic S keeps all of the features of the Clinotronic PLUS, like its reliability, accuracy and ease of use, however the Clinotronic S includes the latest technology.

### Features

- **Wireless Functionality** - Clinotronic S can be connected to an Android or iOS device which can then be used as remote displays. The new features makes the instrument much more versatile and opens up new applications for use
- **Excellent display** - The large colour display is back-lit and has a high contrast giving excellent readability, even under adverse conditions like in the workshop or under a machine
- **User friendly** - The completely redesigned user interface allows for very intuitive handling
- **Adjusted to local gravity** - To ensure best possible accuracy the Clinotronic S can be adjusted to local gravity



### TECHNICAL SPECIFICATION

| Clinotronic PLUS |                         |
|------------------|-------------------------|
| Measuring range  | +/- 45 deg              |
| Settle time      | ca.5 seconds            |
| Sensitivity      | 0.02 mm/m               |
| Working temp.    | 0 to 40° C              |
| Output           | RS 485                  |
| Battery          | Standard AA 1.5V        |
| Housing          | Aluminium hard anodised |
| Dimensions       | 100 x 75 x 30mm         |
| Weight           | 400g                    |

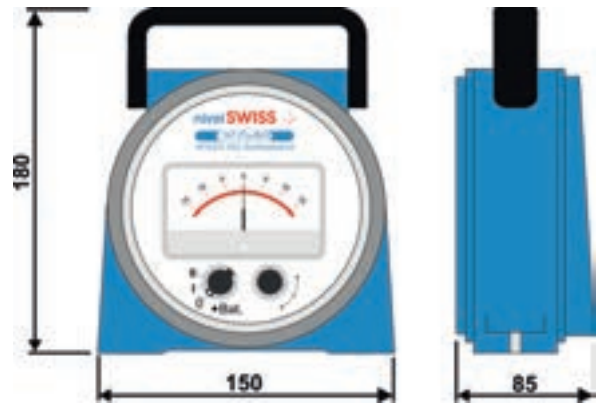
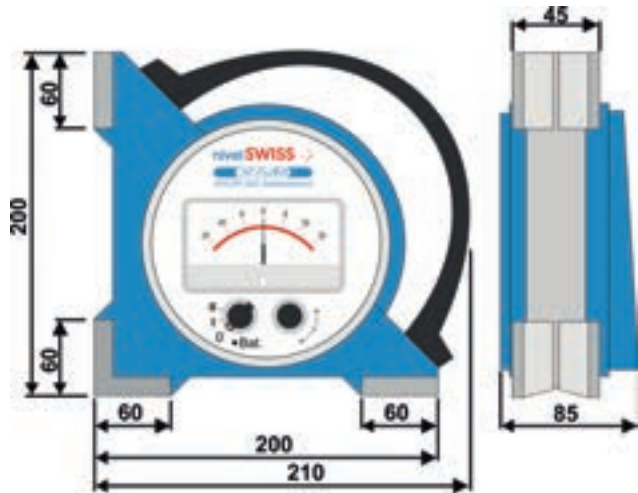
### CLINOTRONIC S

| Code No       | Description                                | Range               | Accuracy °         | Size            | Weight                      | Resolution |
|---------------|--|---------------------|--------------------|-----------------|-----------------------------|------------|
| 60-015-S-XG45 | Clinotronic S without inserts              | +/- 45 degree range | 10 arcsec+0.03% Mw | 100 x 75 x 30mm | 400g (depending on inserts) | 5 arcsec   |
| 60-015-S-HG45 | Clinotronic S with magnets all sides       | +/- 45 degree range | 10 arcsec+0.03% Mw | 100 x 75 x 30mm | 400g (depending on inserts) | 5 arcsec   |
| 60-015-S-PG45 | Clinotronic S with M3 threads on all faces | +/- 45 degree range | 10 arcsec+0.03% Mw | 100 x 75 x 30mm | 400g (depending on inserts) | 5 arcsec   |



## WYLER nivelSWISS - Electronic Analogue Level

The functional range of WYLER nivelSWISS precision levels employs the accurate inductive pendulum principle. Precision prismatic bases make the range particularly useful for measurement on both plane or cylindrical work pieces, whilst the easy to read analogue display aids ease of use.



### nivelswiss 50W with angular base

Suitable for measuring both horizontal and vertical surfaces.

| Code No | Description                      |
|---------|----------------------------------|
| 60-6164 | nivelSWISS 50W with angular base |

### The nivelSWISS has two measuring ranges, reversible:

- a +/- 0.0075" / 10", +/- 0.75mm/m, +/- 150 sec.  
and one division equals 0.0005" in 10" / 0.05mm/m / 10 sec.
- b +/- 0.0015" / 10", +/- 0.15mm/m, +/- 30 sec.  
and one division equals 0.0001" in 10" / 0.01mm/m / 2 sec.

### nivelswiss 50H with horizontal base

Suitable for measuring only horizontal surfaces. This model can have a choice of screw on granite bases in either 200mm, 250mm or 500mm lengths.

| Code No | Description                         |
|---------|-------------------------------------|
| 60-6165 | nivelSWISS 50H with horizontal base |

## WYLER BlueCLINO and BlueCLINO HP Precision Inclinometers



60-6190B  
Cast Iron Rust Protected



60-6190BA  
Anodised Aluminium



60-6190HP  
High Precision

### Features - BlueCLINO and BlueCLINO HP

- Large and very easy to read colour display
- Various colour profiles available
- Various display methods like bar graphs or spirit levels available
- All current units can be indicated
- High accuracy over the whole measuring range
- The internal software, together with a reversal measurement, allows a simple zero setting
- Rugged housing, rust protected, with prismatic bases made of either aluminium hard anodized or cast iron, rust protected
- Built-in cross vial for easy alignment of the vertical axis in order to avoid "twist errors"
- The instrument is compatible with the whole range of digital sensors from WYLER
- Powered with standard 1.5V batteries, rechargeable batteries or with mains adapter
- Fulfils strict CE requirements
- The instrument can be adjusted to the local gravitation
- High Precision (HP) model is hand-scraped prismatic base to lower and left faces and precision ground to the right

### Optional Accessories

- Wireless communication, based on Bluetooth-technology
- Quick calibration function
- The instrument can be recalibrated with the help of simple calibration tools which are supplied together with the instrument. This process is supported by the internal software
- Magnetic inserts in all measuring bases possible
- The base on the right side can be used as a flat measuring base
- A fourth measuring base may be attached to the top of the instrument
- External power supply
- Cable to connect the instrument to a PC
- Software to collect measuring data

### BLUECLINO AND BLUECLINO HP PRECISION INCLINOMETERS

| Code No   | Description                            | Range         | Sensitivity (mm/m)        |
|-----------|--|---------------|---------------------------|
| 60-6190B  | Cast Iron Precision Inclinometer*      | ±60°          | 5 arc seconds (0.025mm/m) |
| 60-6190BA | Aluminium Precision Inclinometer*      | ±60°          | 5 arc seconds (0.025mm/m) |
| 60-6190HP | Cast Iron High Precision Inclinometer* | ±1° (±18mm/m) | 1 arc seconds (0.005mm/m) |

\* without quick calibration function



## Wyler BlueLEVELS with Bluetooth

The modular BlueSYSTEM family of instruments is a further enhancement of the well known and well established measuring instruments MINILEVEL NT and LEVELTRONIC NT. The BlueSYSTEM family uses Wyler's WYBUS system to enable communication and connectivity, with switchable Bluetooth, between all Wyler BlueSYSTEM devices including The BlueCLINO HP, Zerotronic sensors and more, enabling easy data collection to PC in many different ways with a variety of software suited for most applications. A BlueSYSTEM engineers set normally consists of a pair of high precision BlueLEVELS and a BlueMETER SIGMA display.



### BlueLEVEL Features

- Compact and pleasant design which is functionally optimised for precision measurement
- Industrial Bluetooth radio transmission 35m range
- Large easy to read LCD display which can be rotated to be visible from either side
- Each instrument has its own specific address allowing the use of up to 64 instruments to be used simultaneously in a measurement system
- Linearity according to DIN 2276
- All instruments are equipped with RS 232/RS422/RS485 interfaces
- Powered by mains or standard rechargeable or alkaline type 'C' batteries
- In compliance with CE regulations and all applicable EMC regulations
- Fixing holes in bases 150mm and up upward for adaptable use in many applications

### Engineers BlueLEVEL Set comprises

- 2x BlueLEVEL with choice of base and sensitivity
- BlueMETER SIGMA display
- IR remote "zapper" control
- Cables and batteries
- Manual
- Rugged site case

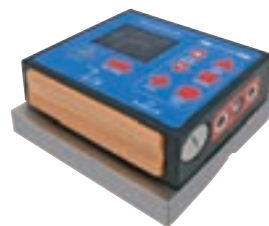


### BlueLEVEL 2D Features

- Dual Sensor technology for simultaneous X-Y Axis measurements
- Industrial Bluetooth radio transmission 35m range
- Large built in colour LCD with multiple display modes
- Fully compatible and connectable with all other BlueSYSTEM instruments
- Linearity according to DIN 2276
- All instruments are equipped with RS 232/RS422/RS485 interfaces
- Powered by mains or standard rechargeable or alkaline type 'C' batteries
- In compliance with CE regulations and all applicable EMC regulations
- High precision base with three hardened steel inserts M4 fixing threads

### Dual Axis BlueLEVEL 2D Set comprises

- 1x BlueLEVEL 2D 0.001mm/m sensitivity
- BlueMETER SIGMA display
- IR remote "zapper" control
- Cables and batteries
- Manual
- Rugged site case



### BLUESYSTEM ENGINEERS SET WITH BLUETOOTH

| Code No           | Description                                  | Range  | Size of Base                           | Sensitivity (mm/m) |
|-------------------|--|--------|--|--------------------|
| 60-6666           | BlueSYSTEM Machine Tool Engineers Set        | 20mm/m | Base A Angular 150mm Base B Flat 150mm | 0.001              |
| 60-6667           | BlueSYSTEM Surface Calibration Engineers Set | 20mm/m | Base A Flat 150mm Base B Flat 150mm    | 0.001              |
| 60-6608BW         | Single BlueLEVEL without Fixing Holes        | 20mm/m | Base A Flat 100mm                      | 0.001              |
| 60-6611BW         | Single BlueLEVEL with Fixing Holes           | 20mm/m | Base A Flat 150mm                      | 0.001              |
| 60-6602BW         | Single BlueLEVEL with Angular Base           | 20mm/m | Base A Angular 150mm                   | 0.001              |
| 60-022F3000-2DG01 | BlueLEVEL 2D SET with SIGMA Display          | 20mm/m | Integral                               | 0.001              |
| 60-016F3000-2DG01 | Single BlueLEVEL 2D Twin Axis Level          | 20mm/m | Integral                               | 0.001              |

A wide range of other configurations are available to suit almost any application, please contact us to discuss your exact requirements

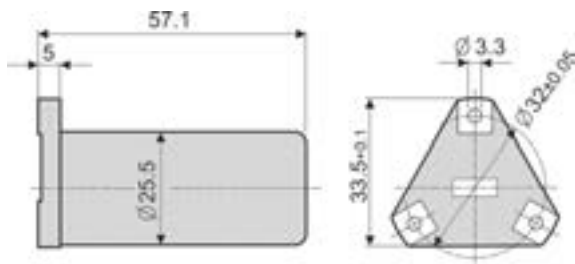
## WYLER Zerotronic - Digital Inclinometer Sensors



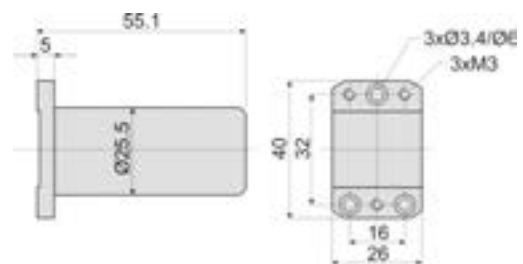
### TECHNICAL SPECIFICATION - ZEROTRONIC SENSOR

|                                      |                                 | ZEROTRONIC-sensor Type 3                             | ZEROTRONIC-sensor Type C |
|--------------------------------------|---------------------------------|--|--------------------------|
| Power consumption ZEROTRONIC-sensors |                                 | ca. 70 mW  | ca. 100 mW               |
| Power supply                         | Sensor                          | 5 V ± 10 %   | 5V ± 10 %                |
| External power supply                | System T/C                      | 12 ... 48 V  |                          |
| Digital output                       |                                 | RS485 / asynchr. , 7 DataBits, 2 StopBits, no parity |                          |
|                                      | Baudrate (automatic adjustment) | 2'400 ... 115'000                                    | 9'600 ... 57'600         |
| Analog output PWM                    |                                 | 0.5 V ... 2.5 V ... 4.5 V<br>@ 5 V Supply            |                          |
| Temperature range                    | Operating                       | - 40°C to + 85°C                                     |                          |
|                                      | Storage                         | - 55°C to + 95°C                                     |                          |
| Net weight sensor                    |                                 | 118gr  | 100gr                    |
| Shock resistance                     |                                 | practically indestructible                           |                          |

### Dimensions Zerotronic Sensor



ZEROTRONIC-sensor with triangular mounting surface



ZEROTRONIC-sensor with rectangular mounting surface

### ZEROTRONIC Type 3

- High resolution, high precision for inclinations up to 30°
- Excellent signal-to-noise ratio
- Excellent repeatability
- Excellent linearity
- Excellent temperature stability

Some typical applications for the ZEROTRONIC Type 3 include those applications in which high precision and high resolution is first priority, and where only small inclinations are measured:

- Adjustment of machines (e.g. pitch and roll)
- Precise adjustment of absolute zero
- Precise measurement of small inclinations in a heavy duty environment; e.g. exposure to outside temperature

### ZEROTRONIC Type C

- Excellent precision for inclinations between 10° and 60°
- Excellent repeatability
- Excellent long-term stability in inclined position
- Excellent linearity
- Excellent temperature stability

Some typical applications for the ZEROTRONIC Type C include:

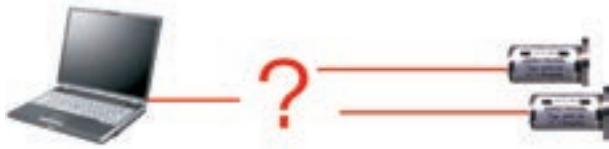
- Larger inclinations
- Applications in which the sensor remains in inclined position over a longer period of time

### ZEROTRONIC SENSORS

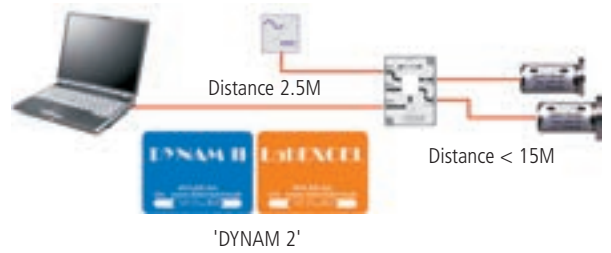
| Code No  | Description    | Range           |
|----------|----------------|-----------------|
| 60-6510  | Zerotronic 0.5 | Type 3 +/- 0.5° |
| 60-6511  | Zerotronic 1   | Type 3 +/- 1°   |
| 60-6513  | Zerotronic 10  | Type 3 +/- 10°  |
| 60-6514  | Zerotronic 30  | Type 3 +/- 30°  |
| 60-6513C | Zerotronic 10  | Type C +/- 10°  |
| 60-6514C | Zerotronic 30  | Type C +/- 30°  |
| 60-6515C | Zerotronic 60  | Type C +/- 60°  |



## WYLER Zerotronic - Digital Inclinometer Sensors



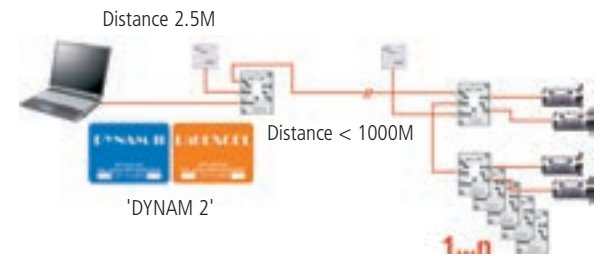
Standard configuration for ZEROTRONIC sensors. The customer can view and record the sensor output signal using their own in-house software.



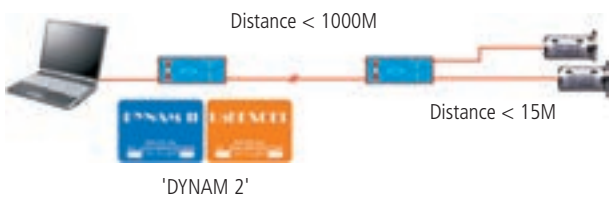
Connection to a PC/laptop through a T/C (Transceiver/Converter)



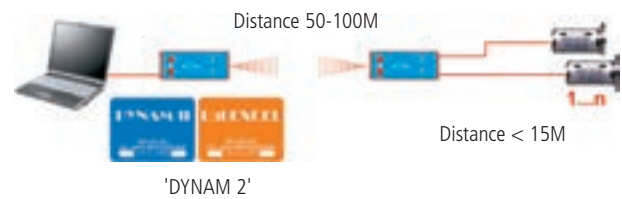
ZEROTRONIC sensors connected to a BlueMETER



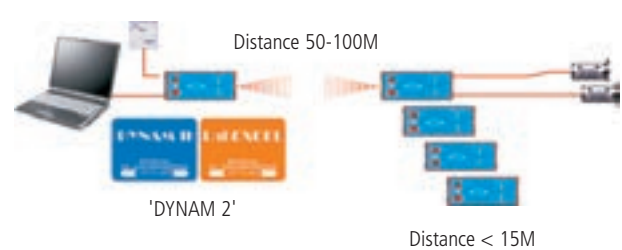
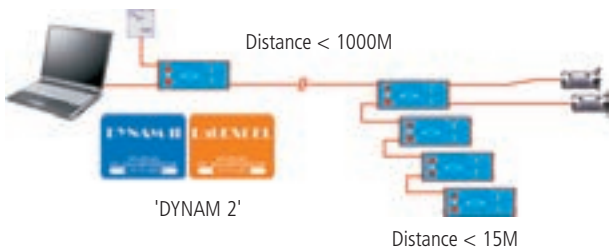
ZEROTRONIC sensors connected to a PC/laptop on RS485-Bus through one or more Transceiver/Converters (T/C). Analysis of measuring results using DYNAM 2 or LabEXCEL software. External power supply via Transceiver/Converter.



Data transmission through cables



Data transmission through a wireless connection



The BlueTC is used as an interface for data transmission through a cable or wireless connection. To each BlueTC up to eight sensors may be connected. In total, the system can handle 64 units. Because every TC also uses one address, a total of 56 sensors can be connected (64 minus 8 BlueTC addresses). Analysis of measuring results utilising LabEXCEL software.

## Functional Diameter Thread Gauges

The Gagemaker PG-6000 and RG-7000 Series gauges measure diameters of internal, and external threads respectively. Both series of these functional diameter gauges inspects the effects of all thread element variations and report deviations.

The gauges must be preset to a Nominal predetermined dimension using gauge blocks, micrometers, or the MIC TRAC gauge setting system. (See page 246).

### PG-6000 SERIES, INTERNAL DIAMETERS

| Code No    | Description                              | Range (inch) |
|------------|--|--------------|
| 90-SPG6000 | Internal Thread Roll Gauge, 1" reach     | 5/8 to 1 1/2 |
| 90-PG6000  | Internal Thread Roll Gauge, 2 1/2" reach | 1 1/2 to 9   |
| 90-PG6001  | Internal Thread Roll Gauge, 2 1/2" reach | 9 to 16      |
| 90-PG6002  | Internal Thread Roll Gauge, 2 1/2" reach | 16 to 24     |
| 90-DPG6000 | Deep Bore Thread Gauge, 6" reach         | 3 to 4       |

Extension arms available up to 24" depth, and 9.1" diameter for DPG-6000 (see below)

### RG-7000 SERIES, EXTERNAL DIAMETERS

| Code No   | Description                | Range (inch) |
|-----------|----------------------------|--------------|
| 90-RG7000 | External Thread Roll Gauge | 5/8 to 4     |
| 90-RG7001 | External Thread Roll Gauge | 4 to 8       |
| 90-RG7002 | External Thread Roll Gauge | 8 to 12      |
| 90-RG7003 | External Thread Roll Gauge | 12 to 16     |
| 90-RG7004 | External Thread Roll Gauge | 16 to 20     |
| 90-RG7005 | External Thread Roll Gauge | 20 to 24     |

Extension arms, handle extensions, and replacement arm sets are available upon request.

