

**baty**

VISION SYSTEMS



Partners in Precision

Baty International has been in business since 1932. Originally, a manufacturer of high precision dial indicators and other associated instruments such as cylinder bore gauges.

Baty soon diversified into non-contact measurement with Optical Profile Projectors and the Baty 'ShadoMaster' series has since become an industry standard in profile projectors.

The optical product range was then expanded in the 1980's when our first camera based Video Inspectors were developed. Video Edge detection (VED), CNC control and programmable lighting were soon added giving rise to increased accuracy, repeatability and measuring speed.

The original design brief was to bring together high-end software functionality with a proven mechanical design at a competitive price. With over 25 years experience as a manufacturer of vision systems and over 80 years in metrology, Baty has built up a sound knowledge of vision application requirements.

Today, our vision system product range is diverse covering a wide range of 2D and 3D applications and most with the option to combine non-contact (VED) and contact measurement in the same program, using Renishaw's extensive touch probe range.

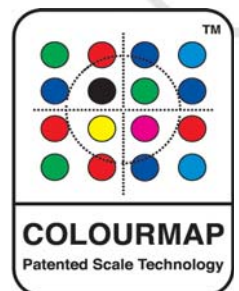
For decades Baty has employed a team of Field based Service Engineers. Today, our service department is the largest ISO 9001:2008 accredited optical instruments Service organisation in the UK offering on-site Service, Training, Retrofits and Repairs for all makes of Profile Projectors and Vision Systems.

So, with design, manufacturing, sales, service and support all under one roof, it is little wonder that Baty's range of Vision Systems and Projectors are the most competitively priced packages on the market.

Please contact us on [sales@baty.co.uk](mailto:sales@baty.co.uk) to discuss your application.

We look forward to talking to you.

This range is still manufactured in Sussex – UK in accordance with ISO 9001:2008.



## Contents

|   |           |
|---|-----------|
| <b>Vu-Master – 2D Manual / 2D CNC</b>           | <b>4</b>  |
| <b>2D Fusion Touch software</b>                 | <b>5</b>  |
| <b>Venture Touch – 3D Manual with Autofocus</b> | <b>6</b>  |
| <b>3D Fusion Touch software</b>                 | <b>7</b>  |
| <b>Venture – CNC Multi-sensor</b>               | <b>8</b>  |
| <b>Fusion 3D CNC software</b>                   | <b>10</b> |
| <b>Venture Options</b>                          | <b>12</b> |
| <b>FlexMaster fixtures</b>                      | <b>13</b> |
| <b>ShadoMaster</b>                              | <b>14</b> |
| <b>Venture Plus</b>                             | <b>16</b> |
| <b>Vision Systems - Technical specification</b> | <b>18</b> |
| <b>Service and Support</b>                      | <b>19</b> |

## VuMaster is a manual 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 to be exact!

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 by CNC control. Inspection routines can be recorded and stored. When played back in manual mode, these ‘programs’ guide the operator through a pre-defined inspection procedure recreating the same lighting conditions and using ‘Video Edge Detection’ to automatically ‘capture’ feature data. For CNC models this process happens automatically.

Finally, a report is generated in the form of a fully dimensioned drawing of the measured part.

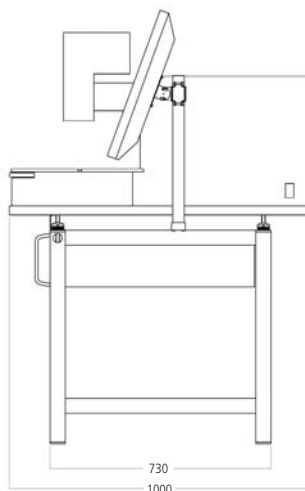
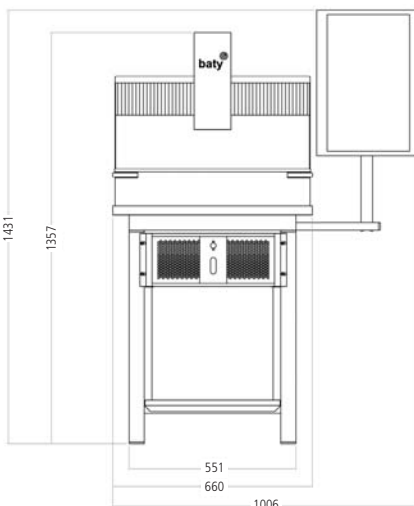
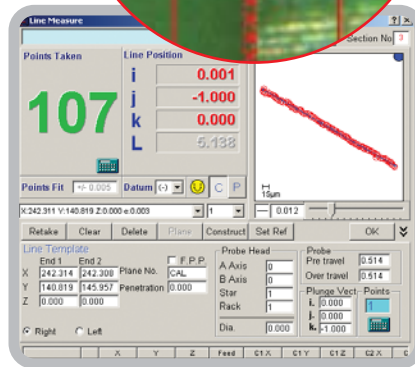
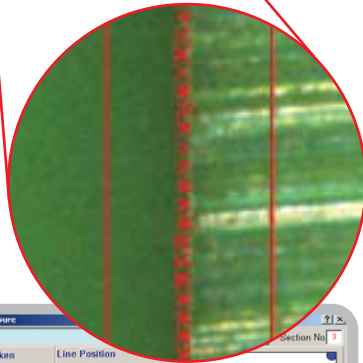
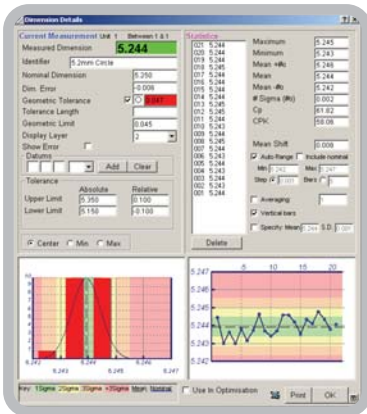
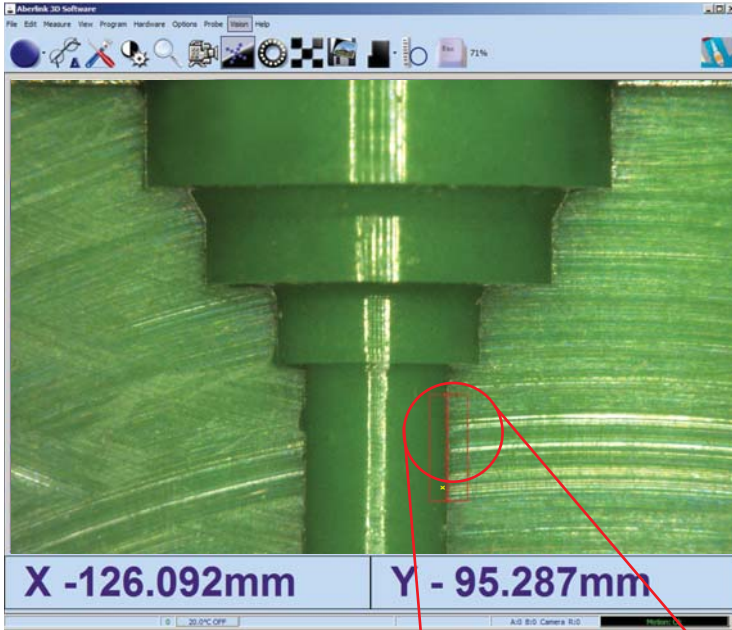


