applications gauging

baty

Tel +44 (0) 1444 235621

Fax +44 (0) 1444 246985

Email: sales@baty.co.uk

Website: www.baty.co.uk

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 'Shadograph' series has since become an industry standard in profile projectors. These products are still manufactured in Sussex in accordance with ISO 9001:2000.

For decades Baty has employed a team of Field Based Service Engineers. Today, our service department is the largest ISO 9001:2000 accredited Projector Service Organisation in the UK offering on-site Service, Training, Retrofits, and Repair for all makes of Profile Projector and Vision Systems.

In keeping with its gauging roots, Baty acquired John Bull and British Indicators, extending its gauging range to include calipers and flexible fixturing.

The range was then completed in the eighties when our first camera based Video Inspectors were developed. Video Edge Detection (VED) was soon added giving rise to increased accuracy, repeatability and measuring speed.

Now all our vision systems offer the best of both worlds with the combination of non-contact (VED) and contact measurement using Renishaw's extensive touch probe range.

Today, Baty is an ISO 9001:2000 accredited company that offers a range of Metrology Instruments from Hand Tools to Vision Systems, offering measuring solutions for almost every measurement application in modern manufacturing and now, we've put them together into one catalogue for your convenience.

So, whether you need a digital caliper or a full CNC multi-sensing Vision system...

...it's here.

We look forward to talking to you.

Geoff Jackson
Managing Director

SYSTEM CERTIFICATION ISO 9001:2000 SGS

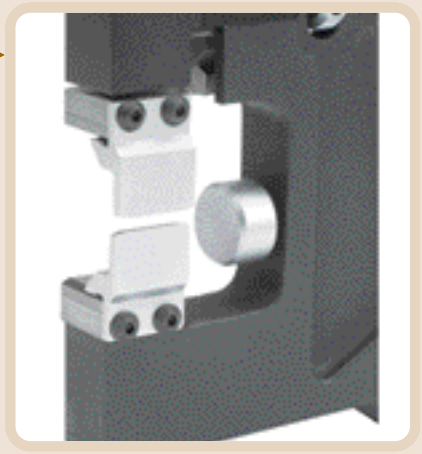
COLOURMAP™
Patented Scale Technology

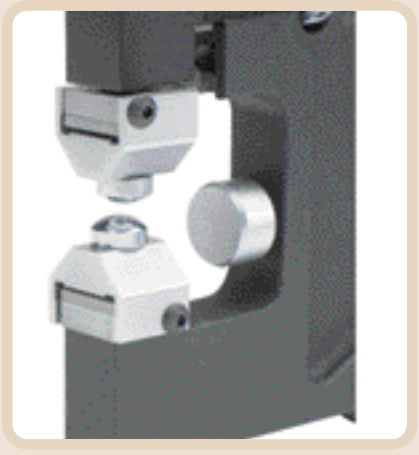
SNAPMASTER

The Snapmaster 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. Special anvils (e.g for grooves etc) can be fitted to the standard gauge by means of the mounting holes in the anvil.





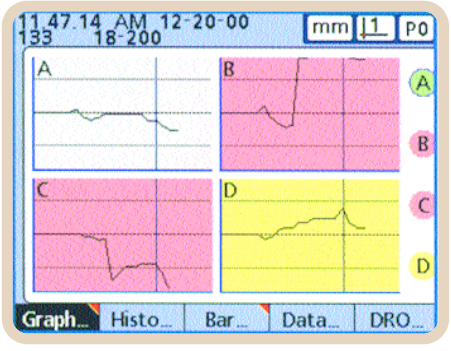
Model	Range	Flatness	Parallelism
USG-0-25LI	0 - 25	0.3µm	2µm
USG-25-50LI	25 - 50	0.3µm	2µm
USG-50-75LI	50 - 75	0.3µm	3µm
USG-75-100LI	75 - 100	0.3µm	3µm
USG-100-125LI	100 - 125	0.3µm	4µm
USG-125-150LI	125 - 150	0.3µm	4µm

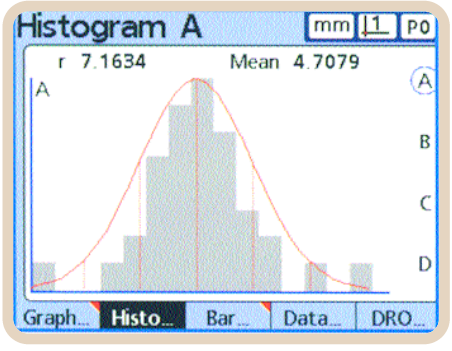
Features

- 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
- Mounting holes for fitting special contacts eg. grooves





CHECKMASTER COMPARATOR

Available in two sizes, 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?