Prices do not include thread roll sets.

## Functional Diameter Thread Gauges - Accessories

The DPG-6000 gauge inspects diameters of internal threads using thread rolls. This functional diameter gauge inspects the effects of all thread element variations and reports any deviations. All thread rolls are sold separately.

### DPG-6000 GAUGE ACCESSORIES

| Code No    | Description                 | Range (inch)              |
|------------|-----------------------------|---------------------------|
| 90-DPG-6R  | Handle Extension Assemblies | 6                         |
| 90-DPG-8R  | Handle Extension Assemblies | 8                         |
| 90-DPG-12R | Handle Extension Assemblies | 12                        |
| 90-DPG-18R | Handle Extension Assemblies | 18                        |
| 90-DPG-24R | Handle Extension Assemblies | 24                        |
| 90-DPG-1   | Diameter Extension Arms     | 3 to 4.300 dia - standard |
| 90-DPG-2   | Diameter Extension Arms     | 4.300 to 5.100 dia        |
| 90-DPG-3   | Diameter Extension Arms     | 5.100 to 5.900 dia        |
| 90-DPG-4   | Diameter Extension Arms     | 5.900 to 6.700 dia        |
| 90-DPG-5   | Diameter Extension Arms     | 6.700 to 7.500 dia        |
| 90-DPG-6   | Diameter Extension Arms     | 7.500 to 8.300 dia        |
| 90-DPG-7   | Diameter Extension Arms     | 8.300 to 9.100 dia        |



90-PG6000



90-RG7000



90-DPG6000

## Functional Gauge Thread Rolls

All thread rolls are sold in matched pairs which come complete with Gagemaker Certificate.

### UN Series Thread Rolls

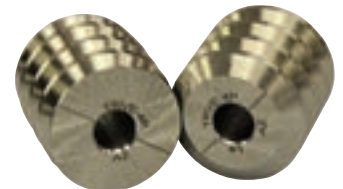
These thread rolls inspect the functional fit of machined parts with 60° "V" thread forms.

#### UN SERIES - INTERNAL

| Code No     | Description               |
|-------------|---------------------------|
| 90-TRVI-4P  | 4 Pitch Internal 60° "V"  |
| 90-TRVI-5P  | 5 Pitch Internal 60° "V"  |
| 90-TRVI-6P  | 6 Pitch Internal 60° "V"  |
| 90-TRVI-8P  | 8 Pitch Internal 60° "V"  |
| 90-TRVI-10P | 10 Pitch Internal 60° "V" |
| 90-TRVI-12P | 12 Pitch Internal 60° "V" |
| 90-TRVI-14P | 14 Pitch Internal 60° "V" |
| 90-TRVI-16P | 16 Pitch Internal 60° "V" |
| 90-TRVI-18P | 18 Pitch Internal 60° "V" |
| 90-TRVI-20P | 20 Pitch Internal 60° "V" |

#### UN SERIES - EXTERNAL

| Code No     | Description               |
|-------------|---------------------------|
| 90-TRVE-4P  | 4 Pitch External 60° "V"  |
| 90-TRVE-5P  | 5 Pitch External 60° "V"  |
| 90-TRVE-6P  | 6 Pitch External 60° "V"  |
| 90-TRVE-8P  | 8 Pitch External 60° "V"  |
| 90-TRVE-10P | 10 Pitch External 60° "V" |
| 90-TRVE-12P | 12 Pitch External 60° "V" |
| 90-TRVE-14P | 14 Pitch External 60° "V" |
| 90-TRVE-16P | 16 Pitch External 60° "V" |
| 90-TRVE-18P | 18 Pitch External 60° "V" |
| 90-TRVE-20P | 20 Pitch External 60° "V" |



90-TRVI-4P

### ACME and STUB ACME Thread Rolls

TRA & TRSA thread rolls inspect the functional fit of parts with 29° ACME and STUB ACME threadforms.

#### ACME AND STUB ACME - INTERNAL & EXTERNAL

| Code No    | Description       |
|------------|-------------------|
| 90-TRA-3P  | 3 Pitch 29° ACME  |
| 90-TRA-4P  | 4 Pitch 29° ACME  |
| 90-TRA-5P  | 5 Pitch 29° ACME  |
| 90-TRA-6P  | 6 Pitch 29° ACME  |
| 90-TRA-8P  | 8 Pitch 29° ACME  |
| 90-TRA-10P | 10 Pitch 29° ACME |
| 90-TRA-12P | 12 Pitch 29° ACME |
| 90-TRA-14P | 14 Pitch 29° ACME |
| 90-TRA-16P | 16 Pitch 29° ACME |
| 90-TRA-18P | 18 Pitch 29° ACME |

| Code No     | Description            |
|-------------|------------------------|
| 90-TRSA-3P  | 3 Pitch 29° STUB ACME  |
| 90-TRSA-4P  | 4 Pitch 29° STUB ACME  |
| 90-TRSA-5P  | 5 Pitch 29° STUB ACME  |
| 90-TRSA-6P  | 6 Pitch 29° STUB ACME  |
| 90-TRSA-8P  | 8 Pitch 29° STUB ACME  |
| 90-TRSA-10P | 10 Pitch 29° STUB ACME |
| 90-TRSA-12P | 12 Pitch 29° STUB ACME |
| 90-TRSA-14P | 14 Pitch 29° STUB ACME |
| 90-TRSA-16P | 16 Pitch 29° STUB ACME |
| 90-TRSA-18P | 18 Pitch 29° STUB ACME |



90-TRA-6P



90-TRSA-8P

### ISO Metric Series Thread Rolls

TRM thread rolls inspect the functional fit of machine threaded parts with ISO metric 60° "V" thread forms.

#### ISO METRIC SERIES - INTERNAL

| Code No      | Description                   |
|--------------|-------------------------------|
| 90-TRMI-4P   | 4mm Pitch Internal 60° "V"    |
| 90-TRMI-35P  | 3.5mm Pitch Internal 60° "V"  |
| 90-TRMI-3P   | 3mm Pitch Internal 60° "V"    |
| 90-TRMI-25P  | 2.5mm Pitch Internal 60° "V"  |
| 90-TRMI-2P   | 2mm Pitch Internal 60° "V"    |
| 90-TRMI-175P | 1.75mm Pitch Internal 60° "V" |
| 90-TRMI-15P  | 1.5mm Pitch Internal 60° "V"  |

#### ISO METRIC SERIES - EXTERNAL

| Code No      | Description                   |
|--------------|-------------------------------|
| 90-TRME-4P   | 4mm Pitch External 60° "V"    |
| 90-TRME-35P  | 3.5mm Pitch External 60° "V"  |
| 90-TRME-3P   | 3mm Pitch External 60° "V"    |
| 90-TRME-25P  | 2.5mm Pitch External 60° "V"  |
| 90-TRME-2P   | 2mm Pitch External 60° "V"    |
| 90-TRME-175P | 1.75mm Pitch External 60° "V" |
| 90-TRME-15P  | 1.5mm Pitch External 60° "V"  |



90-TRMI-4P



90-TRME-4P

### National 7° x 45° Buttress Thread Rolls

These thread rolls inspect the functional fit of parts with 7° x 45° buttress thread forms. Specify the pitch of thread when ordering.

#### NATIONAL 7° X 45° BUTTRESS - INTERNAL & EXTERNAL

| Code No      | Description         |
|--------------|---------------------|
| 90-TRB7452P  | 2 Pitch, 7° x 45°   |
| 90-TRB74535P | 3.5 Pitch, 7° x 45° |
| 90-TRB7454P  | 4 Pitch, 7° x 45°   |
| 90-TRB7456P  | 6 Pitch, 7° x 45°   |

| Code No      | Description        |
|--------------|--------------------|
| 90-TRB7458P  | 8 Pitch, 7° x 45°  |
| 90-TRB74510P | 10 Pitch, 7° x 45° |
| 90-TRB74512P | 12 Pitch, 7° x 45° |
| 90-TRB74516P | 16 Pitch, 7° x 45° |

Specials - all other thread forms available upon request.

## Pitch Diameter Inspection Gauges

The Gagemaker PD-6000 and PD-8000 Series gauges measure Pitch Diameters of internal, and external threads. The gauges can be preset to a nominal predetermined dimension using gauge blocks, micrometers, or the MIC TRAC gauge setting system. (See page 246).

### PD-6000 SERIES, INTERNAL DIAMETERS

| Code No      | Description                        | Range (inch) |
|--------------|------------------------------------|--------------|
| 90-PD6000    | Internal PD Gauge, "V" & ACME      | 1 1/2 to 9   |
| 90-PD6000-02 | Replacement Arm Set, 2 1/2" Length | Standard     |
| 90-PD6000-07 | Replacement Arm Set, 4 1/2" Length |              |
| 90-PD6001    | Internal PD Gauge                  | 6 to 24      |

Extension arms available up to 12" depth, and 9.6" diameter for DPG-6000

### PD-8000 SERIES, EXTERNAL DIAMETERS

| Code No   | Description            | Range (inch) |
|-----------|------------------------|--------------|
| 90-PD8001 | External Ball PD Gauge | 0 to 6       |
| 90-PD8002 | External Ball PD Gauge | 6 to 12      |
| 90-PD8004 | External Ball PD Gauge | 12 to 16     |
| 90-PD8006 | External Ball PD Gauge | 16 to 20     |
| 90-PD8008 | External Ball PD Gauge | 20 to 24     |
| 90-PD8010 | External Ball PD Gauge | 24 to 28     |
| 90-PD8012 | External Ball PD Gauge | 28 to 36     |
| 90-PD8013 | External Ball PD Gauge | 36 to 44     |
| 90-PD8014 | External Ball PD Gauge | 44 to 52     |
| 90-PD8015 | External Ball PD Gauge | 52 to 60     |
| 90-PD8016 | External Ball PD Gauge | 60 to 72     |



90-PD6000



90-PD6001



90-PD8001

## Pitch Diameter Gauge PD-6001 Replacement Parts

### PD-6001 REPLACEMENT PARTS

| Code No        | Description                                     | Length (inch) |
|----------------|---|---------------|
| 90-PD6001-PD4M | Cap   |               |
| 90-4-2-617     | Indicator Base - Mitutoyo Indicator Only        |               |
| 90-PD6001-CBA  | Cap and Base Assembly                           |               |
| 90-PD6001-PD3  | Adjustment Cap Lock Nut                         |               |
| 90-PD6001-PD2  | Adjustment Cap                                  |               |
| 90-PD6001-PD1  | Contact Point Adapter                           |               |
| 90-PD6001-PDA  | Extension Rod                                   | 0.430         |
| 90-PD6001-PDB  | Extension Rod                                   | 0.860         |
| 90-PD6001-PDC  | Extension Rod                                   | 1.290         |
| 90-PD6001-PDD  | Extension Rod                                   | 1.720         |
| 90-PD6001-PDE  | Extension Rod                                   | 3.440         |
| 90-PD6001-PDF  | Extension Rod                                   | 5.590         |
| 90-PD6001-PDG  | Extension Rod                                   | 7.740         |
| 90-PD6001-PDH  | Extension Rod                                   | 10.320        |
| 90-PD6001-12E  | 90-PD6001 Internal Pitch Diameter Extension Rod | 12            |
| 90-PD6001-24E  | 90-PD6001 Internal Pitch Diameter Extension Rod | 24            |
| 90-PD6001-36E  | 90-PD6001 Internal Pitch Diameter Extension Rod | 36            |

Note: Extensions have #10.32 threads



## Thread Disk for Windows Software/Contact Points

Gagemaker's standard ball contact points are manufactured with spherical chrome balls with threaded shanks of 4-48 UNF. Contact sizes are matched closely to thread inspection wire sizes. The contact diameters listed are used in the TDWIN Thread Disk for Windows software program for pitch diameter inspection.



Thread Type Entry Screen

Thread Dimension Screen



### TDWIN THREAD DISK SOFTWARE

| Model         | Description                       |
|---------------|-----------------------------------|
| 90-TDWIN      | Thread Disk for Windows Software  |
| 90-TDWIN-UP   | Upgrade to TDWIN from TD-100      |
| 90-TDWINLIC5  | Multi-Licence Agreement, 5 Users  |
| 90-TDWINLIC10 | Multi-Licence Agreement, 10 Users |

### TECHNICAL SPECIFICATION

| Contact Point | UN Series 60° V (TPI) | Thread Pitch         |                         |     | Trapezoidal Thread (mm Pitch) | ISO Metric 60° (mm Pitch) |
|---------------|-----------------------|----------------------|-------------------------|-----|-------------------------------|---------------------------|
|               |                       | ACME STUB ACME (TPI) | 7° x 45° Buttress (TPI) |     |                               |                           |
| 90-T562C      | 1                     | -                    | 1                       | -   | -                             |                           |
| 90-T531TC     | -                     | 1                    | -                       | -   | -                             |                           |
| 90-T437C      | -                     | -                    | 1 ¼                     | -   | -                             |                           |
| 90-T375C      | -                     | -                    | 1 ½                     | -   | -                             |                           |
| 90-T344TC     | -                     | 1 ½                  | -                       | -   | -                             |                           |
| 90-T288C      | 2                     | -                    | -                       | -   | -                             |                           |
| 90-T281C      | -                     | -                    | 2                       | -   | -                             |                           |
| 90-T266TC     | -                     | 2                    | -                       | -   | -                             |                           |
| 90-T219TC     | -                     | 2 ½                  | -                       | -   | -                             |                           |
| 90-T219C      | -                     | -                    | 2 ½                     | -   | -                             |                           |
| 90-T188TC     | -                     | 3                    | -                       | -   | -                             |                           |
| 90-T188C      | 3 & 3 ½               | -                    | 3                       | -   | -                             |                           |
| 90-T156C      | -                     | -                    | 3 ½                     | -   | -                             |                           |
| 90-T144TC     | -                     | 3 ½                  | -                       | -   | -                             |                           |
| 90-T144C      | 4                     | -                    | 4                       | 7   | -                             |                           |
| 90-T128TC     | -                     | 4                    | -                       | -   | -                             |                           |
| 90-T128C      | 4 ½                   | -                    | -                       | -   | -                             |                           |
| 90-T125C      | -                     | -                    | -                       | 6   | -                             |                           |
| 90-T115C      | 5                     | -                    | 5                       | -   | -                             |                           |
| 90-T105TC     | -                     | 5                    | -                       | -   | -                             |                           |
| 90-T105C      | 5 ½                   | -                    | -                       | -   | -                             |                           |
| 90-T096C      | 6                     | -                    | 6                       | 5   | 4                             |                           |
| 90-T090TC     | -                     | 6 & 7                | -                       | -   | -                             |                           |
| 90-T082C      | -                     | -                    | -                       | 4   | -                             |                           |
| 90-T072C      | 8                     | -                    | 8                       | 3 ½ | 3 & 3 ½                       |                           |
| 90-T062TC     | -                     | 8                    | -                       | -   | -                             |                           |
| 90-T062C      | -                     | -                    | -                       | 3   | -                             |                           |
| 90-T057C      | 10                    | -                    | 10                      | -   | 2 ½                           |                           |
| 90-T050TC     | -                     | 10                   | -                       | -   | -                             |                           |
| 90-T050C      | 11 ½ & 12             | -                    | 12                      | 2 ½ | -                             |                           |
| 90-T041TC     | -                     | 12 & 14              | -                       | -   | -                             |                           |
| 90-T041C      | 14 & 16               | -                    | -                       | 2   | 1 ½, 1¾ & 2                   |                           |
| 90-T032TC     | -                     | 16                   | -                       | -   | -                             |                           |
| 90-T032C      | 18                    | -                    | 16 & 18                 | 1 ½ | -                             |                           |

## Mic Trac Gauge Setting System

The Gagemaker MIC TRAC is a multi-use gauge setting system. The system sets or zeros most gauges with the use of interchangeable anvils or blocks. Standard resolution of base unit is 0.00005". Accuracies range from +/- 0.0001" to +/- 0.0004" depending on the machine capacity.

The MIC TRAC is also available as a multi-use gauge calibration system. These MIC TRACs incorporate the ForceLok™ feature to provide a constant anvil force that improves repeatability from operator to operator. Please ask the Bowers sales team for details.



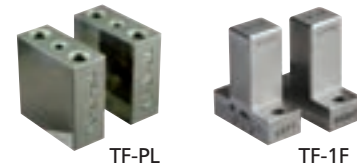
### BASE UNITS (INCLUDES TF-1F BLOCK SET)

| Code No      | Description   |
|--------------|---|
| 90-MT3012-50 | MIC TRAC, Range: 0" to 12" Internal, 1 1/2" to 13 1/2" External |
| 90-MT3024-50 | MIC TRAC, Range: 0" to 24" Internal, 1 1/2" to 25 1/2" External |
| 90-MT3036-50 | MIC TRAC, Range: 0" to 36" Internal, 1 1/2" to 37 1/2" External |
| 90-MT3048-50 | MIC TRAC, Range: 0" to 48" Internal, 1 1/2" to 49 1/2" External |

A huge range of Tapered, Thread and Special setting blocks are available upon request

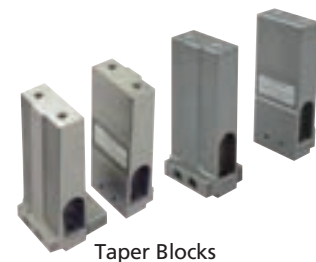
### SETTING BLOCKS

| Code No | Description                                    |
|---------|--|
| 90-TF1F | Face Setting Blocks (1.500" outside Dimension) |
| 90-TFBX | 23° Angled Face setting blocks                 |
| 90-TF10 | Tapered Setting Blocks 10° half angle          |
| 90-TF15 | Tapered setting Blocks 15° half angle          |
| 90-TF20 | Tapered setting Blocks 20° half angle          |
| 90-TF30 | Tapered setting Blocks 30° half angle          |
| 90-TF45 | Tapered setting Blocks 45° half angle          |



### TUBING AND CASING TAPER SETTING BLOCKS

| Code No     | Description   |
|-------------|---|
| 90-TF-STR   | Straight Blocks   |
| 90-TF-.75T  | 3/4" Taper Blocks, 8 & 10 Round, 3/4" TPF Buttress, Line Pipe |
| 90-TF-1.0T  | 1" Taper Blocks, 1" TPF Buttress                              |
| 90-TF-1.12T | 1 1/8" Taper Blocks, 1.125 TPF Connectors                     |
| 90-TF-1.75T | 1 3/4" Taper Blocks, 1.75 TPF Connectors                      |



### ROTARY SHOULDERED CONNECTOR SETTING BLOCKS

| Code No       | Description  |
|---------------|--|
| 90-TF-1.25RSC | 1 1/4" Taper Blocks, 1.25 TPF Rotary Shouldered Connectors |
| 90-TF-1.5RSC  | 1 1/2" Taper Blocks, 1.5 TPF Rotary Shouldered Connectors  |
| 90-TF-2.0RSC  | 2" Taper Blocks, 2.0 TPF Rotary Shouldered Connectors      |
| 90-TF-3.0RSC  | 3" Taper Blocks, 3.0 TPF Rotary Shouldered Connectors      |



### RISER BLOCKS FOR THE TAPER BLOCKS

| Code No      | Description                  |
|--------------|------------------------------|
| 90-TF-RISER1 | 1.00" Riser Block (Set of 2) |
| 90-TF-RISER2 | 2.00" Riser Block (Set of 2) |
| 90-TF-RISER3 | 3.00" Riser Block (Set of 2) |

Special taper blocks available on request



## MRP Pitch Diameter & Ovality Gauges

Gagemaker have introduced the MRP® AIR Crest Diameter Carbon Fibre Gauge, which is stronger, lighter and more accurate than ever, all of this is completed with no damaging rails locking them into place.