### Standard features

- Large 400mm x 300mm measuring range
- Sturdy construction with a granite base
- Supplied with Fusion Touch 2D vision 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 touch screen monitor
- Programmable segmented LED surface ring light
- Motorised autofocus
- Image grab
- Auto inspection playback
- CNC and Manual models available







Baty's PC based Fusion Touch software is powerful and easy to use. The touch screen user interface minimises keyboard use and the need for multiple toolbars. The result is an intuitive touch screen software package that enables the user to produce a fully dimensioned drawing of the measured part in minutes!

Other standard reports include tabulated results and multiple part reports all of which can be exported to Excel®.

### 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.

### Profile Scanning

The curve tool automatically traces the profile of an undefined part. The resulting data-point cloud can then be compared to a pre-toleranced DXF master for best fit analysis. Once 'fitted' the data points appear red or green to indicate whether in tolerance. In addition to best fit, conventional dimensions can also be applied to the scan.

### 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. SPC data can also be exported to Excel™ for further analysis.

### 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.

**The highly successful Venture range includes both manual and full CNC systems that cover two standard measuring ranges:**

The VI-2510 has a 250mm x 125mm x 165mm X, Y, Z measuring capacity and the VI-3030 has 300mm x 300mm x 165mm.

Whether manual or CNC, we believe the newly revised Venture range includes more functionality as standard than any other vision system package on the market.

### **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.

Other standard features include zoom optics, collimated profile lighting, TTL (coaxial surface lighting) and a 64 LED fully programmable segmented surface lighting system.

Suitable for the shop floor, the rugged design features a steel/granite stand with fully integrated PC controller running Baty's all new 3 axis touch screen software – Fusion Touch. The full HD touch screen is mounted on an adjustable arm and the software is arranged in a portrait layout for ease of use. All measured features appear in the part view where they can be selected for dimensioning resulting in a dimensioned part view that can 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.

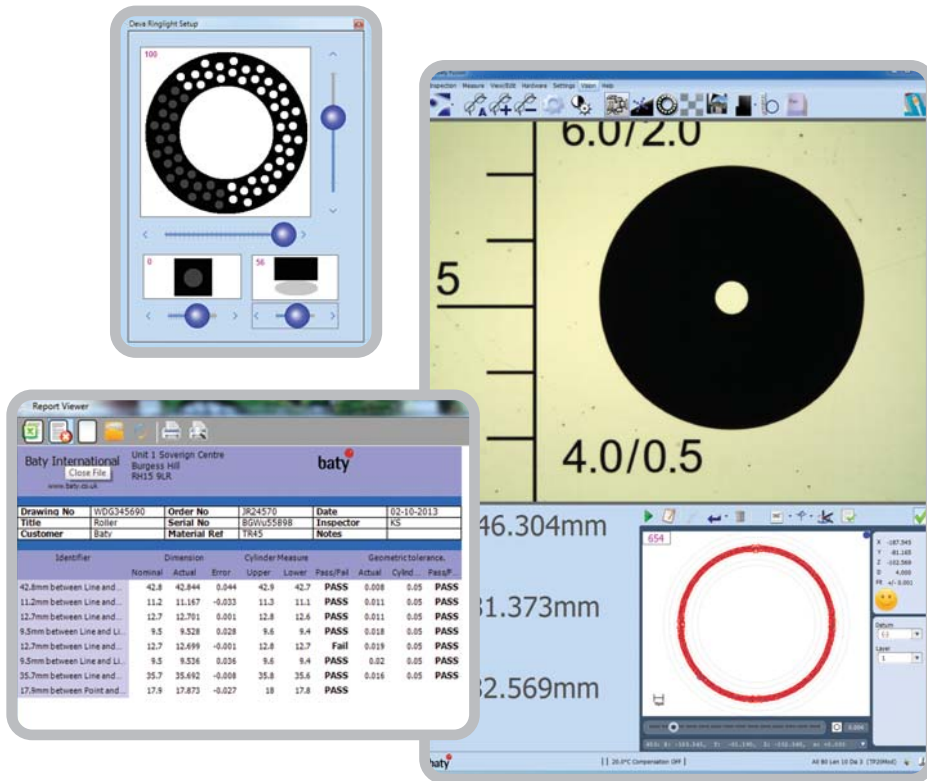
### **Lighting**

The programmable LED lighting is also controlled using the touch screen. Segmented surface illumination, through the lens and profile lighting conditions can be adjusted to ensure that the feature edge is perfectly illuminated. All measured features appear in the part view where they can be selected for dimensioning resulting in a dimensioned part view that can 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.



### **Standard Venture Touch system features include:**

- High resolution 0.5µm scales for increased accuracy
- 6.5:1 Zoom optics (with optional CNC control)
- Programmable segmented LED lighting system
- Z axis dovetail slide mount for increased Z axis capacity
- High precision cross-roller stage
- Ultra-smooth plain rod drives
- Auto video edge detection tools
- Auto programming
- Motorised autofocus
- Full HD touch screen display



## Standard Fusion Touch System features include:

- 22" HD touch screen monitor
- Motorised autofocus for accurate Z axis measurements
- Steel machine stand with granite top
- 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



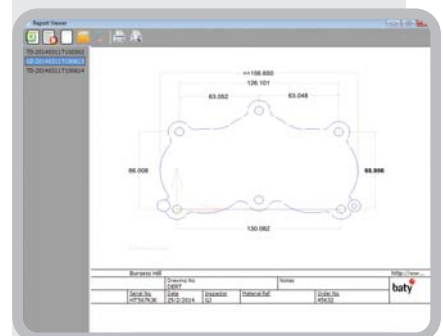
## Venture Touch

This model features Baty's powerful Fusion Touch software which 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.

As with all Ventures, a high precision zoom lens is featured as standard. This manual 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.

## Easy Reporting

In addition to a graphical representation of the measured part, 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.





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 changes are all recorded into the program.

### Large Measurement Volume

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 styli 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.