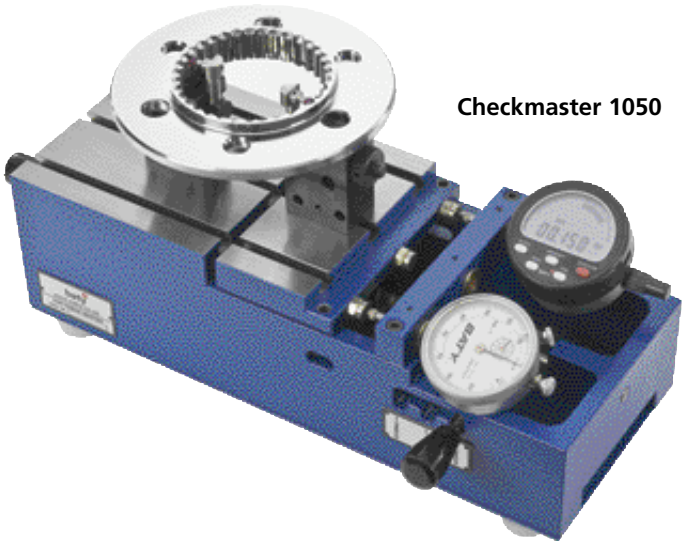
Using Baty's DI-1 Digital indicator, the master size can be pre-set. Now the results are displayed as Absolute dimensions. Tolerances can be entered and an out of tolerance symbol will flash for even quicker reference.

Need SPC, printed reports data storage?

Replacing the conventional indicator with a transducer linked to our GageChek display 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 GageChek 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 GageChek or transferred to a PC.

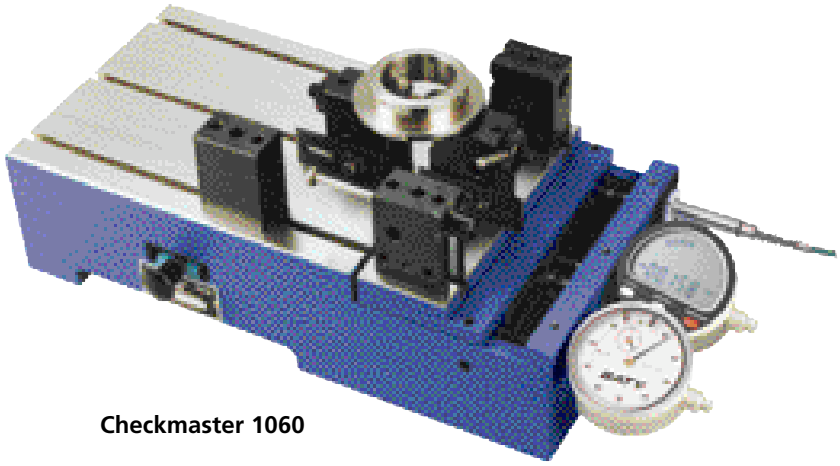
Full maths functionality included: take dynamic measurements such as roundness / concentricity or solve more complex applications by using multiple transducers.



Checkmaster 1050

Checkmaster 1050 with Gage-Chek

CHECKMASTER COMPARATOR



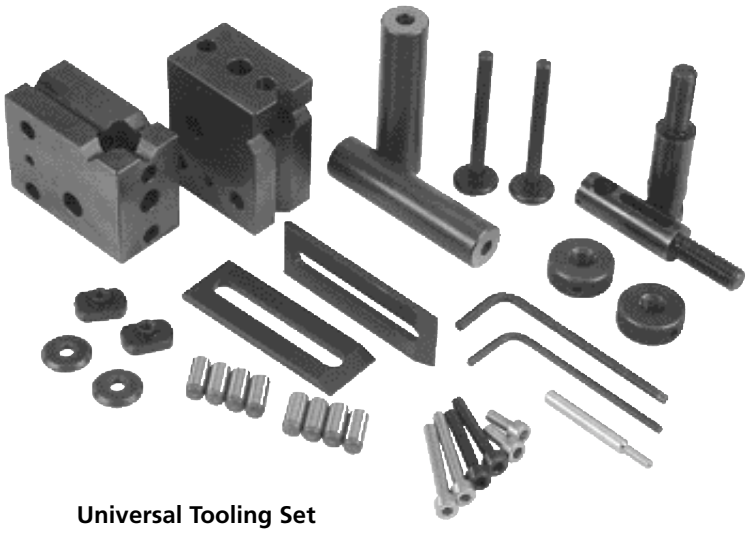
Checkmaster 1060

The capacity of the Checkmaster can be made greater by the use of customised tooling

- 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

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.