All of the MRP series of Pitch diameter gauges measures internal and external pitch diameters of tapered threaded connectors. The gauges use two pivoting thread shoes that rest on the crests of the threads. Variation in diameter is detected by the indicator readout.

The MRP gauges are preset to size before inspecting parts. A variety of setting standards are available. Alternatively the MIC TRAC setting system can be used.



90-MRP-AIR-2001



MRP2500 Series



MRP1000 Series



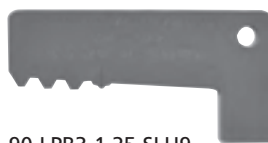
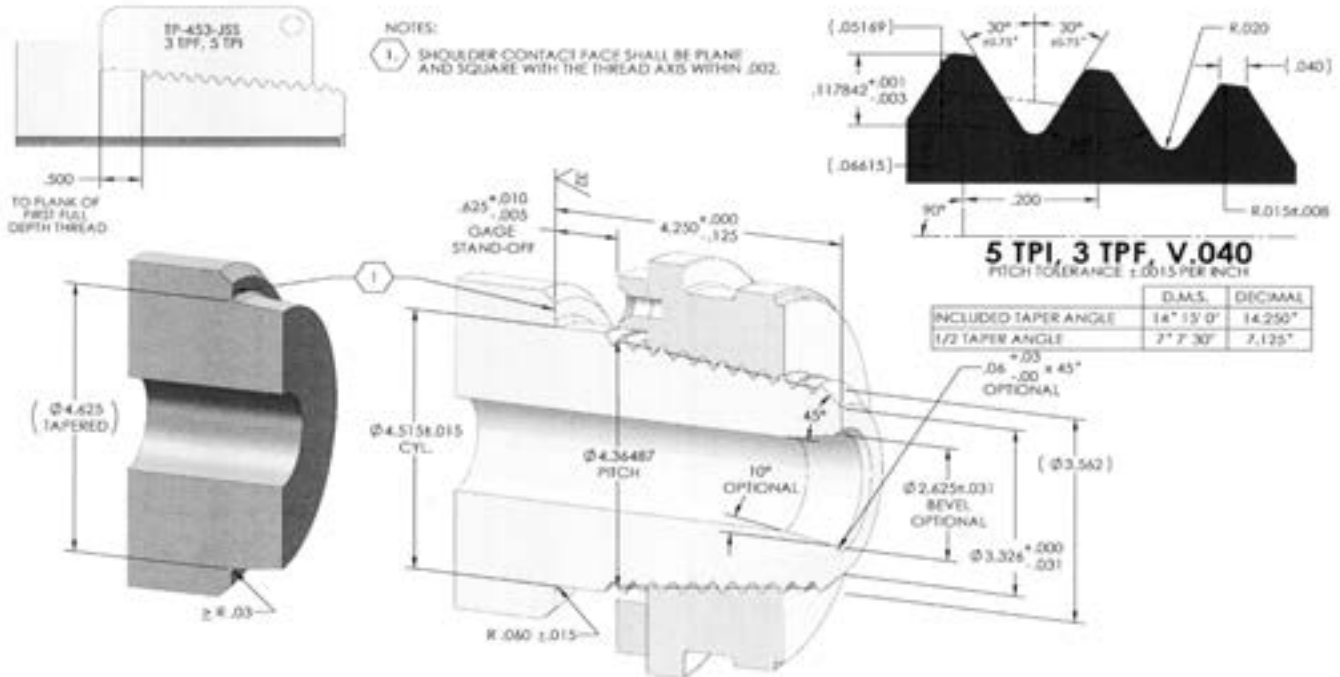
MRP2000 Series

### MRP GAUGES

| Code No            | Description                                      | Range (inch) |
|--------------------|--|--------------|
| 90-MRP1000         | Internal / External PD Gauge                     | 1 1/2-4 1/2  |
| 90-MRP1500         | Internal / External PD Gauge (Solid Frame Style) | 1 1/2-4 1/2  |
| 90-MRP-AIR-2001    | External PD Gauge with 4 1/4" reach              | 2 3/8-20     |
| 90-MRP-AIR-2001-7  | External PD Gauge with 7" reach                  | 2 3/8-20     |
| 90-MRP-AIR-2001-10 | External PD Gauge with 10" reach                 | 2 3/8-20     |
| 90-MRP-AIR-2002    | Internal PD Gauge with 4 1/4" reach              | 2 3/8-20     |
| 90-MRP-AIR-2002-7  | Internal PD Gauge with 7" reach                  | 2 3/8-20     |
| 90-MRP-AIR-2002-10 | Internal PD Gauge with 10" reach                 | 2 3/8-20     |
| 90-MRP-AIR-2003    | Internal / External PD Gauge with 4 1/4" reach   | 2 3/8-20     |
| 90-MRP-AIR-2003-7  | Internal / External PD Gauge with 7" reach       | 2 3/8-20     |
| 90-MRP-AIR-2003-10 | Internal / External PD Gauge with 10" reach      | 2 3/8-20     |
| 90-MRP2511         | External PD Gauge with 4" reach                  | 4 1/2-9 5/8  |
| 90-MRP2521         | External PD Gauge with 4" reach                  | 4 1/2-13 3/8 |
| 90-MRP2512         | Internal PD Gauge with 3 3/8" reach              | 4 1/2-9 5/8  |
| 90-MRP2522         | Internal PD Gauge with 3 3/8" reach              | 4 1/2-13 3/8 |
| 90-MRP2513         | Internal / External PD Gauge with 3 3/8" reach   | 4 1/2-9 5/8  |
| 90-MRP2523         | Internal / External PD Gauge with 3 3/8" reach   | 4 1/2-13 3/8 |
| 90-MRP3001         | External PD Gauge with 3 3/8" reach              | 8 5/8-24     |
| 90-MRP3002         | Internal PD Gauge with 3 3/8" reach              | 8 5/8-24     |
| 90-MRP3003         | Internal / External PD Gauge with 3 3/8" reach   | 8 5/8-24     |
| 90-MRP3501         | External PD Gauge with 6 1/4" reach              | 8 5/8-24     |
| 90-MRP3502         | Internal PD Gauge with 6 1/4" reach              | 8 5/8-24     |
| 90-MRP3503         | Internal / External PD Gauge with 6 1/4" reach   | 8 5/8-24     |

For a full comprehensive catalogue featuring all the Gagemaker products including many API & Premium gauges not shown here, please contact our sales department.

## Thread Pitch Diameter Measurement for Rotary Shoulder Threads - Internal



90-LPB3-1.25-SLH9



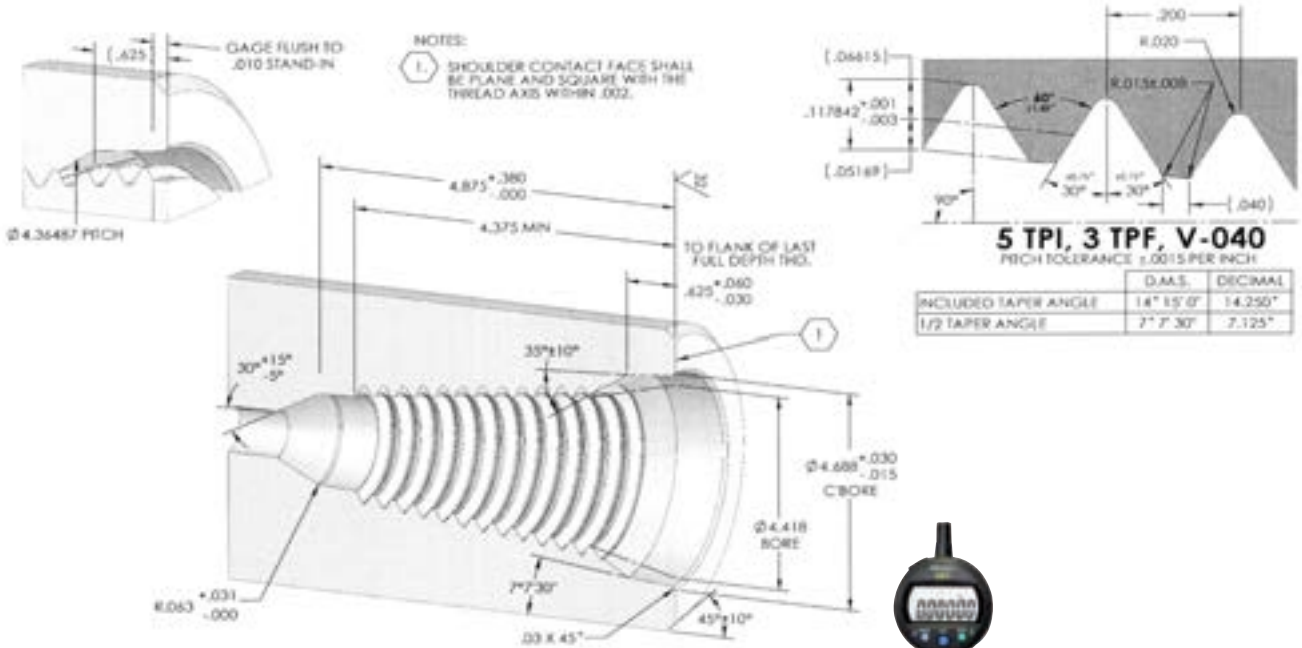
90-IT5104RSC

### THREAD PITCH DIAMETER MEASUREMENT FOR ROTARY SHOULDER THREADS - INTERNAL

| Code No            | Description   |
|--------------------|---|
| 90-IT5104RSC       | Box Rotary Shoulder pitch diameter gauge 0-9" w/ Electronic .500" travel digital indicator                    |
| 90-LPB3-1.25-SLH9  | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 3TPI-1.25TPF-SL-H90 |
| 90-LPB3.5-2-H9     | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 3.5TPI-2TPF-H90     |
| 90-LPB4-1.5-76     | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-1.50TPF-V076   |
| 90-LPB4-2-38       | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-2TPF-V038      |
| 90-LPB3.5-3-H9     | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 3.5TPI-3TPF-H90     |
| 90-LPB4-2-50       | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-2TPF-V050      |
| 90-LPB4-3-38       | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-3TPF-V038      |
| 90-LPB4-3-50       | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-3TPF-V050      |
| 90-LPB6-1.5-55     | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 6TPI-1.50TPF-V055   |
| 90-LPB5-3-40       | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 5TPI-3TPF-V040      |
| 90-LPB4-3.375-A094 | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-3.375TPF-A094  |
| 90-LPB6-2-32       | Box Length Profile template for pitch diameter measurement on rotary shoulder connection. 6TPI-2TPF-V032      |



## Thread Pitch Diameter Measurement for Rotary Shoulder Threads - External



90-LPP3-1.25-SLH9



90-PD8001RSC

### THREAD PITCH DIAMETER MEASUREMENT FOR ROTARY SHOULDER THREADS - EXTERNAL

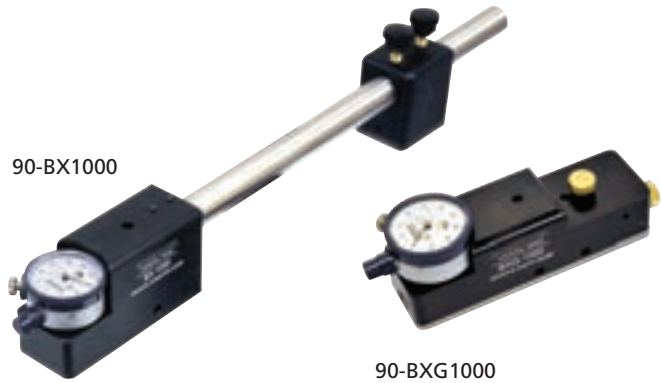
| Code No            | Description   |
|--------------------|---|
| 90-PD8001RSC       | Pin Rotary Shoulder pitch diameter gauge 0-6" w/ Electronic .500" travel digital indicator                    |
| 90-PD8002RSC       | Pin Rotary Shoulder pitch diameter gauge 6-12" w/ Electronic .500" travel digital indicator                   |
| 90-LPP3.5-2-H9     | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 3.5TPI-2TPF-H90     |
| 90-LPP3-1.25-SLH9  | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 3TPI-1.25TPF-SL-H90 |
| 90-LPP3.5-3-H9     | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 3.5TPI-3TPF-H90     |
| 90-LPP4-1.5-76     | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-1.50TPF-V076   |
| 90-LPP4-2-38       | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-2TPF-V038      |
| 90-LPP4-3-50       | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-3TPF-V050      |
| 90-LPP4-2-50       | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-2TPF-V050      |
| 90-LPP4-3.375-A094 | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-3.375TPF-A094  |
| 90-LPP4-3-38       | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 4TPI-3TPF-V038      |
| 90-LPP6-2-32       | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 6TPI-2TPF-V032      |
| 90-LPP6-1.5-55     | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 6TPI-1.50TPF-V055   |
| 90-LPP5-3-40       | Pin Length Profile template for pitch diameter measurement on rotary shoulder connection. 5TPI-3TPF-V040      |

## Groove Diameter and Groove Width Gauges Face Grooves - BX-1000 / BXG-1000 Series

These gauges adjust to cover all sizes of R, RX, and BX ring grooves. The standard gauge measures groove diameters from 2.6-13" and groove widths from 0.375-1.5". Optional rails extend the range of diameters from 13-37". The face groove gauges accurately measure the ring groove diameter and width at the critical sealing point of the face groove. Gauge indicators show actual deviation from a preset master dimension. The BX-1000 can be used to measure straight or tapered groove diameters, shallow bores, and hole locations. Contact points included are .188". The BXG-1000 measures widths of straight or tapered grooves and includes .072" contact points.

### Features

- Measures face grooves for a range of diameters
- Replaces traditional GO/NOT GO templates
- Provides accurate measurements at the critical sealing point of the face groove
- Allows use in a manufacturing or field environment due to durable construction
- Requires presetting using a micrometer or Gagemaker's MIC TRAC measurement center (setting dimensions and tolerances for API ring grooves supplied with gauge)



### GROOVE DIAMETER AND GROOVE WIDTH GAUGES FACE GROOVES

| Code No    | Description                      | Range (inch)                |
|------------|----------------------------------|-----------------------------|
| 90-BX1000  | Groove Diameter Gauge            | Diameters 2.6-13"           |
| 90-BXG1000 | Groove Width Gauge               | Widths 0.375-1.5"           |
| 90-BXR24   | Optional Rail 24"                | Groove Diameters to 25 3/4" |
| 90-BXR30   | Optional Rail 30"                | Groove Diameters to 31 3/4" |
| 90-BXR36   | Optional Rail 36"                | Groove Diameters to 37 3/4" |
| 90-TDWIN   | Thread Disk for Windows Software |                             |

## Applications

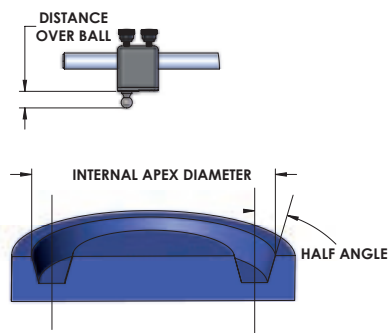
### BX-1000

Groove Diameter Gauge



### BXG-1000

Groove Width Gauge



Example of setting aid using TD Win software

## Thread Lead

The lead gauge inspects thread lead using contact points that seat in the threads of a part. Thread lead is the distance between threads, measured on a plane parallel to the centerline of the threaded part. The pitch of the thread determines the diameter of the contact points required for taking measurements. API specification 7-2 requires thread inspection.

The LG-6001 and the LG-6002 use a two-point system to inspect thread lead for straight and tapered threads. The LG-6002 inspects both external and internal threads, while the LG-6001 inspects external threads. The two point system allows for a sweeping action to obtain the measurement. Both gauges are available with higher resolution indicators.

The LG-5003 uses the three-point system to inspect internal and external thread lead. Two fixed contact points at the rear of the gauge and one moveable contact point at the front of the gauge provide complete stability when taking thread lead measurements. This unique design does not require sweeping to obtain measurements.

Contact points can be easily changed to allow the gauge to be used on a variety of thread forms. Each gauge comes with a default set of contact points, but customers may specify another set.

Before inspecting parts, the lead gauge must be preset to a nominal predetermined dimension using a lead gauge setting standard. Lead standards are available for both straight and tapered threads. Our setting standards are manufactured according to ANSI and API specifications, respectively.

### LEAD SETTING STANDARDS

| Code No      | Description  | Thread Pitch         |
|--------------|--|----------------------|
| 90-LS1001    | Lead standard for all 8 Round casing, tubing & drill pipe; 10 Round tubing, 3/4" TPF | 8 & 10               |
| 90-LS1002    | Lead standard for straight threads, 4" length, .375" width                           | 6-18                 |
| 90-LS1003    | Lead standard for 'V' threads, 3/4" TPF  | 11 1/2               |
| 90-LS1004    | Lead standard for straight threads, NPS threads                                      | 11 1/2               |
| 90-LS1005    | Lead standard for 3/4" Buttress, 3/4" TPF  | 5                    |
| 90-LS1006    | Lead standard for 1 Buttress, 1" TPF   | 5                    |
| 90-LS1007    | Lead standard for 6 TPI, V-0.032, 2" TPF   | 6                    |
| 90-LS1007-01 | Lead standard for 4 TPI, V-0.050 thread forms, 2" TPF                                | 4                    |
| 90-LS1008    | Lead standard for 4 TPI, V-0.038R & V-0.050 thread forms, 3" TPF                     | 4                    |
| 90-LS1009    | Lead standard for 5 TPI, V-0.040 thread forms, 3" TPF                                | 5                    |
| 90-LS1010    | Lead standard for 4 TPI, V-0.038R & V-0.050 thread forms, 1.5" TPF                   | 6                    |
| 90-LS1010-01 | Lead standard for 4 TPI, V-0.076 thread forms, 1.5" TPF                              | 4                    |
| 90-LS1011    | Lead standard for 3.5 TPI, 90-V-0.050 thread form, 2" TPF                            | 3.5                  |
| 90-LS1012    | Lead standard for 3.5 TPI, 90-V-0.050 thread form, 3" TPF                            | 3.5                  |
| 90-LS1013    | Lead standard for 3.5 TPI, 90-V-0.084 thread form, 1" TPF                            | 3                    |
| 90-LS-021    | Lead standard for USS Buttress, 3/4" TPF   | 8                    |
| 90-LS5001    | Lead standard for straight threads, 4.5" length, .750" width                         | 1-5                  |
| 90-LS5002    | Lead standard for straight threads, 4.5" length, .750" width                         | 6-18                 |
| 90-LS5003M   | Lead standard for metric threads   | 1.25, 1.75 and 3.5mm |
| 90-LS5004M   | Lead standard for metric threads   | 1, 1.5, 2, 3 and 4mm |
| 90-LS6MM     | Lead standard for metric threads   | 6mm                  |



### LEAD GAUGES

| Code No     | Description                                       | Note               | Range (mm)  | Range (inch) | Indicator Range (mm) | Indicator Range (inch) | Resolution (mm) | Resolution (inch) |
|-------------|---|--------------------|-------------|--------------|----------------------|------------------------|-----------------|-------------------|
| 90-LG6001   | 2-point external lead gauge                       | No of Contacts - 2 | 12.7 - 50.8 | 1/2 - 2      |                      |                        | .100            | .0005             |
| 90-LG6001-1 | 2-point external lead gauge                       | No of Contacts - 2 | 12.7 - 50.8 | 1/2 - 2      |                      |                        | .025            | .0001             |
| 90-LG6002   | 2-point internal lead gauge                       | No of Contacts - 2 | 0 - 101.6   | 1/2 - 4      |                      |                        | .100            | .0005             |
| 90-LG6002-1 | 2-point internal lead gauge                       | No of Contacts - 2 | 0 - 101.6   | 1/2 - 4      |                      |                        | .025            | .0001             |
| 90-LG6002-M | 2-point internal lead gauge with metric indicator | No of Contacts - 2 | 0 - 101.6   | 1/2 - 4      | 5                    |                        | .01             |                   |

## Thread Form

Gagemaker manufactures precision straight thread profile gauges for quick identification of a thread form. Please specify the thread pitch to be inspected when ordering. Special form profiles are available.