### Standard CNC System Features Include:

- Teach and repeat programming
- Programmable segmented LED lighting
- High resolution 0.5µm scales for increased accuracy
- CAD import / export
- Scanning & best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- 165mm Z axis measuring range on adjustable dovetail slide
- 250mm x 120mm and 300mm x 300mm XY stages available
- Auto program from CAD

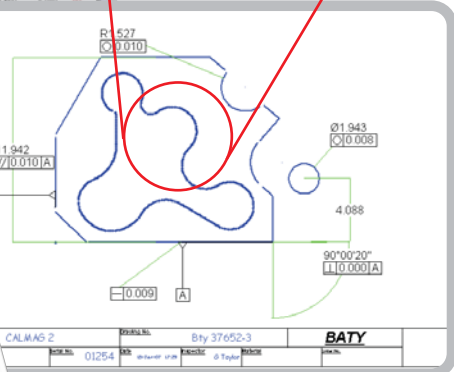
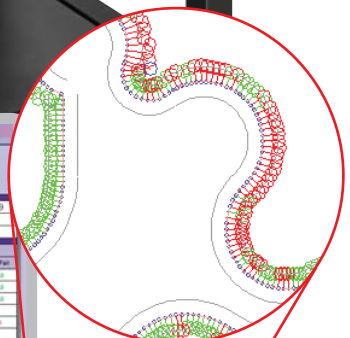


Print Preview

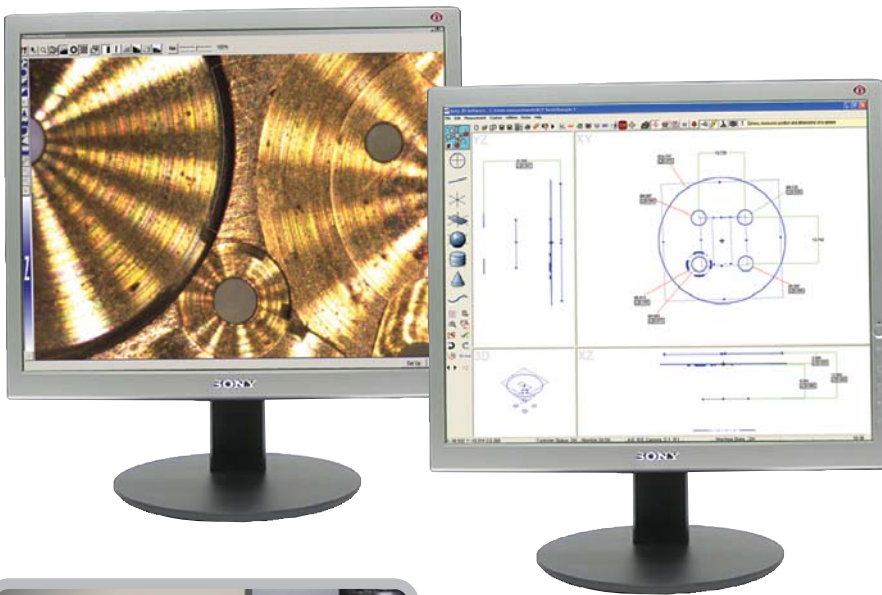
Baty International

| Order No.                    | Serial No. | Date                | Inspector | Notes       |
|------------------------------|------------|---------------------|-----------|-------------|
| 012-7463                     | 250003     | 14-sep-03 08:19     | J. Brown  | trial batch |
| Title: bearing plate         |            | Material: M16 steel |           |             |
| Customer: Becton Engineering |            | Material: M16 steel |           |             |

| Identifier                     | Dimension | Unit   | Lower  | Upper   | Lower  | Upper  | Pass/Fail | Lower | Upper | Pass/Fail | Lower | Upper | Pass/Fail |
|--------------------------------|-----------|--------|--------|---------|--------|--------|-----------|-------|-------|-----------|-------|-------|-----------|
| 85mm Section Line and Line     | 85.000    | 84.947 | -0.053 | 85.000  | 84.900 | 84.950 | FAIL      | 8.000 | 8.200 | FAIL      |       |       |           |
| 90mm Section Line and Line     | 90.000    | 89.147 | -0.853 | 90.000  | 89.000 | 89.100 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 100mm Section Line and Line    | 100.000   | 99.998 | -0.002 | 100.000 | 99.990 | 99.995 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 11.5mm Section Point and Point | 11.500    | 11.295 | -0.205 | 11.500  | 11.300 | 11.300 | FAIL      |       |       |           |       |       |           |
| 15.5mm Section Line and Line   | 15.500    | 15.370 | -0.130 | 15.500  | 15.200 | 15.200 | FAIL      | 0.400 | 0.200 | FAIL      |       |       |           |
| 16.5mm Section Line and Line   | 16.500    | 16.497 | -0.003 | 16.500  | 16.490 | 16.495 | FAIL      | 0.000 | 0.200 | FAIL      |       |       |           |
| 17.5mm Section Line and Line   | 17.500    | 17.447 | -0.053 | 17.500  | 17.400 | 17.450 | FAIL      | 0.000 | 0.200 | FAIL      |       |       |           |
| 18.5mm Section Line and Line   | 18.500    | 18.247 | -0.253 | 18.500  | 18.000 | 18.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 19.5mm Section Line and Line   | 19.500    | 19.147 | -0.353 | 19.500  | 19.000 | 19.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 20.5mm Section Line and Line   | 20.500    | 20.247 | -0.253 | 20.500  | 20.000 | 20.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 21.5mm Section Line and Line   | 21.500    | 21.247 | -0.253 | 21.500  | 21.000 | 21.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 22.5mm Section Line and Line   | 22.500    | 22.247 | -0.253 | 22.500  | 22.000 | 22.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 23.5mm Section Line and Line   | 23.500    | 23.247 | -0.253 | 23.500  | 23.000 | 23.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 24.5mm Section Line and Line   | 24.500    | 24.247 | -0.253 | 24.500  | 24.000 | 24.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |
| 25.5mm Section Line and Line   | 25.500    | 25.247 | -0.253 | 25.500  | 25.000 | 25.000 | FAIL      | 0.040 | 0.200 | FAIL      |       |       |           |







### Touch Probe

The popular Renishaw Touch probe option can be combined with a probe module storage rack for automatic probe changes.



Graphical reports show the measured part as a dimensioned drawing with 'in tolerance' dims shown in green and 'out of tolerance' dims shown in red for an instant pass / fail classification. Geometric call outs can also be shown as well as datum features and true position.

Supplementary tabulated reports show nominals as well as tolerance values with a 'PASS' or 'FAIL' SPC information can either be reported or exported to excel. Distribution and control charts are also produced.

### Programmable Segmented Light

Lighting is critical to ensure that the correct edge is measured. Baty's new programmable LED lighting head allows the user to define any segment pattern to be switched on. This means that oblique lighting conditions can be achieved to illuminate more difficult edges.

Segments can then be rotated and intensity varied to suit the radial position of the edge. Once set, the lighting condition for each measured feature is now automatically programmed and will be reproduced by the software each time a new part is measured. Through the lens (TTL) lighting is included for applications like blind bore measurement. 64 white LED's are used to ensure Venture's high quality colour image is achieved.