Universal Tooling Set

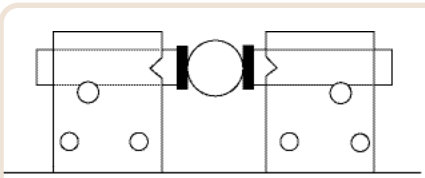
Model
1060-UTS

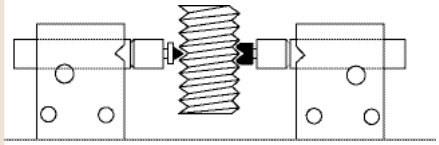
Description
Universal Tooling Set for 1050 or 1060 Checkmaster

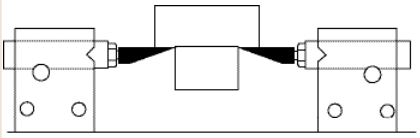
CHECKMASTER TOOLING APPLICATIONS

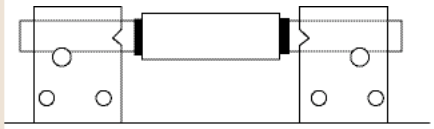
- Diameters, internal and external
- Undercuts, 0 ring grooves, ball tracks internal and external
- Gear and spline pitch diameter internal and external
- Rolling gear test, gear to gear or gear to master
- Gear pitch diameter to shaft bore run out
- Holes centre to centre
- Concentricity bore to O.D.
- Step height, lengths, depths

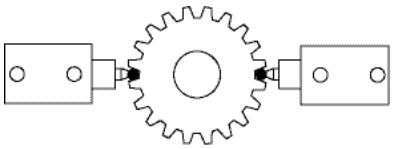
A range of universal tooling is available for these applications.

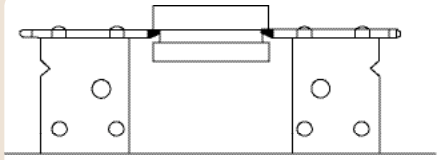

Outside Diameter

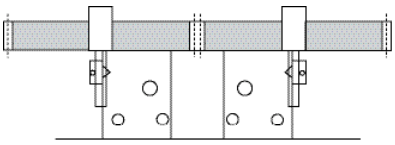

Thread Features

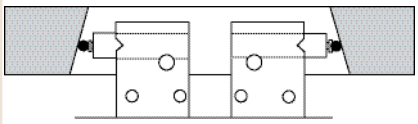

Undercut Depth

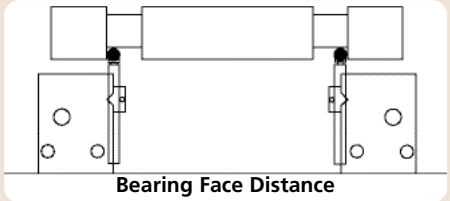

Length

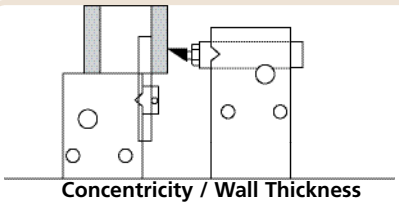

External Spline / Gear PCD

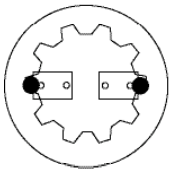

External Diameter

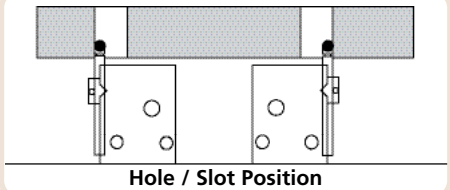

Rolling Gear Test

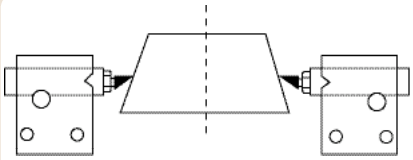

Internal Taper

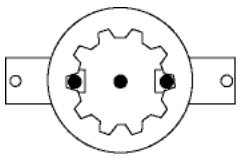

Bearing Face Distance

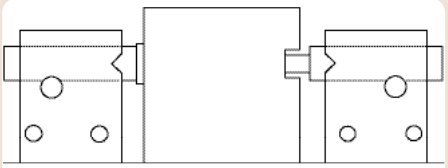

Concentricity / Wall Thickness

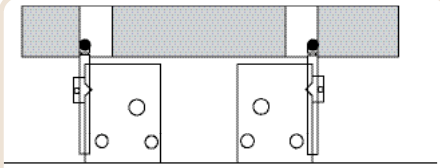

Internal Spline (Large Diameter)