### STRAIGHT THREAD FORM PROFILE GAUGES

| Code No        | Description   |
|----------------|---|
| 90-TP-UNVI-xxP | Internal UN series thread gauge                             |
| 90-TP-UNVE-xxP | External UN series thread gauge                             |
| 90-TP-GPA-xxP  | Internal/external general purpose Acme thread profile gauge |
| 90-TP-SA-xxP   | Internal/external Stub Acme thread profile gauge            |
| 90-TP-SAM1-xxP | Modified 1 Stub Acme thread profile gauge                   |
| 90-TP-SAM2-xxP | Modified 2 Stub Acme thread profile gauge                   |
| 90-TP-MI-xxP   | Internal ISO Metric series thread profile gauge             |
| 90-TP-ME-xxP   | External ISO Metric series thread profile gauge             |
| 90-TP-745-xxP  | Internal/external 7° X 45° Buttress thread profile gauge    |

Gagemaker manufactures precision tapered thread profile gauges for quick identification of a thread form. Please specify the connection to be inspected when ordering. Special profiles will be quoted upon request.

### TAPERED THREAD FORM PROFILE GAUGES

| Code No          | Description  | Note                                  |
|------------------|--|---------------------------------------|
| 90-TP-RTC-8R     | API 8-Round Casing, Tubing & Drill Pipe  | 8 TPI, 3/4" TPF, 8 Round              |
| 90-TP-RTC-10R    | API 10-Round Tubing  | 10 TPI, 3/4" TPF, 10 Round            |
| 90-TP-8V         | 8 V API Line Pipe  | 8 TPI, 3/4" TPF, 8 V Thread           |
| 90-TP-11.5V      | 11 1/2 V API Line Pipe   | 11 1/2 TPI, 3/4" TPF, 11 1/2 V Thread |
| 90-TP-5BTC75-INT | API Buttress Casing, Internal, 4 1/2" - 13 3/8"  | 5 TPI, 3/4" TPF                       |
| 90-TP-5BTC75-EXT | API Buttress Casing, External, 4 1/2" - 13 3/8"  | 5 TPI, 3/4" TPF                       |
| 90-TP-5BTC1-INT  | API Buttress Casing, Internal, 16" - 20"   | 5 TPI, 1" TPF                         |
| 90-TP-5BTC1-EXT  | API Buttress Casing, External, 16" - 20"   | 5 TPI, 1" TPF                         |
| 90-TP-3-1.25-84  | 2 3/8" - 3 1/2" Hughes Slimline H-90   | 3 TPI, 1.25" TPF, 90-V-0.084          |
| 90-TP-3.5-2-50   | 3 1/2" - 6 5/8" Hughes H-90  | 3 TPI, 2" TPF, 90-V-0.050             |
| 90-TP-3.5-3-50   | 7" - 8 5/8" Hughes H-90  | 3 TPI, 3" TPF, 90-V-0.050             |
| 90-TP-4-1.5-76   | 2 3/8" - 3 1/2" PAC Connections<br>2 3/8" - 4 1/2" American Open Hole  | 4 TPI, 1.5" TPF, V-0.076              |
| 90-TP-4-2-50     | 6 5/8" API Regular<br>5 1/2" & 6 5/8" API Full Hole  | 4 TPI, 2" TPF, V-0.050                |
| 90-TP-4-2-38     | 4" API Full Hole, 2 7/8" - 5" Hughes Xtra Hole<br>2 3/8" - 4 1/2" Hughes Slim Hole<br>2 3/8" - 6 5/8" Internal Flush<br>API Numbered Connections #23 - #50 | 4 TPI, 2" TPF, V-0.038R               |
| 90-TP-4-3-38     | API Numbered Connections #56 - #77   | 4 TPI, 3" TPF, V-0.038R               |
| 90-TP-4-3-50     | 5 1/2", 7 5/8", & 8 5/8" API Regular   | 4 TPI, 3" TPF, V-0.050                |
| 90-TP-5-3-40     | 2 3/8" - 4 1/2" API Regular<br>2 7/8", 3 1/2", 4 1/2" API Full Hole  | 5 TPI, 3" TPF, V-0.040                |
| 90-TP-6-1.5-55   | API Numbered Connections #10, #12, #13, #16<br>M.T. (Macaroni Tubing)  | 6 TPI, 1.5" TPF, V-0.055              |
| 90-TP-6-2-32     | 2 3/8" - 2 7/8" Hughes External Flush  | 6 TPI, 2" TPF, V-0.032                |
| 90-TP-9060LS     | 90° & 60° Threads  | Tool Grinding & Setting Gauge         |
| 90-TP-NPT-8      | NPT Threads  | 8 TPI, 3/4" TPF                       |
| 90-TP-NPT-11.5   | NPT Threads  | 11.5 TPI, 3/4" TPF                    |
| 90-TP-NPT-14     | NPT Threads  | 14 TPI, 3/4" TPF                      |



90-TP-UNVI-xxP



90-TP-UNVE-xxP



90-TP-GPA-xxP



90-TP-SA-xxP



90-TP-SAM1-xxP



90-TP-745-xxP

## TDWIN TAPER Thread Disk for Tapered Threads

Gagemaker's TDWIN TAPER software program produces dimensional drawings and inspection data for API downhole tubular connectors based on the most current industry standards. Everything you need to machine, inspect, and document tubular connection threads is available in this convenient software program.

TDWIN TAPER provides easy access to information for both preferred and non-preferred Rotary Shouldered Connections, Tubing and Casing Connections, and any combination of Crossover. The program offers standard connection types and sizes. TDWIN TAPER displays connection drawings, inspection gauge information and setup and inspection reports.

The software displays printable drawings suitable for manufacturing that follow ASME Y14.5 standards for industry compatibility. Print gauge setup and inspection reports with your company logo and work order information. The program also offers the choice to save reports and jobs for future reference.

### Features

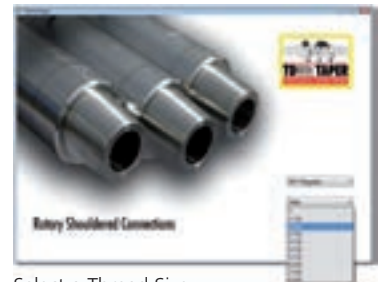
- Follows API Specification 7.2, Dec. 2008, for Rotary Shouldered Connections
- Follows API Specification 5B, Oct. 2008, for Tubing and Casing Connections
- Presents "preferred" connections as well as interchangeable and obsolete connections
- Organises data compatible with API and industry knowledge offered by resources such as Smith, Joy, and Hughes
- Displays Gagemaker style thread gauges and gauge setting information
- Configures and prints reference drawings for manufacturing including; standard pin/box/coupling, pin/box blanking, pin/box
- Relief groove, box modified bore-back relief, special clearance couplings, and SR grooved couplings
- Produces gauge setup reports for tubing, casing, RSC, and crossover combinations
- Provides inspection reports for all connection configurations selected
- Customises reports with your company logo
- Saves reports to job files and recalls them for future reference
- Provides web links to locate and purchase necessary gauges and standards



Select from 3 connection categories or review previous jobs and reports



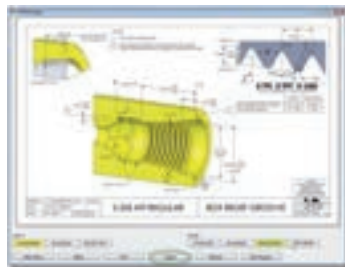
Select a Thread Type



Select a Thread Size



Select View Drawings



Select the desired drawing and view gauge requirements



Select the required gauging method and gauge



View gauge details and tolerances



Customise, preview and print desired reports

### THREAD DISK FOR WINDOWS (Tapered Threads)

Code No  
90-TDWIN-TPR

## Granite Tables

Completely stress free after millions of years of natural stress relieving, high rigidity, corrosion free and non-magnetic, just some of the attributes that makes granite ideal for inspection purposes and anywhere an accurate stable datum is required.

Granite Surface Tables are manufactured to BS817:1988 and are finished to the exacting tolerances required. Every table is supplied complete with a UKAS calibration certificate and a box section frame with adjusting supports. Tapped inserts and covers can also be supplied as extra.

Surface plates are similar to the Tables in both grade and finish and provide a highly accurate datum surface for smaller inspection departments. Each Plate is supplied with UKAS certificates but without a support frame. Tapped inserts and covers can be supplied at extra cost.



### GRANITE TABLES

| Size                      | Code No  | Description | Code No  | Description | Code No  | Description |
|---------------------------|----------|-------------|----------|-------------|----------|-------------|
| 900mm x 600mm (3' x 2')   | 10-10001 | Grade 0     | 10-10002 | Grade 1     | 10-10003 | Grade 2     |
| 1000mm x 1000mm (3' x 3') | 10-10005 | Grade 0     | 10-10006 | Grade 1     | 10-10007 | Grade 2     |
| 1200mm x 900mm (4' x 3')  | 10-10013 | Grade 0     | 10-10014 | Grade 1     | 10-10015 | Grade 2     |
| 1800mm x 900mm (6' x 3')  | 10-10021 | Grade 0     | 10-10022 | Grade 1     | 10-10023 | Grade 2     |
| 2000mm x 1200mm (6' x 4') | 10-10029 | Grade 0     | 10-10030 | Grade 1     | 10-10031 | Grade 2     |
| 2400mm x 1200mm (8' x 4') | 10-10033 | Grade 0     | 10-10034 | Grade 1     | 10-10035 | Grade 2     |

### SURFACE PLATES

| Size                     | Code No  | Description | Code No  | Description | Code No  | Description |
|--------------------------|----------|-------------|----------|-------------|----------|-------------|
| 300mm x 300mm (12 x 12") | 10-10073 | Grade 0     | 10-10074 | Grade 1     | 10-10075 | Grade 2     |
| 450mm x 300mm (18 x 12") | 10-10077 | Grade 0     | 10-10078 | Grade 1     | 10-10079 | Grade 2     |
| 450mm x 450mm (18 x 18") | 10-10081 | Grade 0     | 10-10082 | Grade 1     | 10-10083 | Grade 2     |
| 600mm x 450mm (24 x 18") | 10-10085 | Grade 0     | 10-10086 | Grade 1     | 10-10087 | Grade 2     |
| 600mm x 600mm (24 x 24") | 10-10089 | Grade 0     | 10-10090 | Grade 1     | 10-10091 | Grade 2     |

## Combination Length Bar Sets

Combination Length Bars are made from the same high grade steel as the gauge blocks. These length bars are manufactured to BS 1790 (Imperial) and BS 5317 (Metric). The bars have a round section, are hardened to 64 Rc and are precision lapped. Reference and calibration length bars are produced with plain ends and Inspection and Workshop grades have internal threaded holes in their end faces. This helps with the assembly of a combination of bars. A number of standard sets are available as well as individual sizes.



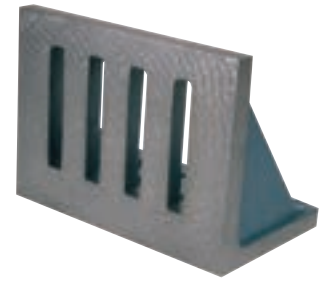
### LENGTH BAR SETS SUPPLIED IN WOODEN CASE

| Code No | Size  |
|---------|---|
| MB8     | 10mm, 20mm, 40mm, 60mm, 80mm, 100mm, 200mm and 300mm                                  |
| MB9     | 10mm, 20mm, 40mm, 60mm, 80mm, 100mm, 200mm, 300mm and 400mm                           |
| MB10    | 10mm, 20mm, 40mm, 60mm, 80mm, 100mm, 200mm, 300mm, 400mm and 600mm                    |
| MB11    | 25mm, 50mm, 75mm, 100mm, 125mm, 150mm, 175mm, 200mm, 375mm, 575mm and 775mm           |
| MB14    | 25mm (x3), 50mm, 75mm, 100mm, 125mm, 150mm, 175mm, 200mm (x2), 375mm, 575mm and 775mm |



## Bowers Angle Plates

Manufactured from close grained cast iron, our high quality Angle Plates are supplied in their Grade A or B and are supplied with UKAS calibration certification as standard.



### ANGLE PLATES

| Size                       | Code No  | Description  | Code No  | Description  |
|----------------------------|----------|--------------|----------|--------------|
| 150(L) x 75(W) x 100mm(H)  | 10-10319 | Grade A Webb | 10-10321 | Grade B Webb |
| 200(L) x 100(W) x 150mm(H) | 10-10323 | Grade A Webb | 10-10325 | Grade B Webb |
| 275(L) x 150(W) x 200mm(H) | 10-10327 | Grade A Webb | 10-10329 | Grade B Webb |
| 300(L) x 150(W) x 250mm(H) | 10-10335 | Grade A Webb | 10-10337 | Grade B Webb |

### BOX ANGLE PLATES

| Size                       | Code No  | Description | Code No  | Description |
|----------------------------|----------|-------------|----------|-------------|
| 150(L) x 122(W) x 115mm(H) | 10-10351 | Grade A     | 10-10352 | Grade B     |
| 225(L) x 175(W) x 150mm(H) | 10-10353 | Grade A     | 10-10354 | Grade B     |
| 300(L) x 250(W) x 225mm(H) | 10-10355 | Grade A     | 10-10356 | Grade B     |

## Traditional Angle Plates

### Features

Complies with: BS5535 Grade B

- Manufactured from close grained cast iron
- Heat stabilised to prevent distortion
- Machined to tolerance on all four edges and two faces (four faces on open end version)



### METRIC / IMPERIAL ANGLE PLATES

| Code No. | Description | Length (mm) | Length (inch) | Width (mm) | Width (inch) | Height (mm) | Height (inch) |
|----------|-------------|-------------|---------------|------------|--------------|-------------|---------------|
| E200     | Webbed      | 100         | 3.94          | 60         | 2.36         | 80          | 3.15          |
| E201     | Webbed      | 131         | 5.15          | 86         | 3.38         | 106         | 4.17          |
| E202     | Webbed      | 160         | 6.30          | 100        | 3.94         | 125         | 4.92          |
| E204     | Webbed      | 200         | 7.87          | 125        | 4.92         | 160         | 6.30          |
| E301     | Open End    | 125         | 4.92          | 80         | 3.15         | 100         | 3.94          |
| E302     | Open End    | 160         | 6.30          | 100        | 3.94         | 125         | 4.92          |
| E304     | Open End    | 200         | 7.87          | 125        | 4.92         | 160         | 6.30          |

## Moore & Wright Traditional Vee Blocks & Clamps

### Features

230 General Workshop grade

- Manufactured from close grained cast iron
- Supplied in matched and numbered pairs
- One steel clamp and screw supplied per pair



### 231 Precision Vee Blocks

- Manufactured to BS3731 grade B
- Manufactured from case hardened and ground mild steel
- Supplied in matched pairs only
- Two malleable iron clamps with steel screws supplied with each pair of blocks

### SPARE CLAMPS

| Code No | Description                   |
|---------|-------------------------------|
| 23001   | Spare Clamp and Screw for 230 |
| 23101   | Spare Clamp and Screw for 231 |

### VEE BLOCKS & CLAMPS

| Code No | Accuracy (mm) | Accuracy (inch) | Range (mm) | Range (inch) | Width (mm) | Width (inch) | Length (mm) | Length (inch) | Height (mm) | Height (inch) |
|---------|---------------|-----------------|------------|--------------|------------|--------------|-------------|---------------|-------------|---------------|
| 230     | 0.05          | 0.020           | 40         | 1 1/2        | 40         | 1 1/2        | 50          | 2             | 40          | 1 1/2         |
| 231     | 0.01          | 0.004           | 25         | 1            | 32         | 1 1/4        | 42          | 1 5/8         | 32          | 1 1/4         |

## Moore & Wright Traditional Vee Blocks Standard Pairs

### Features

- Supplied in matched and numbered pairs only
- Manufactured from close grained cast iron
- Ground faces



### VEE BLOCKS STANDARD PAIRS

| Code No | Accuracy (mm) | Accuracy (inch) | Capacity (mm) | Capacity (inch) | Width (mm) | Width (inch) | Length (mm) | Length (inch) | Height (mm) | Height (inch) |
|---------|---------------|-----------------|---------------|-----------------|------------|--------------|-------------|---------------|-------------|---------------|
| 211     | 0.04          | 0.0015          | 63            | 2.48            | 84         | 3.3          | 39          | 1.55          | 64          | 2.52          |
| 212     | 0.04          | 0.0015          | 80            | 3.15            | 104        | 4.09         | 44          | 1.75          | 74          | 2.91          |
| 213     | 0.05          | 0.0020          | 100           | 3.94            | 134        | 5.27         | 49          | 1.95          | 94          | 3.7           |
| 214     | 0.05          | 0.0020          | 125           | 4.92            | 154        | 6.06         | 54          | 2.15          | 104         | 4.09          |
| 215     | 0.06          | 0.0025          | 160           | 6.30            | 184        | 7.24         | 64          | 2.54          | 134         | 5.27          |
| 216     | 0.06          | 0.0025          | 200           | 7.87            | 224        | 8.82         | 74          | 2.94          | 164         | 6.45          |

## Workshop Tools

### Features

- Accuracy of Ball 25 millionth of an inch sphericity on small and medium, 50 millionth of an inch on the large set
- Overall accuracy of matched pairs +/- 0.0002"
- Class 40 cast iron used on base and housing, is heat stabilised and seasoned



10-16097

### BALL V BLOCKS

| Code No  | Description  |
|----------|--|
| 10-16097 | Small pair blocks 2" x 2" x 1" (without clamps) and test ball              |
| 10-16098 | Medium pair blocks 3 3/4" x 3 3/4" x 2 3/4" (without clamps) and test ball |
| 10-16099 | Large pair block 4 3/4" x 4 3/4" x 2 3/4" (without clamps) and test blocks |
| 10-16123 | Pair clamps for 10-16097   |
| 10-16124 | Pair clamps for 10-16098   |
| 10-16125 | Pair clamps for 10-16099   |

## Bowers Slip Gauges

A full range of different set compositions, grades and materials all manufactured to BS 4311:1993 or DIN861. Popular sizes are available in either Imperial or Metric sets and can be made from Steel, Carbide or Ceramic. Individual sizes also available.

Slip Gauges are supplied either in sets or individually.

Sets are supplied complete in a fitted wooden box with sizes marked. Each set is supplied complete with a calibration certificate of accuracy.

Steel slips must be cleaned after use to avoid corrosion.

Due to their extra hardness, carbide slips can last up to 5 or 6 times longer and do not suffer from the same potential corrosion problems as their steel counterparts.