Only now can this functionality be combined with traditional touch probe technology to offer the ultimate in large format multi-sensing Vision systems – Venture Plus.

### Advanced error mapping.

Once the X-Z and Y-Z alignment and calibration is completed, every Venture goes through an error mapping process using a calibrated master grid as a reference. Any errors in X, Y, Xdy, Ydx and X-Y squareness are compensated and verified. The grid is then re-positioned in the Z axis and the process repeated to eliminate Xdz and Ydz errors.



The Venture range of products are designed and built at Baty's Burgess Hill factory in the south of England. The latest 3D modelling techniques were used to optimise the new base / column design to ensure stability.



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.

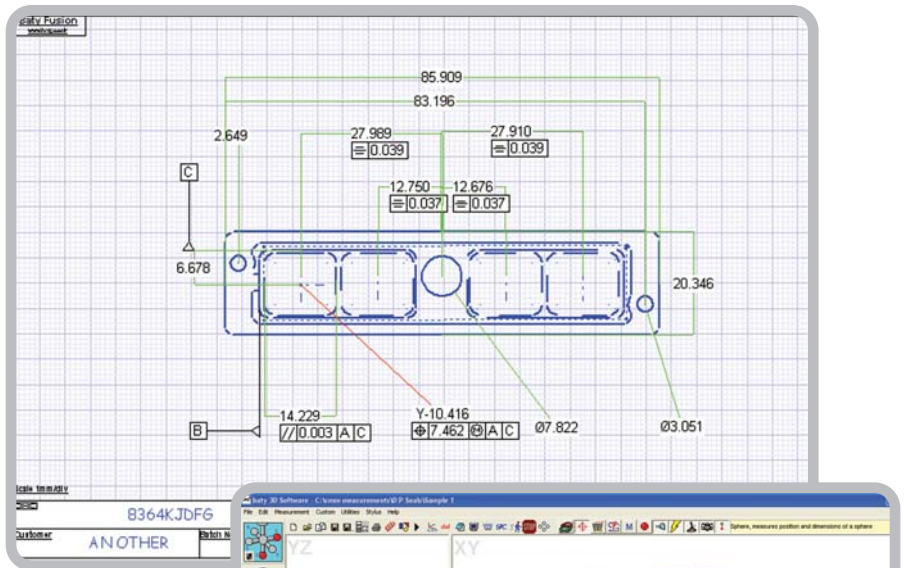
Geometric tolerances can also be displayed using the standard drawing practice. The final dimensioned part view can then be printed as an engineering drawing with a traditional drawing frame containing company details, customer and part details, date and inspection name.

### 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, CPK value, mean shift and also plots two different charts of the batch data.

### Easy Reporting

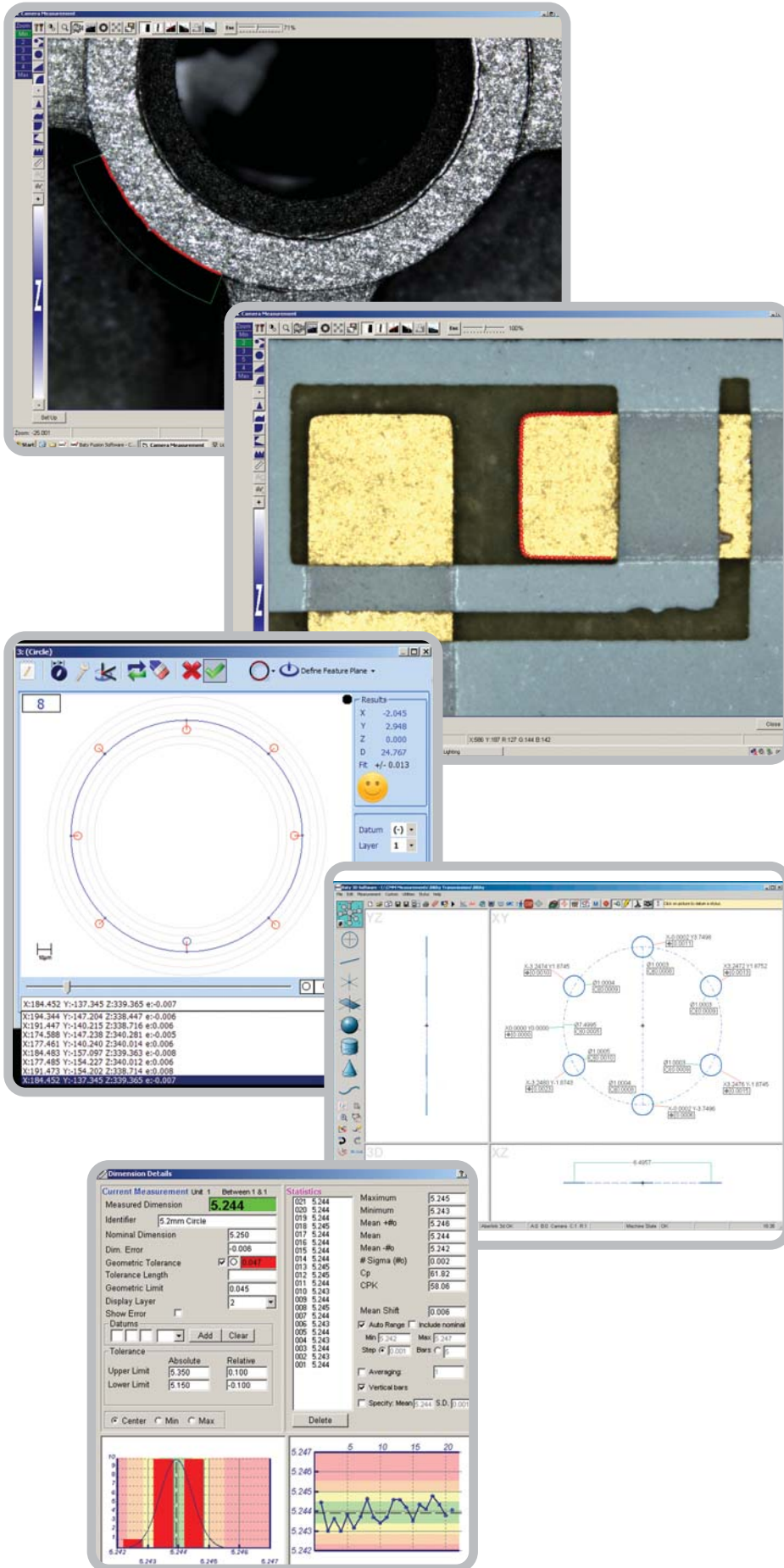
In addition to the graphical representation above, detailed reports can be instantly created showing the feature name, nominal dimension, actual, error, upper and lower limits and a green pass or red fail label for each measured dimension in tabulated format. Geometric tolerance details can also be displayed 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.                   | 52774-4       | Order No.  |            | Date      | 26-Oct-04 18:50 |           |        |        |           |
|-------------------------------|---------------|------------|------------|-----------|-----------------|-----------|--------|--------|-----------|
| Title                         | Element Blade | Serial No. |            | Inspector | DAW             |           |        |        |           |
| Customer                      | Bobby         | Material   |            | Notes     |                 |           |        |        |           |
| Identifier                    | Nominal       | Actual     | Dim. Error | Upper     | Lower           | Pass/Fail | Actual | Limit  | Pass/Fail |
| 7.3°Circle                    | 07.5000       | 07.4995    | -0.0005    | 07.5005   | 07.4995         | FAIL      | 0.0005 | 0.0005 | FAIL      |
| 195.5mm Circle True Position  | 0.0000        | 0.0000     | 0.0000     |           |                 |           | 0.0000 | 0.0005 | FAIL      |
| K pos'n                       | 0.0000        | 0.0000     | 0.0000     |           |                 |           |        |        |           |
| V pos'n                       | 0.0000        | 0.0000     | 0.0000     |           |                 |           |        |        |           |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0004    | 0.0004     | 05.0005   | 05.0000         | FAIL      | 0.0004 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| 1°Circle                      | 05.0000       | 05.0003    | 0.0003     | 05.0005   | 05.0000         | FAIL      | 0.0003 | 0.0020 | FAIL      |
| ES. Axis Circle True Position | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| K pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| V pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| ES. Axis Circle True Position | 0.0000        | -0.0002    | -0.0002    |           |                 |           | 0.0003 | 0.0005 | FAIL      |
| K pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| V pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| ES. Axis Circle True Position | 0.0000        | -0.0002    | -0.0002    |           |                 |           | 0.0003 | 0.0005 | FAIL      |
| K pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| V pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| ES. Axis Circle True Position | 0.0000        | -0.0002    | -0.0002    |           |                 |           | 0.0003 | 0.0005 | FAIL      |
| K pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |
| V pos'n                       | 0.0000        | -0.0002    | -0.0002    |           |                 |           |        |        |           |