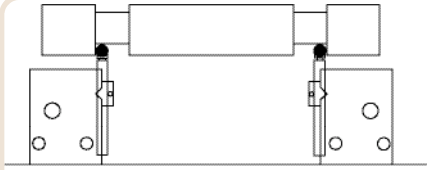

Hole / Slot Position

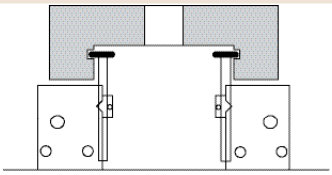

External Taper

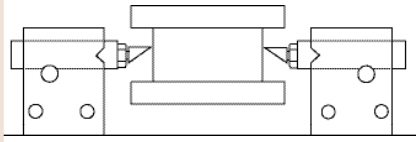

Internal Spline (Small Diameter)

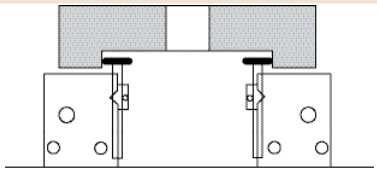

Slot Depth


Hole Centres

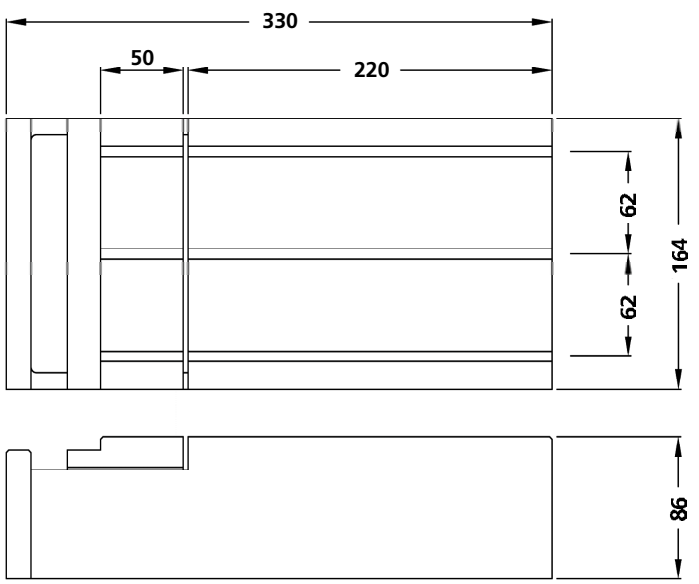

Web Thickness

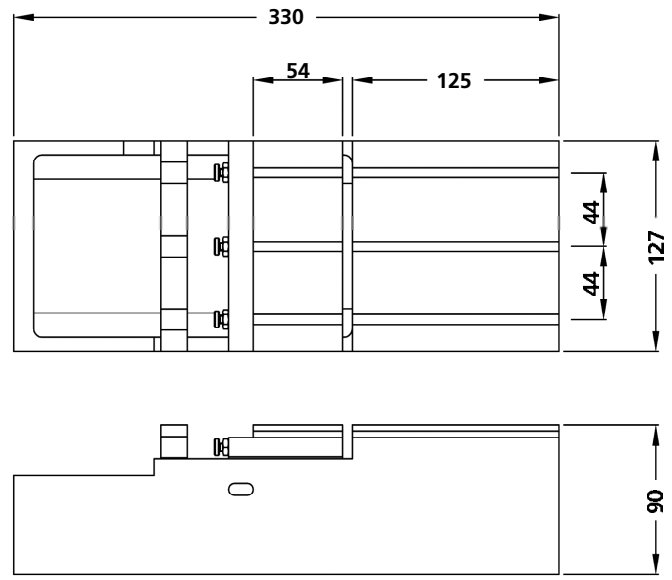

Internal Recess Diameter


Recess Diameter


Bore Diameter

CHECKMASTER DIMENSIONS



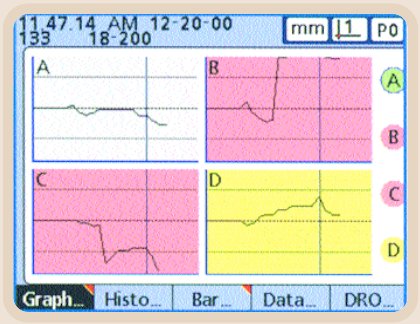


Checkmasters can be supplied with or without indicators

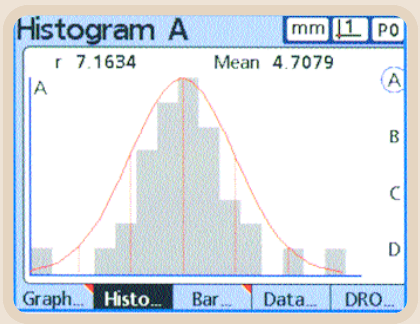
If ordered 'Less Indicator' (eg 1050-LI) the Checkmaster will be supplied with a set of split bushes to suit any 8mm or ⅜" stem mount gauge with a suitable reach, set of Allen keys and a wooden storage box

For Baty's range of indicators please see table below.

Gage-Chek



SPC screens



Indicator Options

57mm Diameter Analogue		Digital	
Model	**Graduation**	**Model**	**Graduation**
FI-1	0.001"	**DI-1**	0.001mm / 0.00005"
FI-4	0.0005"		
FI-6	0.0001"		
FM-1	0.01mm		
FM-5	0.001mm		
FM-8	0.002mm		

GageChek	
GC-110	Gage Chek – 1 transducer input (probes not supplied)
GC-140	Gage Chek – 4 transducer input (probes not supplied)
GC-180	Gage Chek – 8 transducer input (probes not supplied)

GAGE-CHEK MULTI INPUT GAUGE DISPLAY

A compact design for up to eight encoders