### METRIC SETS IN STEEL - BS 4311 - Complete with UKAS

| Note              | Code No        | Description | Code No        | Description | Code No        | Description |
|-------------------|----------------|-------------|----------------|-------------|----------------|-------------|
| M112 (112 pieces) | <b>16-1120</b> | Grade 0     | <b>16-1121</b> | Grade 1     | <b>16-1122</b> | Grade 2     |
| M88 (88 pieces)   | <b>16-1880</b> | Grade 0     | <b>16-1881</b> | Grade 1     | <b>16-1882</b> | Grade 2     |
| M47 (47 pieces)   | <b>16-1470</b> | Grade 0     | <b>16-1471</b> | Grade 1     | <b>16-1472</b> | Grade 2     |
|                   |                |             | <b>16-1081</b> | Grade 1     |                |             |

Imperial Sets available - Please contact the sales office

### METRIC SETS IN CARBIDE - BS 4311 - Complete with UKAS

| Note              | Code No        | Description | Code No        | Description | Code No        | Description |
|-------------------|----------------|-------------|----------------|-------------|----------------|-------------|
| M112 (112 pieces) | <b>16-2120</b> | Grade 0     | <b>16-2121</b> | Grade 1     | <b>16-2122</b> | Grade 2     |
| M88 (88 pieces)   | <b>16-2880</b> | Grade 0     | <b>16-2881</b> | Grade 1     | <b>16-2882</b> | Grade 2     |
| M47 (47 pieces)   | <b>16-2470</b> | Grade 0     | <b>16-2471</b> | Grade 1     | <b>16-2472</b> | Grade 2     |
| M8 (8 pieces)     | <b>16-2080</b> | Grade 0     | <b>16-2081</b> | Grade 1     | <b>16-2082</b> | Grade 2     |

Imperial Sets available - Please contact the sales office



16-1120

## Steel Pin Gauge Sets

### Features

- Standard: Factory Standard
- Boxed sets complete with handle
- Each pin is laser engraved with its size above 1.5mm
- Each pin is stored in its own tube, marked with the pin size
- Pin length 50mm
- Supplied with a certificate of conformity
- Fully hardened to 60/62 HRC
- Manufacturing tolerance +/- .002mm



### STEEL PIN GAUGE SETS

| Code No         | Description   | Code No         | Description   | Code No         | Description  |
|-----------------|---|-----------------|---|-----------------|--|
| <b>MW725-01</b> | Steel Pin Gauge Set 51pce<br>0.50-1.00x.01mm<br>+/- 0.002mm C/W Handle  | <b>MW725-05</b> | Steel Pin Gauge Set 100pce<br>4.01-5.00x.01mm<br>+/- 0.002mm C/W Handle | <b>MW725-09</b> | Steel Pin Gauge Set 100pce<br>8.01-9.00x.01mm<br>+/- 0.002mm C/W Handle  |
| <b>MW725-02</b> | Steel Pin Gauge Set 100pce<br>1.01-2.00x.01mm<br>+/- 0.002mm C/W Handle | <b>MW725-06</b> | Steel Pin Gauge Set 100pce<br>5.01-6.00x.01mm<br>+/- 0.002mm C/W Handle | <b>MW725-10</b> | Steel Pin Gauge Set 100pce<br>9.01-10.00x.01mm<br>+/- 0.002mm C/W Handle |
| <b>MW725-03</b> | Steel Pin Gauge Set 100pce<br>2.01-3.00x.01mm<br>+/- 0.002mm C/W Handle | <b>MW725-07</b> | Steel Pin Gauge Set 100pce<br>6.01-7.00x.01mm<br>+/- 0.002mm C/W Handle |                 |  |
| <b>MW725-04</b> | Steel Pin Gauge Set 100pce<br>3.01-4.00x.01mm<br>+/- 0.002mm C/W Handle | <b>MW725-08</b> | Steel Pin Gauge Set 100pce<br>7.01-8.00x.01mm<br>+/- 0.002mm C/W Handle |                 |  |

## Steel 700 and Carbide 710 Series Gauge Blocks

### 700 Series Features

- Made from high quality stress relieved alloy steel
- Hardened to HV820 (HRC65)
- Excellent rigidity
- Size and serial number are engraved on each individual gauge block
- Available in 2 grades
  - Grade 1 for Inspection
  - Grade 2 for Workshop
- All sets have a MOORE & WRIGHT certificate
- All sets can be issued with a UKAS certificate at extra cost

### 710 Series Features

Standard: DIN 861

- Made from solid carbide with high precision
- Service life is up to 6 times that of steel
- Excellent wringability due to micro polished surfaces
- Every gauge block has its own serial number
- Available in 3 grades
  - Grade 0 for calibration
  - Grade 1 for inspection
  - Grade 2 for workshop
- All sets have MOORE & WRIGHT certificate
- All sets can be issued with UKAS certificate at extra cost



MW700-05

### STEEL GAUGE BLOCK SETS

| Code No  | No. of Blocks | Description |
|----------|---------------|-------------|
| MW700-02 | 103           | Grade 1     |
| MW700-03 | 103           | Grade 2     |
| MW700-05 | 87            | Grade 1     |
| MW700-06 | 87            | Grade 2     |
| MW700-08 | 47            | Grade 1     |
| MW700-09 | 47            | Grade 2     |
| MW700-11 | 32            | Grade 1     |
| MW700-12 | 32            | Grade 2     |

### CARBIDE GAUGE BLOCK SETS

| Code No  | No. of Blocks | Description |
|----------|---------------|-------------|
| MW710-01 | 103           | Grade 0     |
| MW710-02 | 103           | Grade 1     |
| MW710-03 | 103           | Grade 2     |
| MW710-04 | 87            | Grade 0     |
| MW710-05 | 87            | Grade 1     |
| MW710-06 | 87            | Grade 2     |
| MW710-07 | 47            | Grade 0     |
| MW710-08 | 47            | Grade 1     |
| MW710-09 | 47            | Grade 2     |
| MW710-10 | 32            | Grade 0     |
| MW710-11 | 32            | Grade 1     |
| MW710-12 | 32            | Grade 2     |

### BLOCK SET CONFIGURATION

| No. blocks | Nominal size | Qty | Step (mm) | No. blocks | Nominal size | Qty | Step (mm) | No. blocks | Nominal size | Qty | Step (mm) | No. blocks | Nominal size | Qty | Step (mm) |
|------------|--------------|-----|-----------|------------|--------------|-----|-----------|------------|--------------|-----|-----------|------------|--------------|-----|-----------|
| 103        | 1.005        | 1   |           | 87         | 1.001-1.009  | 9   | 0.001     | 47         | 1.005        | 1   |           | 32         | 1.005        | 1   |           |
|            | 1.01-1.49    | 49  | 0.01      |            | 1.01-1.49    | 49  | 0.01      |            | 1.01-1.09    | 9   | 0.01      |            | 1.01-1.09    | 9   | 0.01      |
|            | 0.50-24.50   | 49  | 0.5       |            | 0.50-9.50    | 19  | 0.5       |            | 1.10-1.90    | 9   | 0.1       |            | 1.10-1.90    | 9   | 0.1       |
|            | 25.0-100.0   | 4   | 25        |            | 10.0-100.0   | 10  | 10        |            | 1.0-24.0     | 24  | 1         |            | 1.0-9.0      | 9   | 1         |
|            |              |     |           |            |              |     |           |            | 25.0-100.0   | 4   | 25        |            | 10.0-30.0    | 3   | 10        |
|            |              |     |           |            |              |     |           |            |              |     |           |            | 60.0         | 1   |           |

## Moore & Wright Mic-Check Gauge Block Set MW715 Series

### Features

- Standard: DIN 861
- For the inspection of Metric Micrometers according to DIN 863
- Inspection Grade: Grade 0
- Nominal Gauge Sizes: 2.5, 5.1, 7.7, 10.3, 12.9, 15.0, 17.6, 20.2, 22.8, 25.0mm
- Optical Flat: 30mm diameter, 12.0mm thick
- Supplied with a stand to conveniently hold the slip gauges
- Can be used horizontally or vertically
- Supplied in a fitted case with a M&W Calibration certificate



### MIC-CHECK M10 SET AND STAND

| Code No  | Description  |
|----------|--|
| MW715-01 | 10 Piece Mic-Check Gauge Block Set plus Optical Flat |

## Moore & Wright Cylinder Bore Gauge Setting Master Kit 720 Series

### Features

- Bore Gauge Setting Master Kit for accurately setting any 2 point bore gauge up to 160mm in diameter to an accuracy of 0.01mm
- Setting master and 33 piece metric gauge block set supplied in plastic case

### Setting Device

- Internal range 160mm
- Depth range 25mm
- Centraliser width 70mm
- Quick-release holder for fast adjustment

### Gauge Block Set

- Accuracy to DIN 861, Grade2
- 33 piece metric steel set
- Supplied in a fitted case with a M&W Calibration certificate



### CYLINDER BORE GAUGE SETTING MASTER KIT

| Code No  | Description                   |
|----------|-------------------------------|
| MW720-01 | Bore Gauge Setting Master Kit |

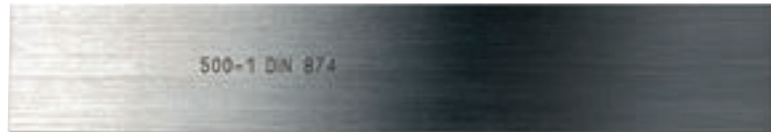
## Bowers Straight Edges & Parallels

Manufactured out of spring steel these straight edges are precision ground.

### Steel Straight Edge

Manufactured to DIN 874/1. Up to 2000mm these straight edges are rectangular section. From 2500mm they are I- section with two grip slots.

$$\text{Straightness: } 4 + \frac{\text{Length (mm)}}{60} = \mu\text{m.}$$



#### STEEL STRAIGHT EDGE

| Code No    | Size              |
|------------|-------------------|
| 80-465-101 | 500 x 40 x 8mm    |
| 80-465-102 | 750 x 50 x 10mm   |
| 80-465-103 | 1000 x 50 x 10mm  |
| 80-465-104 | 1500 x 60 x 12mm  |
| 80-465-105 | 2000 x 70 x 14mm  |
| 80-465-106 | 2500 x 80 x 15mm  |
| 80-465-107 | 3000 x 100 x 16mm |

## Moore & Wright Traditional Engineers' Rules

### Features

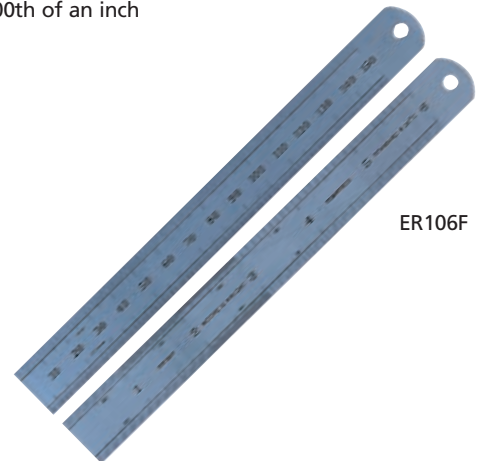
- Made from fine quality steel which has been hardened and tempered to provide the ideal balance between flexibility and durability
- D shaped end with hanging hole
- Satin chrome anti-glare finish
- Permanent black high definition scale markings
- Metric scales front and rear face graduations 0.5mm, 1.0mm
- Metric / Imperial scales front face graduations 1/16th, 1/32nd, 1/64th 1/10th, 1/20th, 1/50th, 1/100th of an inch
- Metric / Imperial scales rear face graduations 0.5mm, 1.0mm

#### METRIC SCALES ONLY: Two Sides, Four Edges

| Code No | Length (mm) | Width (mm) | Thickness | Pack Quantity |
|---------|-------------|------------|-----------|---------------|
| ER306F  | 150         | 19         | 0.4mm     | 1             |
| ER312   | 300         | 25         | 1.0mm     | 1             |

#### METRIC / IMPERIAL SCALES: Two Sides, Four Edges

| Code No | Length (mm) | Length (inch) | Width (mm) | Thickness | Pack Quantity |
|---------|-------------|---------------|------------|-----------|---------------|
| ER106F  | 150         | 6             | 19.0       | 0.4mm     | 1             |
| ER206F  | 150         | 6             | 12.5       | 0.4mm     | 1             |
| ER112   | 300         | 12            | 25.0       | 1.0mm     | 1             |
| ER212   | 300         | 12            | 12.5       | 1.0mm     | 1             |
| ER424   | 600         | 24            | 25.0       | 1.0mm     | 1             |



## Bowers Steel Rules and Tapes

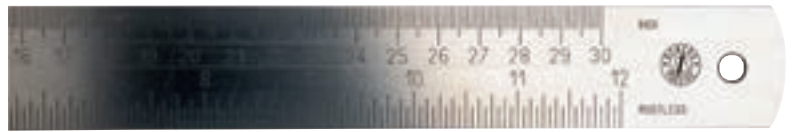
These Graduated Rules are manufactured out of spring steel.

### Graduated Steel Rules

Manufactured to DIN 866/2 these round ended steel rules start their graduations on the left edge. The top of the rule is graduated in inch readings 1/16", 1/32" and 1/64". The bottom is graduated in metric readings of 1/2mm and 1/1mm.

#### GRADUATED STEEL RULES

| Code No    | Size             |
|------------|------------------|
| 80-460-241 | 150 x 13 x 0.5mm |
| 80-460-243 | 250 x 15 x 0.5mm |
| 80-460-247 | 300 x 30 x 1mm   |
| 80-460-248 | 500 x 30 x 1mm   |
| 80-460-249 | 1000 x 30 x 1mm  |
| 80-460-250 | 1500 x 30 x 1mm  |
| 80-460-251 | 2000 x 30 x 1mm  |
| 80-460-252 | 3000 x 30 x 1mm  |

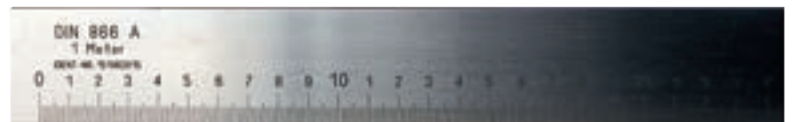


### Graduated Steel Straight Edge

Manufactured to DIN 866/1 the gauging surfaces have been precision ground. The clear and easy to read metric graduations start 5mm in from the ends.

#### GRADUATED STEEL STRAIGHT EDGE

| Code No    | Size             |
|------------|------------------|
| 80-451-101 | 500 x 30 x 6mm   |
| 80-451-102 | 1000 x 40 x 8mm  |
| 80-451-103 | 1500 x 40 x 8mm  |
| 80-451-104 | 2000 x 50 x 10mm |
| 80-451-105 | 3000 x 50 x 10mm |



### Circumference Tapes

Tapes measure both circumference and external diameters on the vernier cover plate. Manufactured to DIN 866/2 and read to 0.1mm.

#### CIRCUMFERENCE TAPES

| Code No    | Circumference | Diameter (mm) |
|------------|---------------|---------------|
| 80-458-102 | 60-950mm      | 20-300        |
| 80-458-103 | 940-2200mm    | 300-700       |
| 80-458-104 | 2190-3460mm   | 700-1100      |
| 80-458-105 | 3450-4720mm   | 1100-1500     |
| 80-458-106 | 4710-5980mm   | 1500-1900     |
| 80-458-107 | 5960-7230mm   | 1900-2300     |
| 80-458-108 | 7220-8500mm   | 2300-2700     |
| 80-458-109 | 8490-9760mm   | 2700-3100     |
| 80-458-110 | 9730-11010mm  | 3100-3500     |



## Moore & Wright Carbide Tipped Scriber

### Features

- Pocket clip
- Pearl-chrome finish
- Robust design



SCT001XR



SCT002R

### CARBIDE TIPPED SCRIBER

| Code No  | Description                               |
|----------|---|
| SCT001XR | Scriber - Carbide Tipped                  |
| SCT002R  | Retail Pack, fixed carbide tipped scriber |

## Telescopic Gauges 315 Series - Sets

### Features

- For quick inside measurement and determination of inside diameters
- Spring loaded plunger that expands in the bore or groove
- Satin-chromed body
- With auto extension and direct locking
- Measuring faces are hardened and micro-lapped

|       |             |
|-------|-------------|
| Range | 8 - 12.7mm  |
|       | 12.7 - 19mm |
|       | 19 - 32mm   |
|       | 32 - 54mm   |
|       | 54 - 90mm   |
|       | 90 - 150mm  |



### TELESCOPIC GAUGES

| Code No   | Range (mm) |
|-----------|------------|
| MW315-011 | 8-12.7     |
| MW315-012 | 12.7-19    |
| MW315-013 | 19-32      |
| MW315-014 | 32-54      |
| MW315-015 | 54-90      |
| MW315-016 | 90-150     |

### TELESCOPIC GAUGE SETS

| Code No  | Range (mm) | Pack Quantity |
|----------|------------|---------------|
| MW315-01 | 8-150      | 6-pieces      |



## Moore & Wright Traditional Engineers' Square

### Features

- Standard: To BS939 / Grade B
- Precision ground blade and stock
- Blind rivetted construction
- Hardened and tempered blades
- Supplied boxed



Product shown in use



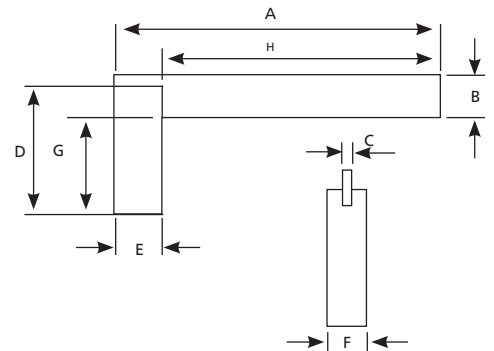
4006

### WORKSHOP SQUARE: Grade B

| Code No | Blade Length (mm) | Blade Length (inch) | Approx. Stock Length (mm) (inside face) |
|---------|-------------------|---------------------|---|
| 4003    | 75                | 3                   | 49                                      |
| 4004    | 100               | 4                   | 56                                      |
| 4006    | 150               | 6                   | 82                                      |
| 4009    | 225               | 9                   | 108                                     |
| 40012   | 300               | 12                  | 139                                     |

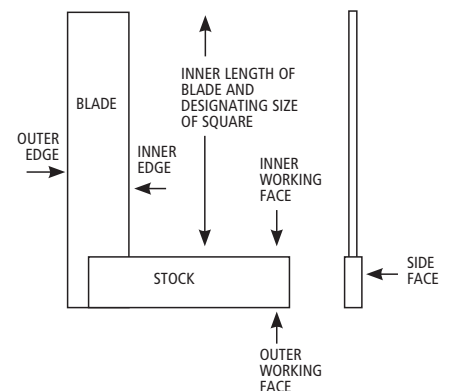
### DIMENSIONS TABLE (MM)

| Square Size Faces | Blade |      | Stock |       |      |       | Inner Working |        |
|-------------------|-------|------|-------|-------|------|-------|---------------|--------|
|                   | A     | B    | C     | D     | E    | F     | G             | H      |
| 3" (75mm)         | 104.8 | 25.4 | 1.42  | 68.5  | 25.4 | 12.7  | 49.3          | 79.4   |
| 4" (100mm)        | 130.2 | 25.4 | 1.42  | 76.2  | 25.4 | 12.7  | 57.0          | 104.8  |
| 6" (150mm)        | 181.0 | 25.4 | 1.42  | 101.6 | 25.4 | 12.7  | 82.4          | 155.6  |
| 9" (225mm)        | 273.1 | 38.1 | 3.15  | 139.7 | 38.1 | 19.05 | 107.9         | 234.95 |
| 12" (300mm)       | 355.6 | 44.4 | 3.15  | 177.8 | 44.4 | 22.2  | 139.7         | 311.2  |



### 400 SERIES ENGINEERS SQUARES TOLERANCES (MICRONS)

|  | Size of Square |          |          |          |           |
|--|----------------|----------|----------|----------|-----------|
|  | 3" 75mm        | 4" 100mm | 6" 150mm | 9" 225mm | 12" 300mm |
| Straightness of Blade Edges  | 8              | 8        | 8        | 8        | 12        |
| Parallelism of Blade Edges   | 8              | 8        | 8        | 12       | 12        |
| Flatness of Working Faces of Stock (any deviation must be concave) | 4              | 6        | 6        | 8        | 8         |
| Parallelism of Working Faces of Stock                              | 5              | 5        | 5        | 8        | 8         |
| Parallelism of Side Faces of Stock                                 | 25             | 25       | 25       | 50       | 50        |
| Squareness of Side Faces of Stock to Working Faces of Stock        | 57             | 57       | 75       | 114      | 134       |
| Squareness of Edges of Blade to Side Faces of Stock                | 15             | 15       | 15       | 15       | 15        |
| Squareness of Edges of Blade to Working Faces of Stock             | 16             | 16       | 16       | 16       | 24        |
| Lateral Squareness of Blade  | 125            | 250      | 250      | 375      | 375       |



## Moore & Wright Sliding 'T' Squares

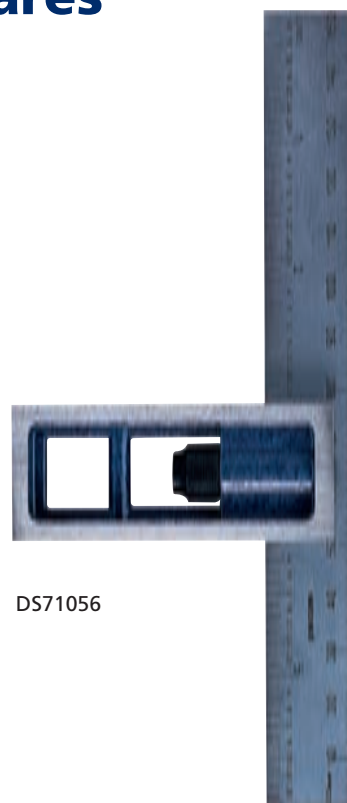
### Features

- Practical time saving tool for marking-out applications
- Suitable for use as a parallel or as a double square
- Working surfaces of the stock are ground
- The blade is hardened, tempered and has a satin chrome finish