## 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.

## Profile Scanning

The curve tool automatically traces the profile of an undefined part. The resulting data-point cloud can then be compared to a pre-toleranced DXF master for best fit analysis.

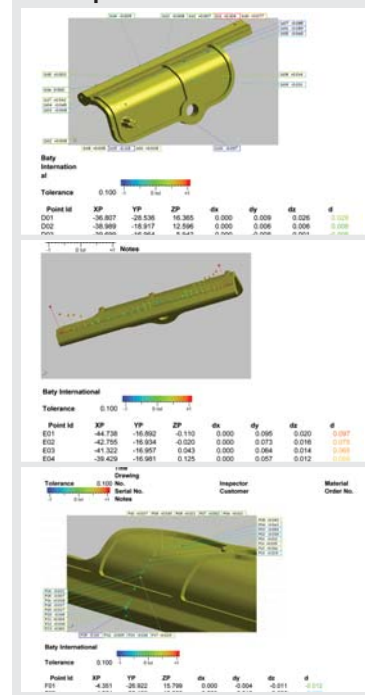
## Touch Probe Compatible

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.

## 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.

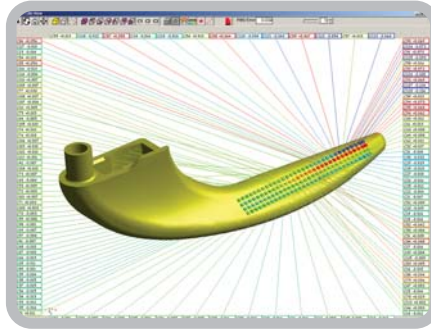
## CAD Option





### 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.



### Rotary Axis

A rotary indexing device is used to rotate the part and bring the required features into the camera view.



Rotations are automatically recorded into the inspection program.



6 jaw keyless chuck to suit O/D range of 2-44mm can be mounted horizontally (as shown) or vertically.



A CNC rotary axis is used to rotate the part to a pre-determined angle for the next set of measurements to be taken.

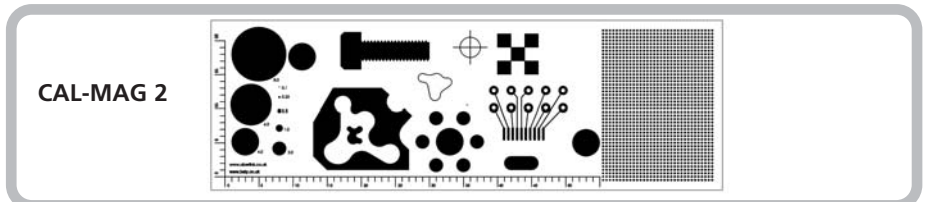


### SA-196

Cast vee blocks and extended centres for the 2510 Venture model

### UFB3030

Universal fixture base provides fixture mounting slots compatible with all projector accessories.