The Gage-Chek combines familiar digital readout functions with colour graphics to provide fast and accurate measurement feedback. Encoders can be algebraically combined for dimensions such as thickness, flatness and volume. Results can be displayed numerically, graphically or achieved for process studies such as SPC.

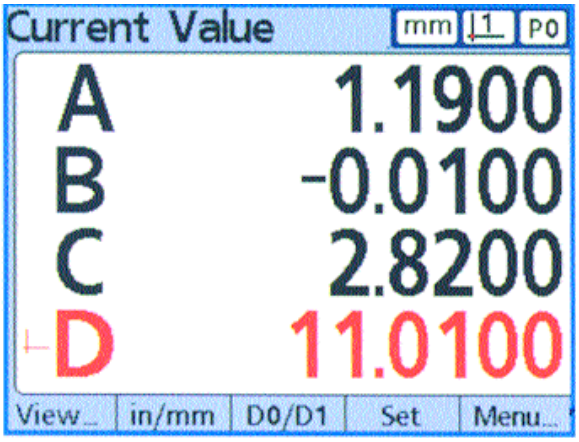
The Gage-Chek contains powerful maths and trig formulas that can be applied to one or more inputs to display complex dimensions. It can be configured to solve basic to advanced applications. Soft keys and numeric short cut keys can be mapped to fit your needs. Two large, easy to reach hot keys on top of the console can be programmed to trigger an operator's most frequent steps.

The Min Max function continuously monitors the highest or lowest measured or calculated value. Each input or calculated dimension can be toleranced. Output includes colour pass/fail indication and audio alerts. Multiple 'parts' tolerances, SPC parameters and custom formulas are stored on a part basis so that the Gage-Chek can measure a wide variety of fixtures and parts.

Gage-Chek can connect and receive data from three types of probe / instrument.

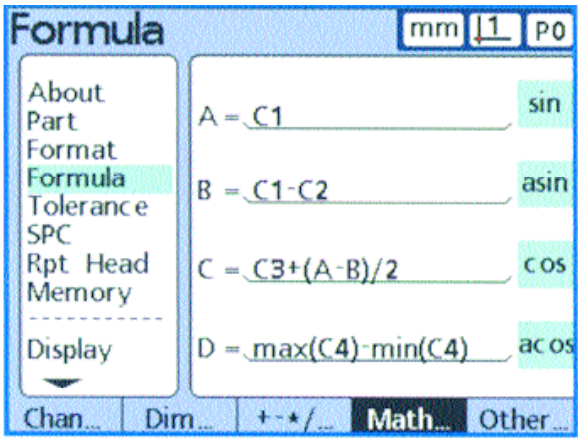
GC-140

Model	Input channels	Input type
GC-110	1	Digital Encoder
GC-140	4	Digital Encoder
GC-180	8	Digital Encoder
GC-110-TS-HB	1	Half Bridge Transducer
GC-140-TS-HB	4	Half Bridge Transducer
GC-180-TS-HB	8	Half Bridge Transducer
GC-110-BSR	1	Serial Cable
GC-140-BSR	4	Serial Cable
GC-180-BSR	8	Serial Cable