DS71041



DS71056



### METRIC SLIDING T SQUARES

| Code No | Length (mm) | Graduation | Stock Length (mm) |
|---------|-------------|------------|-------------------|
| DS71041 | 100         | 1mm, 0.5m  | 62                |
| DS71051 | 150         | 1mm, 0.5m  | 62                |

### METRIC / IMPERIAL SLIDING T SQUARES

| Code No | Length (mm) | Length (inch) | Graduation | Stock Length (mm) |
|---------|-------------|---------------|------------|-------------------|
| DS71044 | 100         | 4             | 0.5mm, 1mm | 62                |
| DS71056 | 150         | 6             | 0.5mm, 1mm | 62                |

## Moore & Wright Precision Engineers' Square

### Features

- Standard: DIN 875 Grade 0
- Made of heat treated steel
- Precision ground and micro-lapped
- 2 knife-form sides with angle of 40°

### ENGINEERS' SQUARE

| Code No  | Description |
|----------|-------------|
| MW910-01 | 40 x 30mm   |
| MW910-02 | 50 x 40mm   |
| MW910-03 | 75 x 50mm   |
| MW910-04 | 100 x 70mm  |
| MW910-05 | 150 x 100mm |
| MW910-06 | 200 x 130mm |



## Moore & Wright Traditional (Hermaphrodite) Calipers

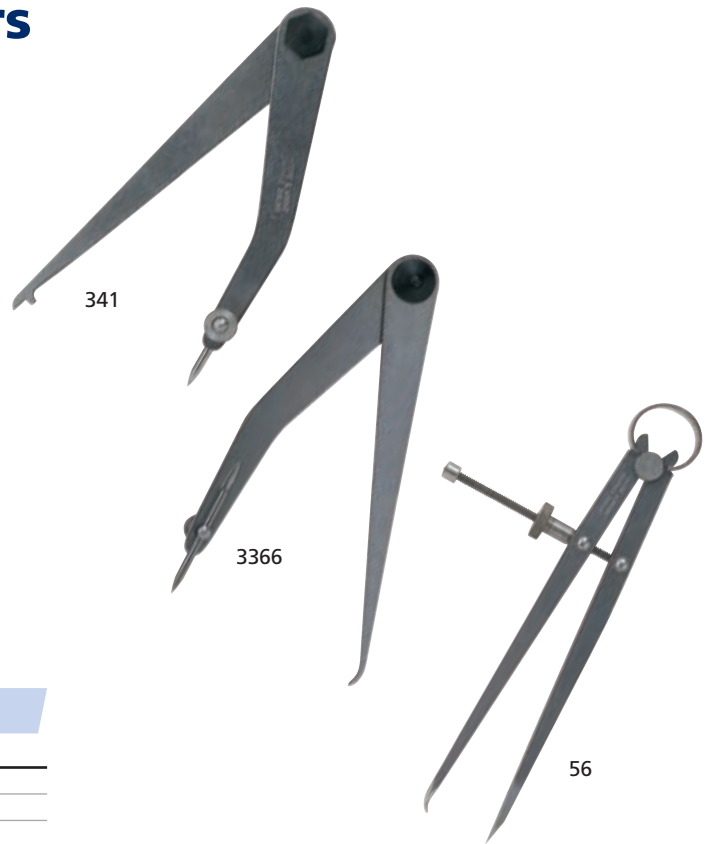
### Firm Joint Adjustable Point:

- Manufactured from polished tool steel
- A large headed nut and screw assembly provides a firm and rigid friction joint, with no play
- The sizes listed are the effective leg length which is measured from the joint assembly
- Leg which holds the round adjustable hardened point is offset
- Model 341 has a locating spur on the straight leg

Note: Firm joint caliper capacities are generally 1/3 greater than the effective leg length.

### Spring Joint:

- Manufactured from polished tool steel
- The marking leg is hardened to over 550Hv at the point
- Bow spring ensures uniform tension over working range
- Centrally mounted adjustment screw offers finer setting than firm joint type



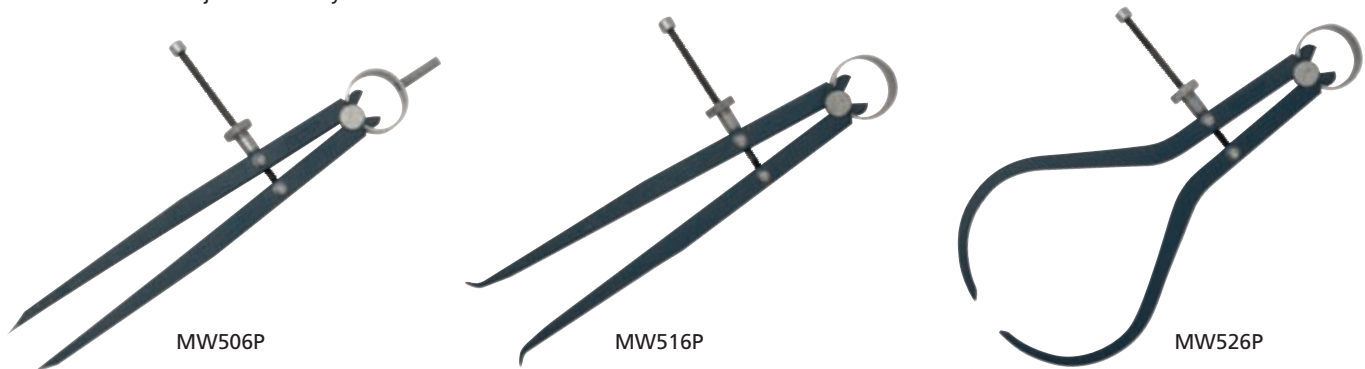
### METRIC / IMPERIAL (HERMAPHRODITE) CALIPERS

| Code No | Size       | Pack Quantity | Description  |
|---------|------------|---------------|--------------|
| 341     | 125mm / 5" | 5             | Firm Joint   |
| 3366    | 150mm / 6" | 5             | Firm Joint   |
| 56      | 150mm / 6" | 5             | Spring Joint |

## Moore & Wright Powder Coated Calipers & Dividers

### Features

- Powder coated steel for extra durability
- Sizes listed are the effective leg length which is measured from the joint assembly



### POWDER COATED CALIPERS & DIVIDERS

| Code No | Description | Code No | Description     | Code No | Description      | Size        |
|---------|-------------|---------|-----------------|---------|------------------|-------------|
| MW504P  | Dividers    | MW514P  | Inside Calipers | MW524P  | Outside Calipers | 100mm / 4"  |
| MW506P  | Dividers    | MW516P  | Inside Calipers | MW526P  | Outside Calipers | 150mm / 6"  |
| MW5012P | Dividers    | MW5112P | Inside Calipers | MW5212P | Outside Calipers | 300mm / 12" |

## Moore & Wright Traditional Inside & Outside Calipers

### Outside & Inside Calipers, Firm Joint:

- Standard: BS3123
- Manufactured from polished tool steel
- A large headed nut & screw assembly provides a firm & rigid friction joint, with no play
- The sizes listed are the effective leg length which is measured from the joint assembly

Note: Firm joint caliper capacities are generally 1/3 greater than the effective leg length.

### Outside Calipers, Spring Joint:

- Standard: BS3123
- Bow spring ensures uniform tension over working range
- Centrally mounted adjustment screw offers finer setting, than firm joint type

### Inside Calipers, Spring Joint:

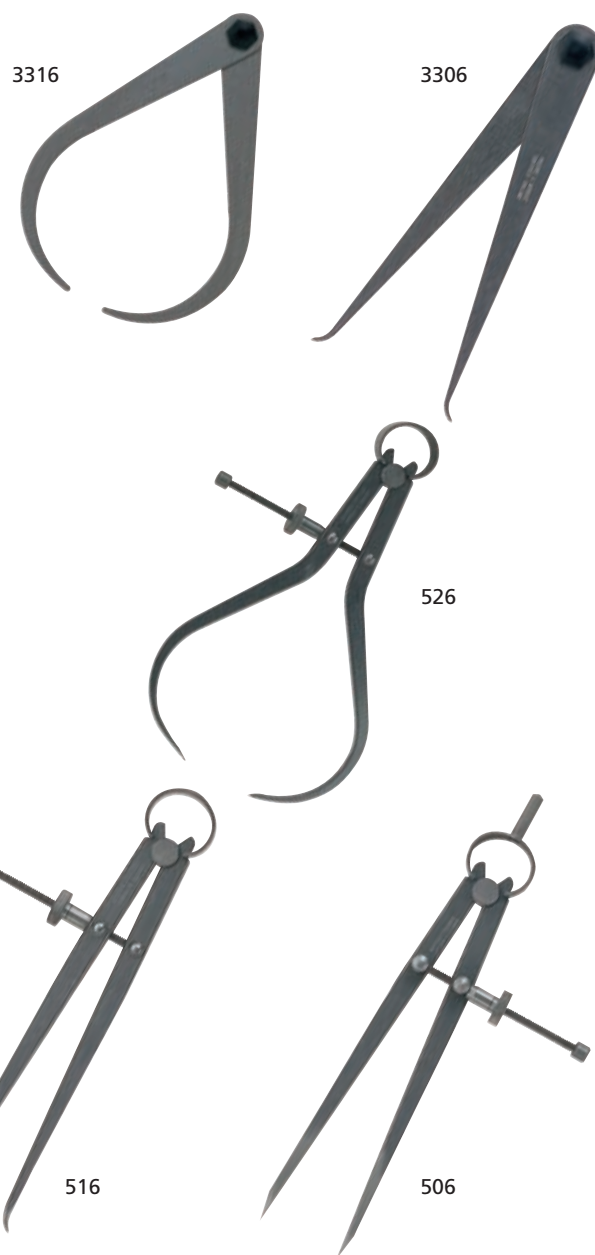
- Standard: BS3123
- Bow spring ensures uniform tension over working range
- Centrally mounted adjustment screw
- Manufactured from polished tool steel

Note: Firm joint caliper capacities are generally 1/3 greater than the effective leg length.

### Spring Dividers:

- Standard: BS3123
- Manufactured from polished tool steel
- Points are hardened to over 550Hv
- Bow spring ensures uniform tension over working range
- Centrally mounted adjustment screw

Note: The nominal size is the distance between the centre of the roller and the working ends of the legs.



#### INSIDE CALIPERS FIRM JOINT

| Code No | Size        | Pack Quantity |
|---------|-------------|---------------|
| 3306    | 150mm / 6"  | 5             |
| 3308    | 200mm / 8"  | 1             |
| 33012   | 300mm / 12" | 1             |

#### OUTSIDE CALIPERS FIRM JOINT

| Code No | Size        | Pack Quantity |
|---------|-------------|---------------|
| 3316    | 150mm / 6"  | 5             |
| 3318    | 200mm / 8"  | 1             |
| 33112   | 300mm / 12" | 1             |
| 33118   | 450mm / 18" | 1             |
| 33124   | 600mm / 24" | 1             |

#### DIVIDERS & INSIDE / OUTSIDE CALIPERS SPRING JOINT

| Code No | Description | Code No | Description | Code No | Description | Size        | Pack Quantity |
|---------|-------------|---------|-------------|---------|-------------|-------------|---------------|
| 503     | Dividers    | 513     | Inside      | 523     | Outside     | 75mm / 3"   | 5             |
| 504     | Dividers    | 514     | Inside      | 524     | Outside     | 100mm / 4"  | 5             |
| 506     | Dividers    | 516     | Inside      | 526     | Outside     | 150mm / 6"  | 5             |
| 508     | Dividers    | 518     | Inside      | 528     | Outside     | 200mm / 8"  | 1             |
| 5010    | Dividers    | 5110    | Inside      | 5210    | Outside     | 250mm / 10" | 1             |
| 5012    | Dividers    | 5112    | Inside      | 5212    | Outside     | 300mm / 12" | 1             |

## Moore & Wright Angle Meter 946 Series

### Features

- Made of tool steel
- Satin chromed laser engraved scale
- Robust and durable design



### METRIC ANGLE METER READINGS

| Code No  | Length (mm) | Diameter of Scale (mm) |
|----------|-------------|------------------------|
| MW946-01 | 120         | 80                     |
| MW946-02 | 150         | 120                    |
| MW946-03 | 200         | 150                    |
| MW946-04 | 300         | 200                    |

## Moore & Wright Traditional Depth Gauge

### Depth Gauge:

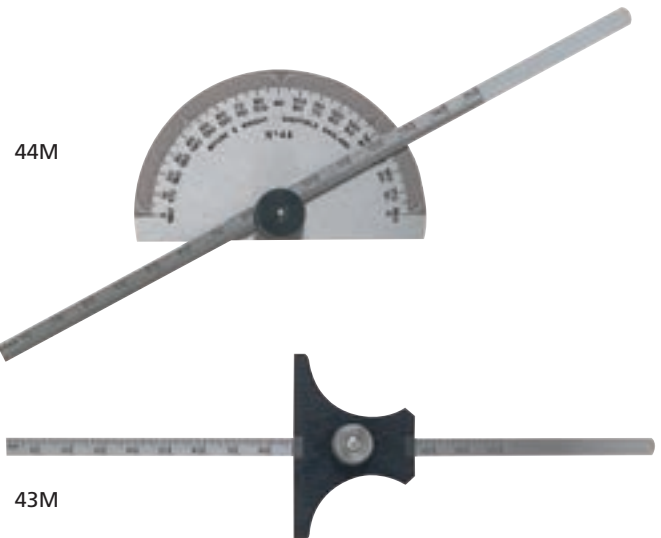
- Available with either reversible base or protractor
- Full range rule adjustment
- Readings can be fixed by means of a locknut
- Rules graduated on both sides
- Metric scales front face graduations 0.5mm, 1.0mm
- Metric scales rear face graduations 1.0mm
- Metric / Imperial scales front face graduations 1/32nd
- Metric / Imperial scales rear face graduations 1.0mm
- Length of blade 195mm / 7.68"

### Reversible Base Type:

- Accurately ground top and bottom faces allow base to be reversed, for use in confined spaces

### Protractor Type:

- Protractor plate is graduated 0° - 180° - 0° degrees
- Scale resolution 1/2 degree



### METRIC DEPTH GAUGE 0-150MM

| Code No | Description     | Width (mm) | Thickness | Size of Base             |
|---------|-----------------|------------|-----------|--------------------------|
| 43M     | Reversible Base | 5.5        | 1.0mm     | 18mm, 56mm, 0.71", 2.21" |
| 44M     | Protractor      | 5.5        | 1.0mm     | 79mm                     |

### METRIC / IMPERIAL DEPTH GAUGE 0-150MM / 0-6"

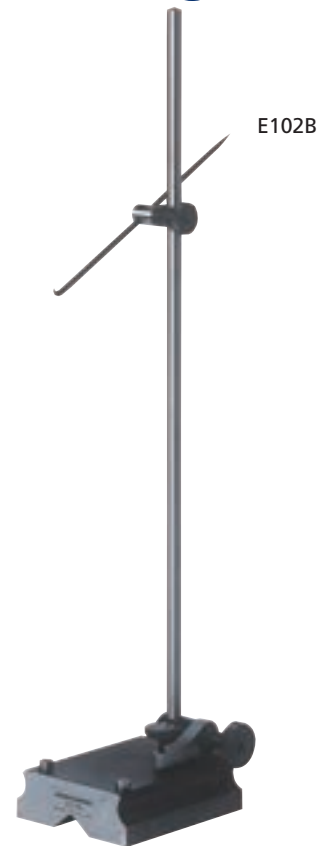
| Code No | Description     | Width (mm) | Width (inch) | Thickness     | Size of Base             |
|---------|-----------------|------------|--------------|---------------|--------------------------|
| 43      | Reversible Base | 5.5        | 0.22         | 1.0mm / 0.04" | 18mm, 56mm, 0.71", 2.21" |
| 44      | Protractor      | 5.5        | 0.22         | 1.0mm / 0.04" | 79mm / 3.11"             |

## Moore & Wright Traditional Surface Gauges

### Universal type:

- Designed for precise marking out operations
- Hardened and tempered steel base, ground on one end and bottom face
- Vee groove for locating on cylindrical workpieces
- Two retractable locating pins
- Radial grooves in the side facilitate comfortable handling
- One handed fine adjustment
- Supplied with two interchangeable pillars and one 4mm diameter scriber

Note: Surface gauges can be used for mounting dial test indicators with either a 4mm or 6.35mm (1/4") mounting spigot.



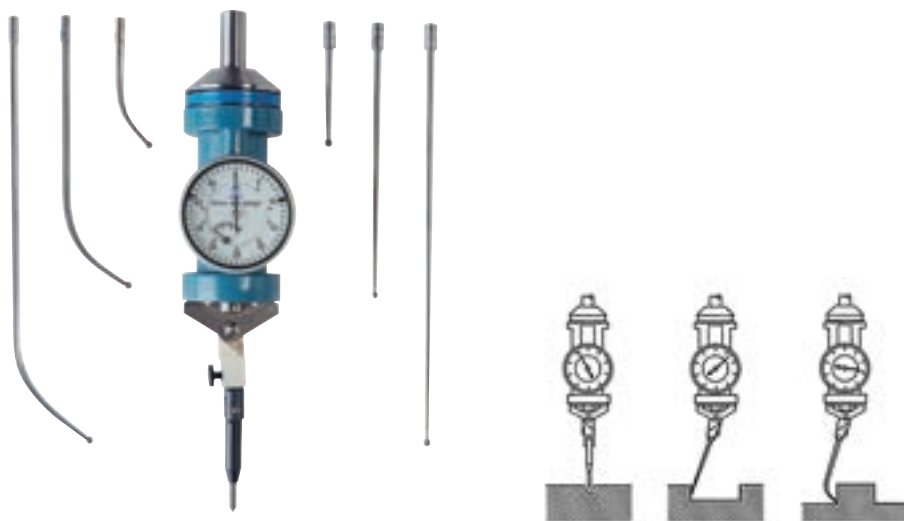
### METRIC / IMPERIAL SURFACE GAUGES

| Code No | Description | Size of Base               | Height (mm) | Height (inch) |
|---------|-------------|----------------------------|-------------|---------------|
| E101B   | Universal   | 80 x 65mm, 3 1/8 x 2 1/2"  | 225 & 300   | 9 & 12        |
| E102B   | Universal   | 105 x 85mm, 4 1/8 x 3 3/8" | 300 & 450   | 12 & 18       |

## Moore & Wright Universal Centre Finder with Indicator

### Features

- Standard: Factory Standard
- Universal equipment for finding the centre of a bore or to measure the concentricity of work pieces
- Indicator always faces operator, also when spindle runs
- With double indicator for maximum accuracy
- For vertical and horizontal use
- Includes 6 touch points for internal and external measurement



### UNIVERSAL CENTRE FINDER

| Code No  | Description   | Range - Internal (mm) | Range - External (mm) | Concentricity | Accuracy (mm) | Indicator Range (mm) |
|----------|---------------|-----------------------|-----------------------|---------------|---------------|----------------------|
| MW612-01 | Centre finder | 3.5-300               | 0-300                 | 0.005mm       | 0.01          | 0-3                  |

## Moore & Wright Universal Bevel Protractor 500 Series

### Features

- Made of high quality hardened and ground stainless steel
- High precision satin chromed scale
- Minimum reading 5 minutes
- Magnifying glass for easy reading
- With fine adjustment and acute angle attachment
- 300mm / 12" and 150mm / 6" rule
- Packed as set in plastic box



### UNIVERSAL BEVEL PROTRACTOR SET

| Code No  | Range |
|----------|-------|
| MW500-01 | 360°  |

## Moore & Wright Indicator Bevel Protractor

### Features

- Features high quality indicator
- Made of high quality hardened and ground stainless steel
- High precision satin chromed scale
- Minimum reading 5 minutes
- With fine adjustment and acute angle attachment
- 300mm / 12" rule and 150mm / 6" rule
- Packed as set in plastic box



### INDICATOR BEVEL PROTRACTOR

| Code No  | Range |
|----------|-------|
| MW510-01 | 360°  |

## Moore & Wright Digital Angle Rule

### Features

- Large LCD display
- Easy-to-use and strong lock device
- Inside and outside angle measuring
- Digital functions: Hold function, on/off, zero-setting
- Reversible reading
- Stainless steel rule blades with mm scale



### DIGITAL ANGLE RULE

| Code No  | Range (mm) | Resolution |
|----------|------------|------------|
| MW506-01 | 200        | 0.05°      |
| MW506-02 | 300        | 0.05°      |

## Sylvac Digital Protractor

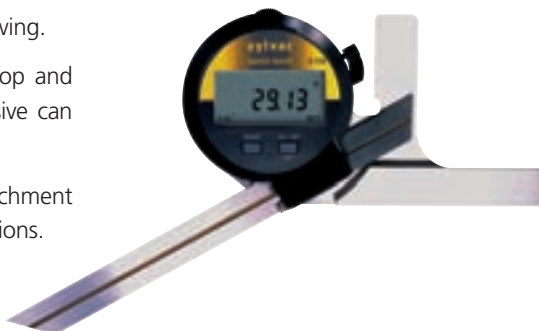
The Sylvac Digital Protractor gives the operator access to a multitude of useful functions within an easy to use format. The instrument's easy to read display, digital output and range of useful accessories mean that it can undertake most angular measuring tasks with great ease.