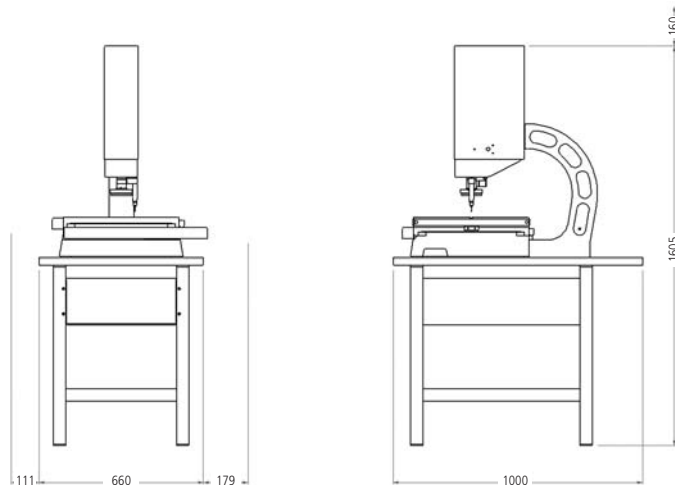


### Venture Stand

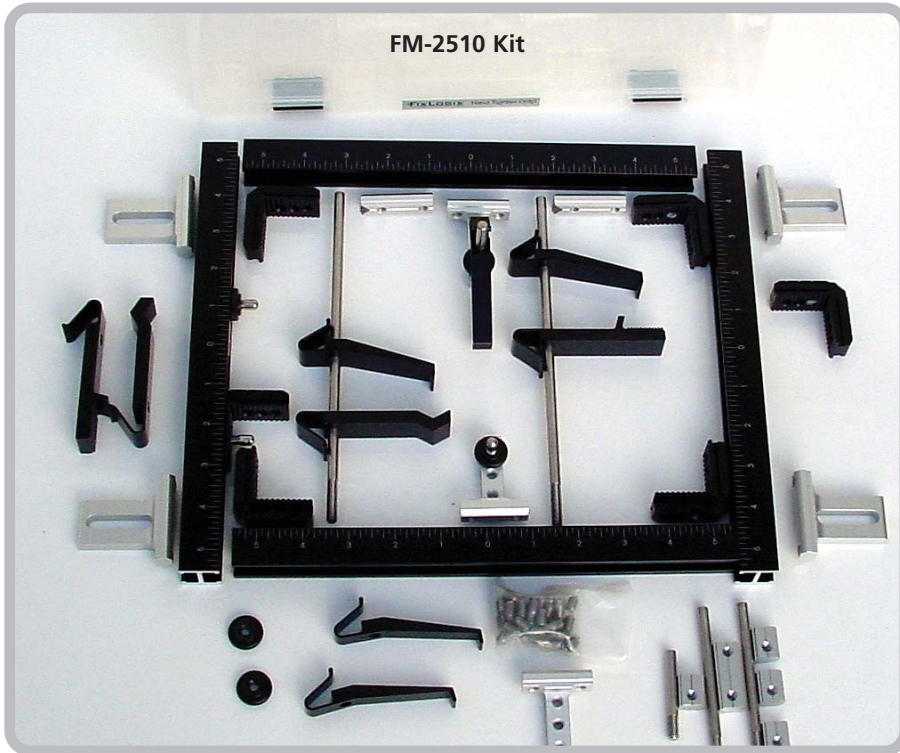
Rigid steel stand with granite top and integral PC / controller shelf for Venture 2510 and 3030 models

### Glass Reference Standard

Calibration standard with nominal diameters for field of view measurement verification and pixel calibration.







**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.

**Standard kits include the following:**

**Components**

Fixture frame assembly, including 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 slide-frame, 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



**The ShadoMaster is a horizontal camera based video inspection system that is particularly aimed at turned part measurement.**

The cast iron stage has tooling slots aligned with the optical path to facilitate the mounting of work holding fixtures such as vee-blocks and centres.

A selection video edge scanning tools are used to scan the profile of the shaft and Baty's Fusion software converts this scanned data into a dimensioned drawing of the measured part.

Interchangeable fixed objective lenses are used to determine the field of view and pixel size which can be sub-micron for close tolerance requirements.

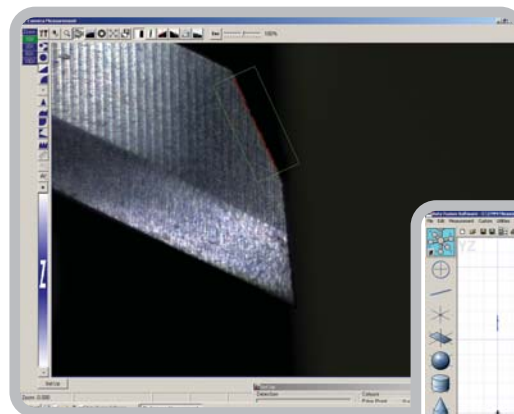
The VI-3015H can measure shafts up to 300mm in length with a maximum diameter of 150mm providing the overall weight does not exceed 15kg.

The PC based controller runs on a Windows 7 operating system and is completely integrated within the chassis so the installation is both quick and easy with no trailing cables. The system is also supplied with LED surface illumination which is ideal for illuminating the various facets of form cutting tools for example. The LED lighting consists of 16 high intensity white LEDs which can be switched on in clusters to form a segment which can be radially positioned by using the mouse.

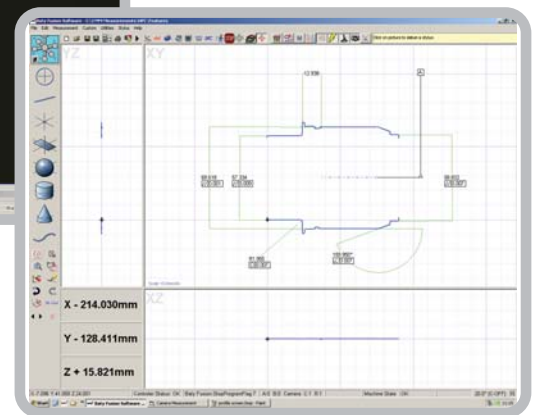
This means that the light can be positioned exactly where it needs to be in order for the edge detection tools to measure the edges that you are interested in. Once programmed, the lighting conditions are reproduced by the software for every inspection to ensure optimum repeatability.



**ShadoMaster  
VI-3015**

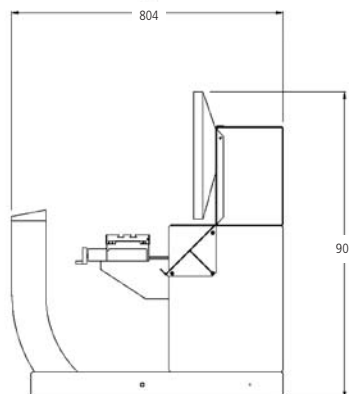
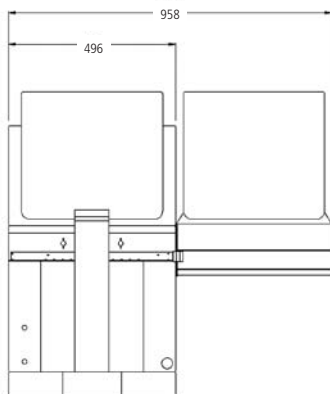
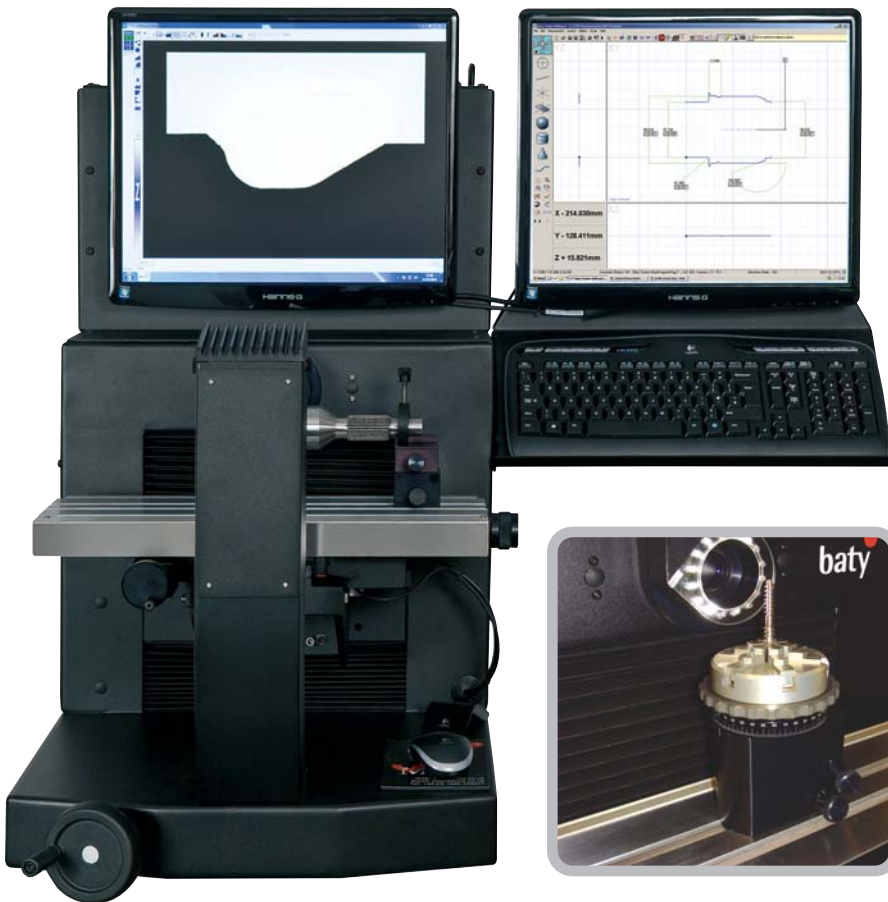