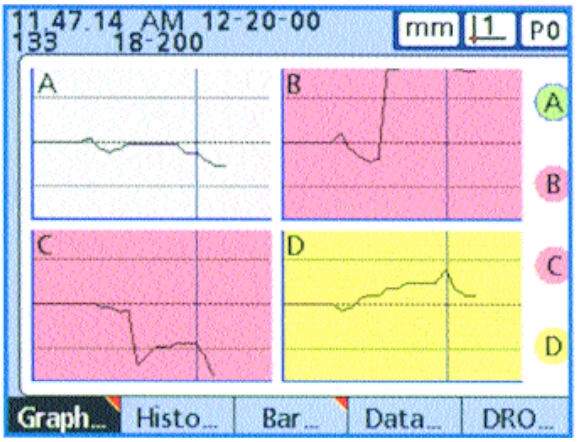
Large, easy-to-read display

Get instantaneous 4 dimension feedback with 'out of tolerances' condition indicators.



Powerful custom formulae

Powerful math and trigonometric formulae can be applied to one or more inputs (C1, C2...) to display complex dimensions (A, B...)



Integrated SPC evaluation

The Gage-Chek includes integrated SPC studies such as X-bar and range charts. Statistics such as mean, min, max, standard deviation and range are available for each dimension.

Digital Encoders require very little set-up and are self-referencing. These tend to be used for absolute measurement.

Half-Bridge Transducers need to be calibrated using a master and tend to have a relatively short measuring range. They are ideally suited to fixturing and tend to be used for comparative measurement.

In both cases the probe measures displacement which is displayed on the Gage-Chek.

The serial input allows data to be sent from another digital instrument such as a micrometer, caliper, bore gauge or height gauge. These instruments will display the measured result on their own display but the data can also be sent via a serial cable to the Gage-Chek for tolerance classification, storage, spc and reporting.

GAGE-CHEK MULTI INPUT GAUGE DISPLAY

Specifications	Gage-Chek
Display	16 Dimensions
Inputs	Up to 8 probes
Colour LCD screen	15cm (6")
Adjustable-tilt front panel	+15° – 45°
Hot keys	15
Date / time	Yes
Sound	Speaker
Footswitch	Option
Remote keypad	Option
Keypad in relief	Yes

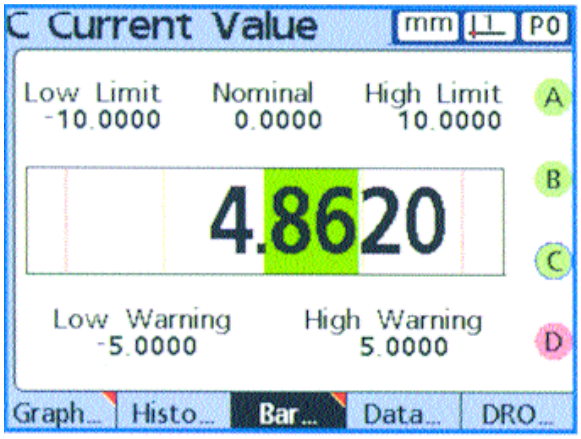
Inputs	Gage-Chek
Length gauges	Yes
Linear encoder	Yes
Measuring instruments	Yes

Power Supply Unit	Gage-Chek
Input voltage range	85-264 VAC
Input frequency	43-63 Hz
Operating temperature	0-45°C