Large 8.5mm LCD digits for ease of viewing.

Zero setting is made against a fixed stop and internal angles from 40° to 160° inclusive can be measured.

Accessories include an acute angle attachment and a support stand for vertical applications.



### Read-out

- 1 minute of arc or 0.01 degrees of arc
- For accurate settings the instrument is fitted with a micro-fine adjustment

### Accuracy

- 4 minutes of arc

### Range

- With the aid of a push button the range can be selected according to the application. i.e 1 x 360°, 2 x 180° or 4 x 90°. Changing from reading of arc minutes to decimal indication by pressing a button. Example: Angle reading 35°30' changes to 35.50°

### SYLVAC PROTRACTOR

| Code No     | Description                                |
|-------------|--|
| 30-820-1700 | Sylvac Digital Protractor with 200mm blade |
| 30-820-2420 | Replacement Blade 200mm                    |
| 30-820-2430 | Additional Blade 300mm                     |
| 30-820-2450 | Additional Blade 500mm                     |
| 30-820-2460 | Support stand for protractor               |
| 30-820-2461 | Acute Angle Attachment                     |

## Moore & Wright Digital Protractor



### Features

- 360° measuring range (4 x 90°)
- Manufactured from stainless steel
- Displays in deg/min/sec and decimal
- Resolution 30'
- Fine adjustment
- Battery CR2032
- Supplied with 150mm, 200mm and 300mm blades
- Supplied with acute angle attachment
- Accuracy +/- 5'

### DIGITAL PROTRACTOR

| Code No   | Range |
|-----------|-------|
| MW500-01D | 360°  |

## Digital Protractor



### Features

- Large LCD display
- Strong magnets on all blade edges
- Easy-to-use and strong lock device
- Hold function
- Reversible reading

### DIGITAL PROTRACTOR

| Code No  | Accuracy ° | Range | Size        | Resolution |
|----------|------------|-------|-------------|------------|
| MW505-01 | ±0.2°      | 360°  | 100mm / 4"  | 0.05°      |
| MW505-02 | ±0.2°      | 360°  | 200mm / 8"  | 0.05°      |
| MW505-03 | ±0.2°      | 360°  | 300mm / 12" | 0.05°      |





## Moore & Wright Workshop Combination Set 521 Series

### Features

- Three measuring heads are attached to the stainless steel ruler, allowing versatile measurements on various types of work pieces
- Square head, protractor head and centre head
- For various measuring and marking applications
- Hardened and ground slide ways
- Stainless steel rule with engraved graduations; one side metric, one side imperial



### WORKSHOP COMBINATION SET

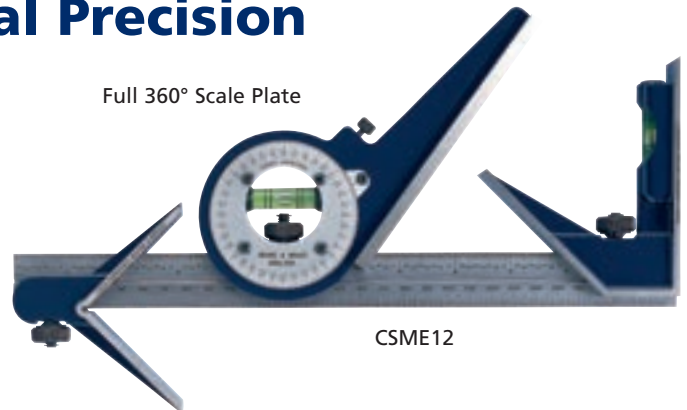
| Code No  | Range | Description    |
|----------|-------|----------------|
| MW521-01 | 180°  | 4 items in set |

## Moore & Wright Traditional Precision Combination Set CSM300

### Features

- Fully hardened and tempered precision rules with deeply etched graduations on both sides for ease of reading and long life
- Fully hardened and ground datum faces to resist wear
- Centrally mounted protractor vial allows unrestricted viewing
- Protractor has full 360° scale plate, graduated 0 - 180° - 0
- Satin chrome scale plate on protractor
- Unique rule clamp allows positive location and clamping
- Square head offers the following fixed angles: 15°, 30°, 45°, 60°, 75° & 90°
- Centre head offers a fixed 90° angle, for finding the centre of round bar stock up to 120mm diameter
- Clipped corner on rule to maximise capability

Full 360° Scale Plate



CSME12

### METRIC PRECISION COMBINATION SETS & RULES

| Code No | Application Range         | Description  |
|---------|---------------------------|--|
| CSM300  | Precision Combination Set | Full set including 300mm rule (graduated both sides), Protractor head, Square head and Centre head |
| CSRM300 | Rule, 300mm               | mm and 0.5mm on both sides; numbered every 10mm  |
| CSRM600 | Rule, 600mm               | mm and 0.5mm on both sides; numbered every 10mm  |

### METRIC / IMPERIAL PRECISION COMBINATION SETS & RULES

| Code No | Application Range         | Description   |
|---------|---------------------------|---|
| CSME12  | Precision Combination Set | Full set inc. 300mm / 12" rule, Protractor head, Square head & Centre head                                      |
| CSRME12 | Rule, 300mm / 12"         | Metric graduations: in 0.5mm, numbered every 10mm.<br>Imperial graduations: 32nds and 64ths numbered every 1/8" |
| CSRME24 | Rule, 600mm / 24"         | Metric graduations: in 0.5mm, numbered every 10mm.<br>Imperial graduations: 32nds and 64ths numbered every 1/8" |

CSRME12

### REPLACEMENT COMPONENTS (TO SUIT CSM300 & CSME12)

| Code No  | Description                  |
|----------|------------------------------|
| CSPRO    | Protractor head              |
| CSSH     | Square head                  |
| CSCH     | Centre head                  |
| RPCSCS-S | Replacement rule clamp screw |



RPCSCS-S

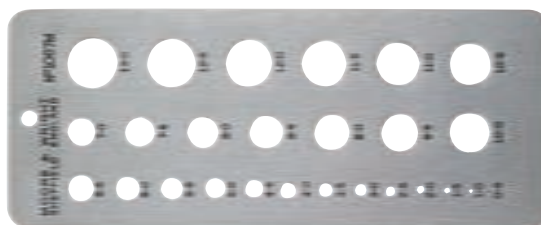
## Moore & Wright Traditional Drill & Standard Wire Gauges

### Drill Gauges:

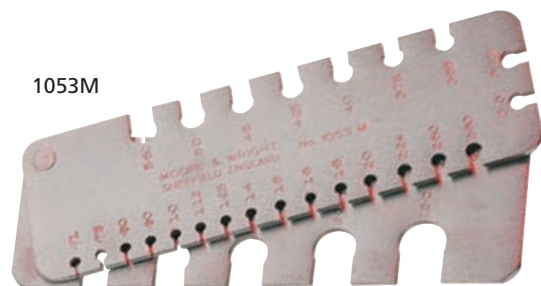
- Made from high grade tool steel, with a brushed finish
- Marked with nominal size of each hole

### Standard Wire Gauges:

- Two part space saving design, with corner pivot
- Marked with nominal size of each slot
- Made from high grade tool steel, with a brushed finish
- 1067M & 1053M available in Retail Packs



1067M



1053M

### METRIC STANDARD WIRE GAUGES

| Code No | No. of Slots | Range of Slot Size |
|---------|--------------|--------------------|
| 1053M   | 40           | 0.2-10.0mm         |

### IMPERIAL STANDARD WIRE GAUGES

| Code No | No. of Slots | Range of Slot Size |
|---------|--------------|--------------------|
| 1052    | 36           | 1-36 SWG           |

### METRIC DRILL GAUGES

| Code No | No. of Holes | Range of Hole Size | Graduation (mm) |
|---------|--------------|--------------------|-----------------|
| 1067M   | 26           | 0.5-13.0mm         | 0.5             |
| 1066M   | 96           | 0.5-10.0mm         | 0.1             |

## Moore & Wright Feeler Strip Sets

### Features

- Standard: DIN 2275
- 20 piece feeler strip in wallet
- Hardened, tempered and polished steel strip
- Nominal thickness is marked on each strip
- Imperial Set: Length 6", Range 1-25 Thou
- Metric Set: Length 150mm, Range 0.03 to 1.00mm



FS20M

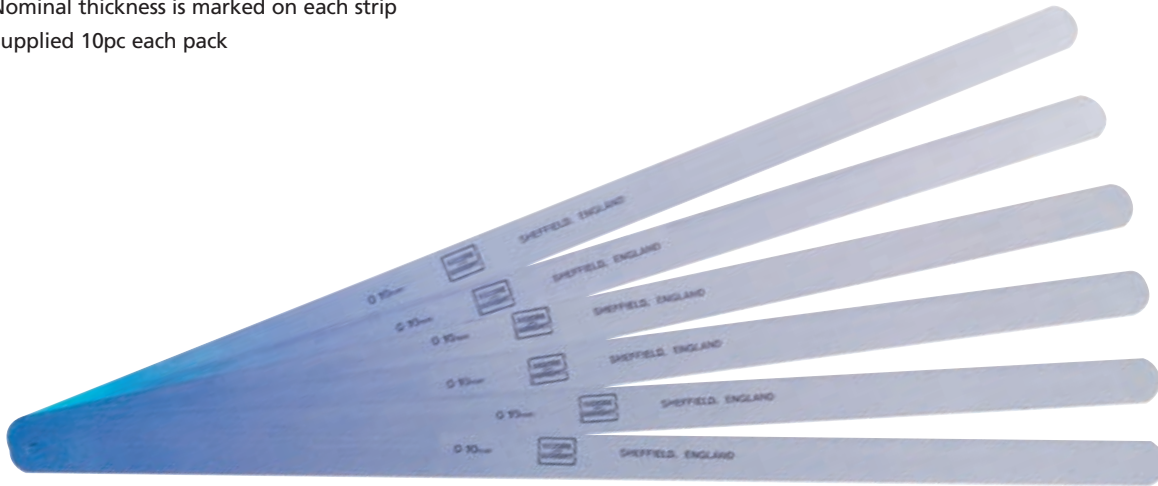
### FEELER STRIP SETS

| Code No | Range                              |
|---------|------------------------------------|
| FS20M   | Metric 20 Piece Feeler Strip Set   |
| FS20E   | Imperial 20 Piece Feeler Strip Set |

## Moore & Wright Feeler Strip 126M Series

### Features

- Standard: DIN 2275
- Hardened, tempered and polished steel strip
- Nominal thickness is marked on each strip
- Supplied 10pc each pack



126M003

### METRIC 0.03-0.60MM

| Code No | Thickness<br>x 0.01mm | Length (mm) | Width (mm) |
|---------|-----------------------|-------------|------------|
| 126M003 | 3                     | 300         | 12.7       |
| 126M004 | 4                     | 300         | 12.7       |
| 126M005 | 5                     | 300         | 12.7       |
| 126M006 | 6                     | 300         | 12.7       |
| 126M007 | 7                     | 300         | 12.7       |
| 126M008 | 8                     | 300         | 12.7       |
| 126M009 | 9                     | 300         | 12.7       |
| 126M010 | 10                    | 300         | 12.7       |
| 126M015 | 15                    | 300         | 12.7       |
| 126M020 | 20                    | 300         | 12.7       |
| 126M025 | 25                    | 300         | 12.7       |
| 126M030 | 30                    | 300         | 12.7       |
| 126M035 | 35                    | 300         | 12.7       |
| 126M040 | 40                    | 300         | 12.7       |
| 126M045 | 45                    | 300         | 12.7       |
| 126M050 | 50                    | 300         | 12.7       |
| 126M055 | 55                    | 300         | 12.7       |
| 126M060 | 60                    | 300         | 12.7       |

### IMPERIAL 0.001-0.025"

| Code No  | Thickness<br>x 0.001" | Length (inch) | Width (inch) |
|----------|-----------------------|---------------|--------------|
| 1260001  | 1                     | 12            | 0.5          |
| 12600015 | 1.5                   | 12            | 0.5          |
| 1260002  | 2                     | 12            | 0.5          |
| 12600025 | 2.5                   | 12            | 0.5          |
| 1260003  | 3                     | 12            | 0.5          |
| 1260004  | 4                     | 12            | 0.5          |
| 1260005  | 5                     | 12            | 0.5          |
| 1260006  | 6                     | 12            | 0.5          |
| 1260007  | 7                     | 12            | 0.5          |
| 1260008  | 8                     | 12            | 0.5          |
| 1260009  | 9                     | 12            | 0.5          |
| 1260010  | 10                    | 12            | 0.5          |
| 1260011  | 11                    | 12            | 0.5          |
| 1260012  | 12                    | 12            | 0.5          |
| 1260013  | 13                    | 12            | 0.5          |
| 1260014  | 14                    | 12            | 0.5          |
| 1260015  | 15                    | 12            | 0.5          |
| 1260016  | 16                    | 12            | 0.5          |
| 1260017  | 17                    | 12            | 0.5          |
| 1260018  | 18                    | 12            | 0.5          |
| 1260019  | 19                    | 12            | 0.5          |
| 1260020  | 20                    | 12            | 0.5          |
| 1260021  | 21                    | 12            | 0.5          |
| 1260022  | 22                    | 12            | 0.5          |
| 1260023  | 23                    | 12            | 0.5          |
| 1260024  | 24                    | 12            | 0.5          |
| 1260025  | 25                    | 12            | 0.5          |

## Moore & Wright Traditional Feeler Gauge Set - Precision Range

### Precision Range:

- Standard: DIN 2275
- All blades are hardened, tempered and polished
- Nominal thickness marked on each blade
- Replacement blades available
- 3" / 75mm & 4" / 100mm available in Retail Pack



389M



387M

### IMPERIAL PRECISION RANGE

| Code No | Length (inch) | No. of Blades | Thickness x 0.001"   | Width (inch) | Locking Screw |
|---------|---------------|---------------|--|--------------|---------------|
| 1243    | 3             | 10            | 1.5, 2, 3, 4, 6, 8,  | 0.5          | No            |
| 132     | 4             | 10            | 10, 12, 15, 25   | 0.5          | No            |
| 1246    | 6             | 10            |  | 0.5          | No            |
| 12412   | 12            | 10            |  | 0.5          | No            |
| 493     | 4             | 15            | 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20, 25   | 0.5          | No            |
| 12      | 3             | 26            | 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 | 0.5          | No            |

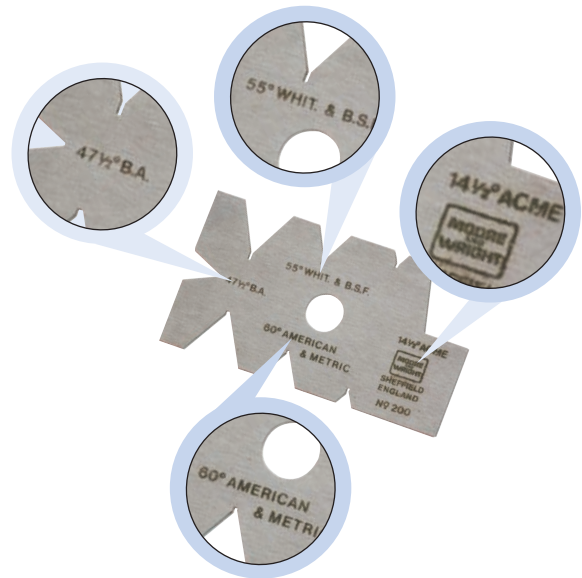
### METRIC PRECISION RANGE

| Code No | Length (mm) | No. of Blades | Thickness x 0.01mm                  | Width (mm) | Locking Screw |
|---------|-------------|---------------|-------------------------------------|------------|---------------|
| 387M    | 75          | 13            | 3, 4, 5, 6, 7, 8,                   | 12.7       | Yes           |
| 388M    | 100         | 13            | 9, 10, 15, 20, 30, 40, 50           | 12.7       | Yes           |
| 389M    | 100         | 13            | 5, 10, 15, 20,                      | 12.7       | No            |
| 394M    | 150         | 13            | 25, 30, 40, 50, 60, 70, 80, 90, 100 | 12.7       | No            |
| 393M    | 75          | 20            | 5, 10, 15, 20,                      | 12.7       | No            |
| 390M    | 100         | 20            | 25, 30, 35, 40,                     | 12.7       | No            |
| 395M    | 150         | 20            | 45, 50, 55, 60,                     | 12.7       | No            |
| 399M    | 300         | 20            | 65, 70, 75, 80, 85, 90, 95, 100     | 12.7       | Yes           |

## Moore & Wright Traditional Screw Cutting Gauges

### Features

- Suitable for most standard metric and imperial thread forms
- Accurately milled angles for precise evaluation of thread form
- Supplied in packs of 10



| SCREW CUTTING GAUGE |   |               |
|---------------------|---|---------------|
| Code No             | Description   | Pack Quantity |
| 200                 | Thread form: SI, ISO, US Std. 60°.<br>Thread form: Whitworth 55°.<br>Thread form: British Association (BA). 47.5°.<br>Thread form: ACME. 14.5°. | 10            |

## Moore & Wright Traditional Radius Gauges

### Features

- Accurately milled steel blades
- Designed to check both internal and external radii
- Marked with nominal size on each blade
- Mounted either on a ring or in a steel sleeve



206M



204M

### METRIC: Radius Gauges, 0.75-13mm

| Code No | Range (mm) | Graduation (mm) | No. of Blades | Description |
|---------|------------|-----------------|---------------|-------------|
| 204M    | 0.75-5     | 0.25            | 18            | Ring        |
| 206M    | 0.75-5     | 0.25            | 18            | Sleeve      |
| 204MA   | 5.5-13     | 0.5             | 16            | Ring        |
| 206MA   | 5.5-13     | 0.5             | 16            | Sleeve      |

### IMPERIAL: Radius Gauges, 1/32-33/64"

| Code No | Range (inch) | Graduation (inch) | No. of Blades | Description |
|---------|--------------|-------------------|---------------|-------------|
| 204     | 1/32 - 17/64 | 1/64              | 16            | Ring        |
| 206     | 1/32 - 17/64 | 1/64              | 16            | Sleeve      |
| 204A    | 9/32 - 33/64 | 1/64              | 16            | Ring        |
| 206A    | 9/32 - 33/64 | 1/64              | 16            | Sleeve      |

## Moore & Wright Traditional Screw Pitch Gauges MW800 Series

### Features

- Accurately milled steel blades
- Designed to check both internal and external thread forms
- Marked with nominal size on each blade
- All blades fixed in a steel sleeve
- Screw cutting gauge included

Note: SI (System International) metric blades should not be used to check ISO (International Standards Organisation) metric threads due to interference of the thread forms; but ISO metric blades can be used to check SI metric threads.