Programmable LED illumination allows surface features to be measured using video edge detection



**Standard system features include:**

- Collimated profile light ideal for shaft measurement
- Choice of 5 fixed objective lenses from 20x - 200x
- 300mm x 150mm measuring range.
- Programmable LED surface illumination with Autofocus for pocket depth measurement
- Integral Windows 7 controller
- Helix light adjustment for screw thread measurement
- Auto program from CAD



**The ShadoMaster 3015 has a solid cast iron stage 300 x 150 x 60 X,Y,Z measuring range. Dovetail slots provide mounting for work holding accessories which are naturally aligned with the optical path.**

A choice of 5 interchangeable fixed objective lenses provide a magnification range from 20x to 200x and digital zooming allows further enhancement to over 800x.

- PC based 3 axis Fusion software with full 3D geometric functionality
- Enhanced video edge detection tools with autofocus, auto program from dxf
- CNC profile scanning and best fit analysis, SPC
- Part view can be printed as dimensioned drawing
- Programmable segmented LED surface lighting provides a detailed colour surface image and a collimated profile light ensures a crisp profile image
- PC controller is integral and 2 x 19" LCD monitors are chassis mounted with keyboard shelf for ease of use
- Automatic shaft profile scan

**Profile Scanning**

The curve tool automatically traces the profile of an undefined part. The resulting data-point cloud can then be compared to a pre-toleranced DXF master for best fit analysis. Once 'fitted' the data points appear red or green to indicate whether in tolerance. In addition to best fit, conventional dimensions can also be applied to the scan.

**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. SPC data can also be exported to Excel™ for further analysis.





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 with 640mm x 600mm x 250mm measuring range

VP6490 with 640mm x 900mm x 250mm measuring range

VP101040 with 1000mm x 1000mm x 400mm measuring range

VP100150 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 errors. Ambient temperature can be compensated for within the Fusion software making Venture Plus ideal for use on the shop floor.

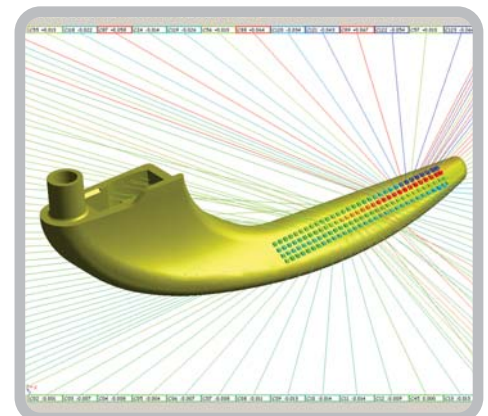
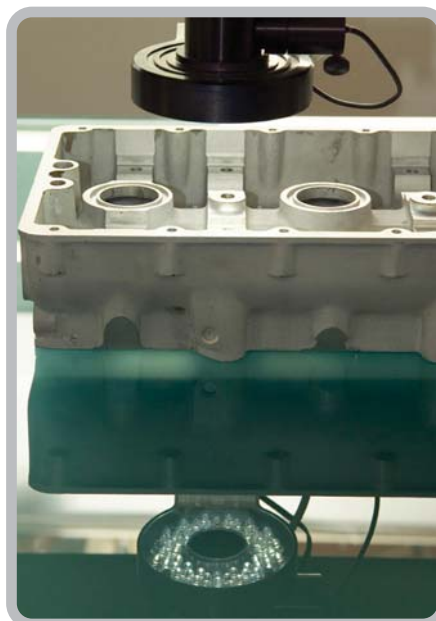
Complete with our standard zoom optics and lighting, Venture Plus offers the same level of camera based functionality as every other Venture.

### Standard CNC System Features Include:

- Teach and repeat programming
- Programmable segmented LED lighting
- High resolution 0.57m scales for increased accuracy
- CAD import / export
- Scanning & best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- Renishaw TP20 touch probe joint



Venture Plus VP-6460





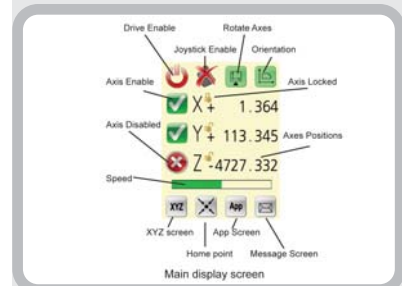


**Venture Plus additional features include:**

- Rigid, low mass bridge construction
- Integral zoom optics
- CNC controlled collimated profile lighting
- 250/400mm Z axis measuring range
- 640mm x 600mm and 640mm x 900mm bridge formats available
- 1000mm x 1000mm x 400mm and 1000mm x 1500mm x 400 models also available
- Optional automatic temperature compensation
- Optional multi function joystick with colour touch screen display

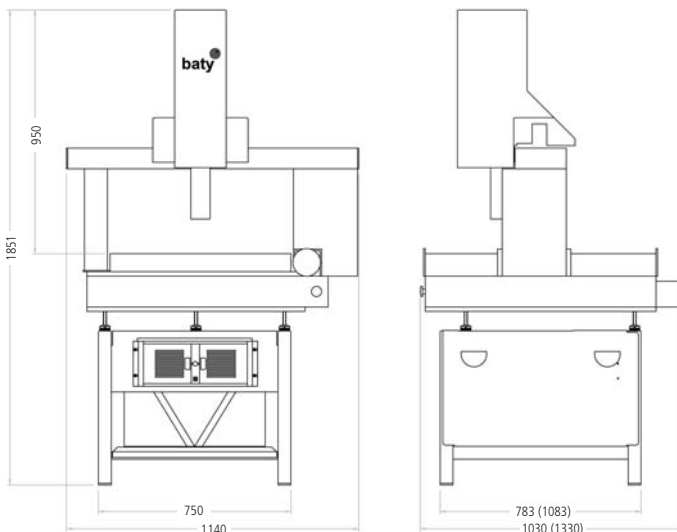
**Options include:**

Multi-function joystick with colour touch screen



**Features:**

- High quality 3 axis hall effect joystick
- Speedwheel for feedrate control
- High resolution colour touch screen
- Easy to use graphic interface
- Hardwired emergency stop button
- Built in speaker for audio feedback
- Left and right handed operation
- 3m CAT5 cable easily extendable
- Remote operation of Windows PC
- Software extendable user interface