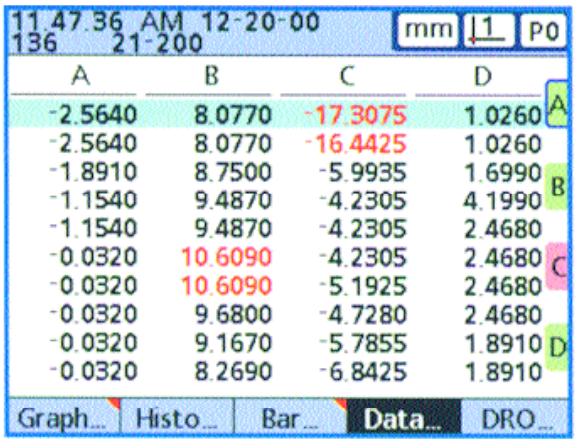
Functions	Gage-Chek
Inputs / dimensions combination	By formulae
Number of part settings	10
Statistics (SPC)	Yes
Static measurement	Yes
Dynamic measurement (min/max)	Yes
Tolerances	Yes
MM / inch	Yes
Auto-enter function	Yes
Reference marks	Yes
Error compensation ments	Linear, seg-

Outputs & Interfaces	Gage-Chek
Parallel port	Printer
RS 232 port	Computer
Switching outputs	2

Dimensions & Weight	Gage-Chek
Enclosure	W 287 – H 195 D 75mm
Base	W 257 – H 57 D 198mm
Enclosure + base (4.8kg)	1.6kg + 3.2kg

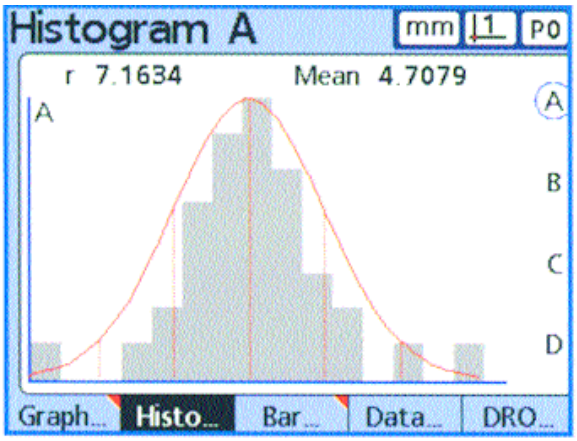


Colour-enhanced vertical or horizontal bar graph (up to 16 dimensions). User selectable nominal value, high and low tolerance limits and high and low warning limits.



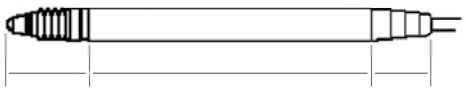
Historical data views

The Gage-Chek can store hundreds of measurements into its database. Historical raw data may be viewed in a tabular numeric display.

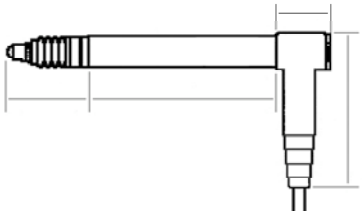


Histogram charts are available to check sample's distribution.

TD-1-HB

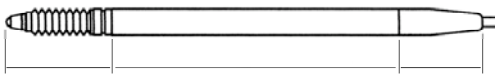


TD-2-HB

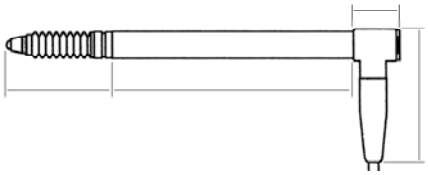


TD-1-HB / TD-2-HB	
Maximum stroke	4.6mm
Measuring stroke	±2mm
Spring rate	0.63N ±20% at electrical zero
Linearity error	0.3% in ±1000µm range (at 20°C ±1°C)

TD-3-HB

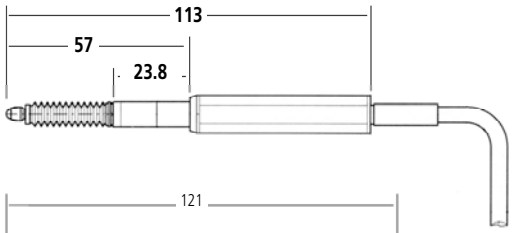


TD-4-HB

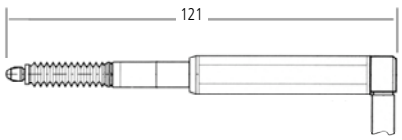


TD-3-HB / TD-4-HB	
Maximum stroke	10.6mm
Measuring stroke	±5mm
Spring rate	1.0N ±20% at electrical zero
Linearity error	0.9% in ±5000µm range (at 20°C ±1°C)

TD-1



TD-2



TD1 / TD2	
Maximum stroke	12mm
Measuring stroke	12mm
Spring rate	0.6-2.4N
Linearity error	±1 micron