801



804

### COMBINED METRIC & IMPERIAL: Screw Pitch Gauges

| Code No | Description             | No. of Blades | Threads per mm   | Note   |
|---------|-------------------------|---------------|--|--|
| 804     | S.I. Metric & Whitworth | 49            | Metric: 0.4, 0.5, 0.7, 0.75, 0.8, 0.9, 1.0, 1.25, 1.50, 1.75, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0<br>Imperial: 4, 4.5, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 40, 48, 60 | Screw Cutting Gauge included 60 degrees and 55 degrees |

### METRIC: Screw Pitch Gauges

| Code No | Description | No. of Blades | Threads per mm   | Note                                    |
|---------|-------------|---------------|--|---|
| 801     | S.I. Metric | 30            | 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 1.0, 1.1, 1.2, 1.25, 1.3, 1.4, 1.5, 1.6, 1.7, 1.75, 1.8, 1.9, 2.0, 2.5, 3.0 | Screw Cutting Gauge included 60 degrees |
| 809     | ISO Metric  | 22            | 0.35, 0.4, 0.45, 0.5, 0.6, 0.7, 0.75, 0.8, 1.0, 1.25, 1.5, 1.75, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0   | Screw Cutting Gauge included 60 degrees |

### IMPERIAL: Screw Pitch Gauges

| Code No | Description       | No. of Blades | Threads per inch   | Note                                    |
|---------|-------------------|---------------|--|---|
| 799     | American National | 30            | 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 11.5, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 | n/a                                     |
| 800     | Whitworth         | 28            | 4, 4.5, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 40, 48, 60                | Screw Cutting Gauge included 55 degrees |
| 806     | Unified           | 30            | 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 11.5, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 | n/a                                     |



## Retail Packed Products



### RETAIL PACKED RANGE

| Code No | Description  |
|---------|--|
| 1243R   | Feeler Gauge Set - Imperial, 3" x 10 blades, 1.5-25    |
| 12R     | Feeler Gauge Set - Imperial, 3" x 26 blades, 1.5-25    |
| 132R    | Feeler Gauge Set - Imperial, 4" x 26 blades, 1.5-25    |
| 493R    | Feeler Gauge Set - Imperial, 4" x 15 blades, 1.5-25    |
| 387MR   | Feeler Gauge Set - Metric, 75mm x 13 blades, 0.03-0.5  |
| 388MR   | Feeler Gauge Set - Metric, 100mm x 13 blades, 0.03-0.5 |
| 389MR   | Feeler Gauge Set - Metric, 100mm x 13 blades, 0.05-1.0 |
| 390MR   | Feeler Gauge Set - Metric, 100mm x 20 blades, 0.05-1.0 |
| 393MR   | Feeler Gauge Set - Metric, 75mm x 20 blades, 0.05-1.0  |
| 200R    | Screw Cutting Gauge                                    |
| 3306R   | Caliper - 6" / 150mm Inside Firm Joint                 |
| 3316R   | Caliper - 6" / 150mm Outside Firm Joint                |
| 3366R   | Jenny Caliper - 6" / 150mm Firm Joint                  |
| 341R    | Jenny Caliper - 5" / 125mm Firm Joint                  |
| 56R     | Jenny Caliper - 6" / 150mm Spring Joint                |
| 503R    | Dividers - 3" / 75mm Spring Joint                      |
| 504R    | Dividers - 4" / 100mm Spring Joint                     |
| 506R    | Dividers - 6" / 150mm Spring Joint                     |
| 513R    | Calipers - 3" / 75mm Inside Spring Joint               |
| 514R    | Calipers - 4" / 100mm Inside Spring Joint              |

| Code No  | Description                                   |
|----------|---|
| 516R     | Calipers - 6" / 150mm Inside Spring Joint     |
| 523R     | Calipers - 3" / 75mm Outside Spring Joint     |
| 524R     | Calipers - 4" / 100mm Outside Spring Joint    |
| 526R     | Calipers - 6" / 150mm Outside Spring Joint    |
| ELT001XR | Mini Level                                    |
| 4003R    | Engineer's Square - 3" / 75mm Grade B         |
| 4004R    | Engineer's Square - 4" / 100mm Grade B        |
| 1965R    | Micrometer - External Imperial 0-1"           |
| 1965MR   | Micrometer - External Metric 0-25mm           |
| 1053MR   | Wire Gauge - Metric, 40 slots 0.2-10.0mm      |
| 1067MR   | Drill Gauge - Metric, 26 holes 0.5-13.0mm     |
| 43MR     | Depth Gauge - Reversible Base                 |
| 44MR     | Depth Gauge - Protractor                      |
| SCT001XR | Scriber - Carbide Tipped                      |
| 801R     | Screw Pitch Gauge - SI Metric                 |
| 804R     | Screw Pitch Gauge - SI Metric & Whitworth     |
| 806R     | Screw Pitch Gauge - Unified                   |
| 809R     | Screw Pitch Gauge - ISO Metric                |
| 204MR    | Radius Gauge - Metric, on ring, 0.75-5mm      |
| 204R     | Radius Gauge - Imperial, on ring, 1/32-17/64" |

## Wireless Data Output Options

Allowing the wireless transmission of measurement values from gauge to PC, the IBRit-rf1 Radio Module is the latest development in interface technologies.

Communicating with up to 120 gauges, and with a maximum transmission distance of up to 200m, the wireless data transfer module connects via a port to your PC. The PC transmits address numbers to each gauge radio module where they are stored. The transmission of a measurement value is triggered simply by pressing the data key on the gauge module or on the gauge itself. An audible tone and visible light confirms a successful data transmission. Special data coding between the PC and the gauge radio module guarantees absolute data security.

### Special versions of radio modules

Gauge radio modules with external antenna The Standard IBRit - rf1 radio modules are delivered with an integrated antenna. For max. transmission power, all radio modules can be delivered with an external antenna.

Gauge radio modules with terminal strips The IBRit - rf1 radio modules can be delivered optional with terminal strips for the connection of external switches for data transmission.



### Features

- User-friendly
- Full data security
- Low cost
- Compact size
- Long transmitter battery life
- Long transmission distance
- CE & FCC approval
- Audible/visual transmission confirmation
- Individually programmable
- Connects to all types of gauges
- Up to 120 transmitters per receiver
- Allows integration into SPC software

### IBRit - rf1 - usb

The radio module IBRit - rf1 - usb serves as PC station for the wireless data transmission of measured values. The module is connected to an USB Port. The program IBR\_SimKey is a simple PC software for the IBRit - rf1 series with following functions:

1. Programming of the gauge radio modules.
2. Displaying of received values for testing.
3. Data transfer to all Windows programs.

Code No: 25-604-001



### IBRit - rf1 - mit1

Radio module for gauges with Mitutoyo Digimatic interface.

*Plugable in calipers and dial gauges.*

Code No: 25-604-011



### IBRit - rf1 - digi

Radio module for gauges with Mitutoyo Digimatic interface. *Use with Mitutoyo cables.*

Code No: 25-604-007



### IBRit - rf1 - opto

Radio module for gauges with Opto RS-232 interface.

Code No: 25-604-014



### Opto / 232

Adapter to connect IBRit - rf1 - opto radio modules to 9 pin. Sub-D connectors. *Connection to Height gauges...*

Code No: 25-604-004



### IBRit - rf1 - prox

Radio module for gauges with Proximity interface.

Code No: 25-604-064



### IBRit - rf1 - S233

Radio module for gauges with Power RS-232 interface.

Code No: S233 25-604-013



### IBRit - rf1 - SDial

Radio module for gauges with Power RS-232 interface.

Code No: SDial 25-604-013A



### IBRit - rf1 - tesa

Radio module for Tesa dial gauges of series Digico 2xx... 7xx.

Code No: 25-604-014T



### IBRit - rf1 - mahr

Radio module for gauges with MarConnect interface.

Code No: 25-604-006



### IBRit - rf1 - 232

The radio module IBRit - rf1 - 232 allows the connection of stationary gauges with RS-232 output and is universally programmable.

Code No: 25-604-008





## Cables & Accessories

A complete listing of cables and output accessories to suit the Bowers Group range of instruments.

### CABLES

| Code No        | Description   | PC Connectivity | Length | Output  | Functions                     |
|----------------|---|-----------------|--------|---|-------------------------------|
| 30-926-5521    | Sylvac Opto Simplex Serial Data Cable                                 | 9 Pin Female    | 2      | All (Non IP65) Opto outputs   | Data Send Only                |
| 30-926-5521A   | Sylvac Opto Simplex with Footswitch                                   | 9 Pin Female    | 2      | All (Non IP65) Opto outputs   | Data Send Only                |
| 30-926-5520    | Sylvac Opto Simplex   | 9 Pin Female    | 15     | All (Non IP65) Opto outputs   | Data Send Only                |
| 30-926-6521    | Sylvac Opto Duplex  | 9 Pin Female    | 2      | All (Non IP65) Opto outputs   | Bi Directional Connectivity   |
| 30-926-6521A   | Sylvac Opto Duplex with Footswitch                                    | 9 Pin Female    | 2      | All (Non IP65) Opto outputs   | Bi Directional Connectivity   |
| 30-926-6535    | Sylvac Opto Duplex  | 9 Pin Female    | 15     | All (Non IP65) Opto outputs   | Bi Directional Connectivity   |
| 30-926-6621    | Sylvac Opto Duplex  | USB             | 2      | All (Non IP65) Opto outputs   | Bi Directional Connectivity   |
| 30-905-4516    | Powered Serial Data Output Cable                                      | 9 Pin Female    | 2      | All IP65 Opto Outputs   | Bi Directional Connectivity   |
| 30-905-4519    | Sylvac Powered Opto Duplex  | 9 Pin Female    | 1.5    | All IP65 Opto Outputs   | Bi Directional Connectivity   |
| 30-926-6821    | Powered Opto / USB  | USB             | 3      | All IP65 Opto Outputs   | Bi Directional Connectivity   |
| 30-925-1151    | Sylvac Power Booster  | 9 Pin Female    | 2      | for RS232 Cable   | Continuous Power Supply       |
| 30-925-1143    | Sylvac Power Booster with Footswitch (for Bi-Directional Cables Only) | 9 Pin Female    | 3      | for RS232 Cable   | Continuous Power Supply       |
| 30-926-5516    | Sylvac Power Supply (To replace battery)                              | N/A             | 3      | All (Non IP65) Opto outputs   |                               |
| 30-926-6723    | Proximity Serial Data Output Cable                                    | 9 Pin Female    | 3      | All IP67 Proximity Outputs  | Bi Directional Connectivity   |
| 30-926-6721    | Sylvac Proximity USB Cable  | USB             | 3      | All IP67 Proximity Outputs  | Bi Directional Connectivity   |
| 30-926-USB     | Serial to USB adaptor   | USB             | 1      | RS232 Cable   | Converts Serial Output to USB |
| 30-925-5608    | RS232 connecting cable  | 9 Pin Female    | 2      | D50S, D60S, D80S, D100S, D104 PC, All Z Cal Height Gauges, Diavite (Up to DH7) Trimos V & VL Series, Altia, Altia Premium, Trimos Horizon H series, Sylvac MBus, 55-2045-AEP column | Bi Directional Connectivity   |
| 30-925-5609    | Straight Connection<br>9 Pin Male - 9 Pin Female                      | 9 Pin Female    | 3      | D50S, D60S, D80S, D100S, D104 PC, All Z Cal Height Gauges, Diavite (Up to DH7) Trimos V Series, Altia, Altia Premium, Trimos Horizon H series, Sylvac MBus, 55-2045-AEP column      | Bi Directional Connectivity   |
| 30-926-8116    | Sylvac 9 Pin Female to Digimatic                                      | Digimatic       | 2      | D50S, D60S, D80S, D100S, D104 PC, All Z Cal Height Gauges, Diavite (Up to DH7) Trimos V Series, Altia, Altia Premium Height Gauges and Trimos Horizon H series                      | Bi Directional Connectivity   |
| 30-904-4101    | Foot pedal  | N/A             | 2      | D50S, D60S, D80S, D100S, D104PC, D300S, D302, D304, D70S, D400S All Z Cal, V Series and Altia Height Gauges   |                               |
| 30-904-4102    | Footswitch  | N/A             | 2      | Sylvac D70I, D70H only  |                               |
| 30-926-7020    | USB Footswitch  |                 | 2      | Software Wedge, Sylconnect, VMux  |                               |
| 20-USB         | Standard A-B USB Cable  | USB Receiver    | 2      | Trimos Mestra, Vectra, D200S, D300S, D400S  | Bi Directional Connectivity   |
| 30-926-6001    | Mini USB - USB  | USB Receiver    | 2      | Sylvac Hi-cal   |                               |
| 25-604-014     | Wireless Opto Module  | USB Receiver    | N/A    | All (Non IP65) Opto outputs   | Data Send Only                |
| 25-604-013     | Wireless Powered Opto Module  | USB Receiver    | N/A    | All IP65 Opto Outputs   | Data Send Only                |
| 25-604-064     | Wireless Proximity Module Transmitter                                 | USB Receiver    | N/A    | All IP67 Promimity Outputs  | Data Send Only                |
| MW-Y100/700USB | Data Cable-USB to suit all DABS products                              |                 |        |   |                               |

## Cables & Accessories

### CABLES CONTINUED

| Code No     | Description  | PC Connectivity | Length | Output   | Functions                   |
|-------------|--|-----------------|--------|--|-----------------------------|
| 25-604-004  | Adapter RS232 / Opto (Requires 25-604-014)   | USB Receiver    | N/A    | All Sylvac 9 Pin Connectors  | Data Send Only              |
| 25-604-008  | RS232 Transmitter Module   | USB Receiver    | N/A    | All 9 Pin Static Instrument Connectors   | Data Send Only              |
| 25-604-007  | Wireless Digimatic (Mitutoyo) Module   | USB Receiver    | N/A    | Can be connected to Standard Instrument cable  | Data Send Only              |
| 25-604-011  | Wireless Digimatic (Mitutoyo) Module   | USB Receiver    | N/A    | Can be connected directly to Calipers and Dial Gauges  | Data Send Only              |
| 25-604-006  | Wireless Mahr Module   | USB Receiver    | N/A    | All Mahr Connect Instruments   | Data Send Only              |
| 25-604-001  | USB Receiver   | USB Receiver    | N/A    | Connect to PC Only   | Data Send Only              |
| 55-PC2311   | RS232 cable (9p/M/F)   |                 |        |  |                             |
| 20-25019    | Trimos THV to PC Cable   | 9 Pin Female    | 2      | Heidenhein QC110 to PC   | Data Send Only              |
| 60-6517     | WYLER ZeroTronic Sensor to LM2000<br>WYLER Clinotronic, Clino 2000 to LM2000<br>or Adaptor Cable | N/A             | 2.5    | ZeroTronic Sensor to LM2000 or Transceiver Converter<br>Clinotronic, Clino 2000 to LM2000 or Adaptor | Bi Directional Connectivity |
| 60-6519     | WYLER ZeroTronic Sensor to LM2000<br>WYLER Clinotronic, Clino 2000 to LM2000<br>or Adaptor Cable | N/A             | 5      | ZeroTronic Sensor to LM2000 or Transceiver Converter<br>Clinotronic, Clino 2000 to LM2000 or Adaptor | Bi Directional Connectivity |
| 60-6519A    | WYLER ZeroTronic Sensor to LM2000<br>WYLER Clinotronic, Clino 2000 to LM2000<br>or Adaptor Cable | N/A             | 10     | ZeroTronic Sensor to LM2000 or Transceiver Converter<br>Clinotronic, Clino 2000 to LM2000 or Adaptor | Bi Directional Connectivity |
| 60-6172A    | WYLER Clinotronic<br>RS485 /RS232 Adaptor  | 9 Pin Female    | N/A    | Clinotronic  | Bi Directional Connectivity |
| 60-6657     | WYLER NT to Levelmeter 2000  | N/A             | 2.5    | NT Level to LM2000   |                             |
| 60-6662     | WYLER Levelmeter 2000 and CLINO 2000<br>to PC  | 9 Pin Female    | 2      | Levelmeter 2000 to PC  |                             |
| 60-6617     | WYLER Blue Level, Blue Level Basic, Blue Meter,<br>Blue Meter Basic, Blue TC, Blue Clino         | N/A             | 2.5    | Blue Meter Blue Series Universal   |                             |
| 60-232USB   | USB Adaptor WYLER  |                 |        |  |                             |
| RAN0004     | RS232 PC Connection Cable  | 9 Pin Female    | 2      | Rangemaster to PC  | Data Send Only              |
| W-TA510     | Impact HT to PC  | 9 Pin Female    | 2      | Impact Series to PC  | Data Send Only              |
| W-WRT150PC  | CVI WRT150 (CVR135) Surface Finish Tester  | 9 Pin Female    | 2      | WRT150 (CVR150) to PC  | Data Send Only              |
| W-TR-200CA  | CVI TR200 Surface Finish Tester<br>(Included with Tester)  | 9 Pin Female    | 2      | TR200 to PC  | Data Send Only              |
| 30-901-5042 | Replacement Sylvac Probe Cable   | N/A             | 1.5    | P2B [Pre 2011]and P5   |                             |
| 30-901-5002 | Replacement Sylvac Probe Cable   | N/A             | 1.5    | P10  |                             |
| 30-901-5012 | Replacement Sylvac Probe Cable   | N/A             | 1.5    | P25  |                             |
| 30-901-5022 | Replacement Sylvac Probe Cable   | N/A             | 1.5    | P50  |                             |
| 30-901-5052 | Replacement Sylvac Probe Cable   | N/A             | 1.5    | P2BL and P5L   |                             |
| 30-901-5032 | Replacement Sylvac Probe Cable   | N/A             | 1.5    | P10L   |                             |
| 30-901-9993 | Extension Cable (affects accuracy calculation)   | N/A             | 3      | All Sylvac Probes  |                             |

### SYLVAC VMUX BLUETOOTH AND DEVICE MANAGEMENT SOFTWARE

| Code No     | Description                            |
|-------------|--|
| 30-981-7100 | USB Dongle BT Smart for PC/D300S/D400S |
| 30-926-7020 | USB Footswitch                         |
| 30-926-7021 | Heavy Duty USB Footswitch              |
| 30-926-7022 | Bluetooth Footswitch                   |
| 30-981-7132 | Sylcom Standard                        |
| 30-981-7161 | Sylvac VMux Dongle (Single Licence)    |

## Main Conditions of Sale

- Minimum Order Value:** £50.00 Nett.
- Carriage:** Charged as EXTRA from our warehouse on every shipment.
- Settlement:** Payment in advance of delivery unless you have an authorised credit account. Authorised credit account holders - we reserve the right to charge interest on overdue accounts. This title in the goods does not pass to you until they have been paid for in full and if you sell on the goods before the goods have been paid for, then we have the right to the proceeds of such sale.
- Prices:** As ruling at the date of despatch. This price list cancels all previous price lists. This price list can be used as a guide only due to currency fluctuations.
- Collections:** You are welcome to collect goods from our warehouse. However in order to avoid inconvenience to yourselves, please allow us 2 hours notification to prepare your order.
- Out-of-Stock Goods:** All items out of stock will be automatically back-ordered. If you do not wish us to keep any items on back-order, please mark your order Ex-stock or cancel.
- Claims:** Non-delivery of goods must be advised IN WRITING to us within 3 days of receipt of invoice, otherwise you are liable to the cost of the goods invoiced. Shortages / damages must be advised IN WRITING to us and carriers on the day of delivery.
- Returns:** Goods ordered in error are subject to a 25% re-stocking charge if returned. We cannot accept back for credit, replacement or exchange any goods that have been defaced or engraved in any way. Any goods being returned must be returned within 30 days of date of invoice.
- Guarantee:** All instruments are manufactured to the highest standards using correspondingly high-quality materials and are therefore guaranteed against faulty materials and workmanship. Should any defect arise due to faulty materials or workmanship then we undertake to repair or replace that item free of charge. Any defect item should be returned to our warehouse, carriage paid together with a covering letter clearly stating the reason for complaint. The guarantee does not cover instrument defects arising from fair wear and tear or improper use.
- Value Added Tax:** Added to all invoices, except Export, at current rate. All prices shown in this list are exclusive of V.A.T.
- Specification:** As improvement is a continuing process, we reserve the right to change specification without prior notification E. & O.E.

Full list of Terms & Conditions of sale available on request.

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