| MANUAL SYSTEMS                    |  |  |                         |  |
|-----------------------------------|--|--|-------------------------|--|
|                                   | VM-4030 VuMaster   | VI-2510 Venture  | VI-3030 Venture         | ShadoMaster VI-3015  |
| X, Y, Z measuring range (mm)      | 400 x 300  | 250 x 125 x 165  | 300 x 300 x 165         | 300 x 150 x 40   |
| Workstage area (mm)               | 420 x 320  | 414 x 262  | 464 x 462               | 475 x 127  |
| Max workpiece load (kg)           | 25   | 25   | 25                      | 15   |
| Drive type                        | Manual   | Manual   | Manual                  | Manual   |
| Bearings                          | Air bearings   | Cross roller rail guide  | 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 with programmable LED lighting          | 6.5:1 detent zoom lens. Fully programmable software controlled white LED segmented surface lighting head with understage and through the lens (TTL) lighting as standard |                         | Interchangeable fixed objective telecentric lenses with programmable 16LED surface and collimated profile lighting |
| Resolution                        | 0.001mm  | 0.0005mm   | 0.0005mm                | 0.0005mm   |
| Accuracy                          | 7.5µm  | 2+L / 100  | 2+L / 100               | 2+L / 100  |
| Max field of view (FOV)           | 12mm   | 16mm*  | 16mm*                   | 13.5mm   |
| Magnification                     | 20x 350x   | Optical zoom ratio 27x - 175x on 17" monitor with digital zoom enhancement to over 1200x   |                         | 20x - 200x optical magnification using fixed lenses with digital zoom enhancement to over 1200x                    |
| Touch probe option available      | No   | Yes  | Yes                     | No   |
| Probe type                        | N/A  | Renishaw TP20  | Renishaw TP20           | N/A  |
| Change rack compatible?           | N/A  | N/A  | N/A                     | N/A  |
| *using optional 0.5x adapter lens |  |  |                         |  |

| CNC SYSTEMS                       |  |  |                         |                      |                      |                        |                         |
|-----------------------------------|--|--|-------------------------|----------------------|----------------------|------------------------|-------------------------|
|                                   | VM-4030 VuMaster   | VI-2510 Venture  | VI-3030 Venture         | VP-6460 Venture Plus | VP-6490 Venture Plus | VP-100150 Venture Plus | VI-3015 ShadoMaster     |
| X, Y, Z measuring range (mm)      | 400 x 300  | 250 x 125 x 165  | 300 x 300 x 165         | 640 x 600 x 250      | 640 x 900 x 250      | 1000 x 1500 x 400      | 300 x 150 x 40          |
| Workstage area                    | 420mm x 320mm  | 414mm x 262mm  | 464mm x 462mm           | 700mm x 940mm        | 700mm x 1240mm       | 1050mm x 1850mm        | 475mm x 127mm           |
| Max workpiece load (kg)           | 25   | 25   | 25                      | 75                   | 75                   | 75                     | 15                      |
| Drive type                        | CNC / handwheel  | CNC / joystick   | CNC / joystick          | CNC / joystick       | CNC / joystick       | CNC / joystick         | CNC / joystick          |
| Bearings                          | Air bearings   | Cross roller rail guide  | Cross roller rail guide | Air bearings         | Air bearings         | Air bearings           | Cross roller rail guide |
| Max drive speed                   | 100mm / sec  | 200mm / sec  | 200mm / sec             | 350mm / sec          | 350mm / sec          | 350mm / sec            | 100mm / sec             |
| Camera type                       | 2048 x 1590 pixel colour USB2 camera with 8 x 9mm chip and dynamic latch |  |                         |                      |                      |                        |                         |
| Optics / lighting                 | Fixed objective telecentric lens with programmable LED lighting          | 6.5:1 detent zoom lens. Fully programmable software controlled white LED segmented surface lighting head with understage and through the lens (TTL) lighting as standard |                         |                      |                      |                        |                         |
| Resolution                        | 0.001mm  | 0.0005mm   | 0.0005mm                | 0.0005mm             | 0.0005mm             | 0.0005mm               | 0.0005mm                |
| Accuracy                          | 7.5µm  | 2+L / 100  | 2+L / 100               | 2.5+L / 150          | 2.5+L / 150          | 2.5+L / 150            | 2.5+L / 150             |
| Max field of view (FOV)           | 12mm   | 16mm*  | 16mm*                   | 16mm*                | 16mm*                | 16mm*                  | 13.5mm                  |
| Magnification                     | 20-350x  |  |                         |                      |                      |                        |                         |
| Touch probe option available      | No   | Yes  | Yes                     | Yes                  | Yes                  | Yes                    | Yes                     |
| Probe type                        | N/A  | Renishaw TP20  | Renishaw TP20           | Renishaw TP20        | Renishaw TP20        | Renishaw TP20          | Renishaw TP20           |
| Change rack compatible?           | N/A  | Yes  | Yes                     | Yes                  | Yes                  | Yes                    | No                      |
| *using optional 0.5x adapter lens |  |  |                         |                      |                      |                        |                         |



### Baty Service, Calibration and Upgrades

Give your Vision System or Optical Profile projector the Baty star service treatment. Regular calibration is essential to your Quality system. Why not let the UK's premier optical measuring systems manufacturer take care of it?

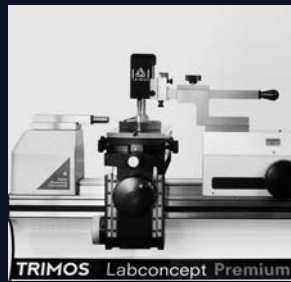
#### What's the difference?

We don't just calibrate. Firstly we will carry out a full service on the instrument, adjusting optics, mirrors and alignments in order to minimise inherent system errors. Only then will the calibration process take place which involves full non-linear error compensation to reduce remaining errors to a minimum. The end result is more than just a calibration certificate, it's a better, more accurate measuring system.

Obsolete readout system? No problem. Talk to us about retrofit options with our new FT2-E touch screen DRO.



**Baty International**  
Victoria Road, Burgess Hill  
West Sussex RH15 9LR  
**Tel:** +44 (0) 1444 235621  
**Fax:** +44 (0) 1444 246985  
**Email:** sales@baty.co.uk  
**Website:** www.baty.co.uk



**BOWERS GROUP**

[www.bowersgroup.co.uk](http://www.bowersgroup.co.uk)