General Specifications – Half Bridge

Pretravel
Adjustable

Bearing
Ball bearing

Life
>10 million cycles

Tip rotation
1° over full stroke

Temperature range
-10 to +65°C, operation & storage

Mounting position
Any

Contact Tip
3mm tungsten carbide ball, M2.5 fixing thread, interchangeable

Gaiter
Viton

Body diameter
Ø 8h6 (DIN No 7182)

Cable
in polyurethane, length 2m

Plug
5 Pin 240° (DIN No. 453220)

Sensitivity
73±0.15mV / (V*mm) into R=2kW (±0.1%)

Drive frequency
13kHz ±5%

Drive voltage
3 V ±0.5% RMS

Coil form
Halfbridge

Repair
possible, unit can be disassembled

General Specifications – Digital

Temperature range
10°C – 40°C

Reference mark mounting diameter
Ø 8h6

Protection IP64

Resolution
1µm / 0.5µm

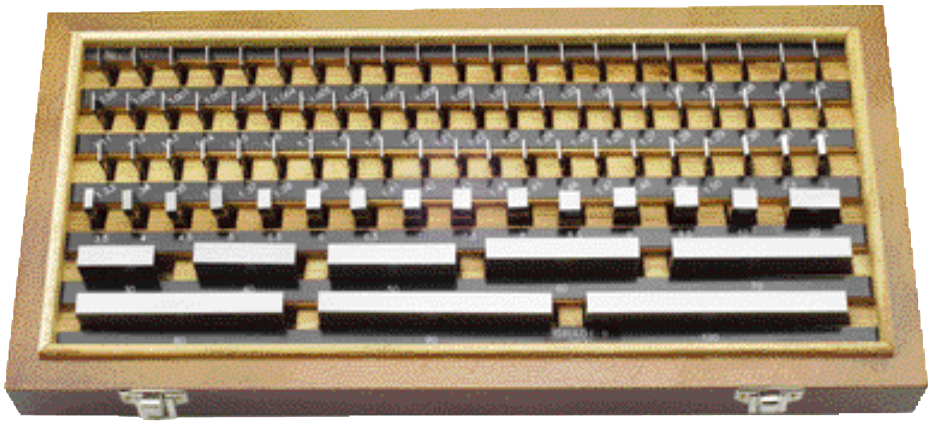
Contact Tip
3mm tungsten carbide ball, M2.5 fixing thread, interchangeable, absolute measurement

STEEL GAUGE BLOCKS

Features

Standard: DIN 861

- 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 3 grades:
  - Grade 0 for calibration
  - Grade 1 for inspection
  - Grade 2 for workshop
- All sets can be issued with a UKAS certificate at extra cost



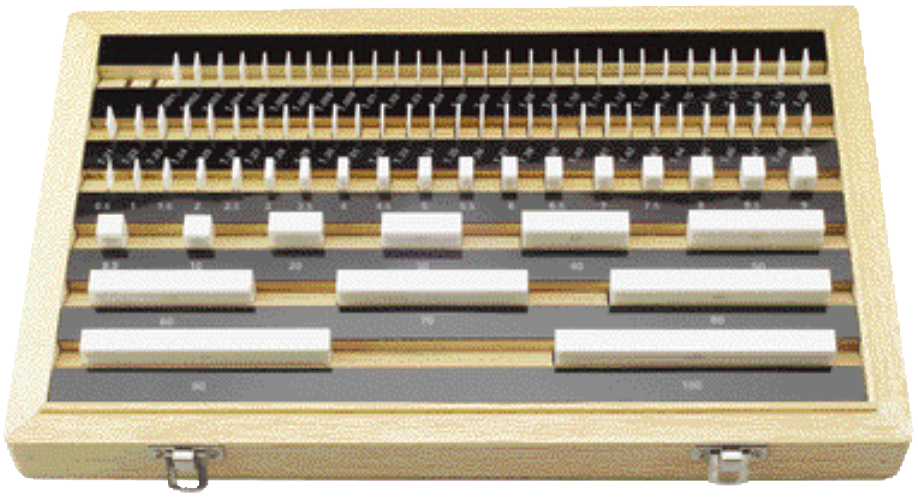
Model	Description
GB-M87	Metric Set – M87
GB-M47	Metric Set – M47
GB-E81	Imperial Set – E81
GB-E41	Imperial Set – E41

CERAMIC GAUGE BLOCKS

Features

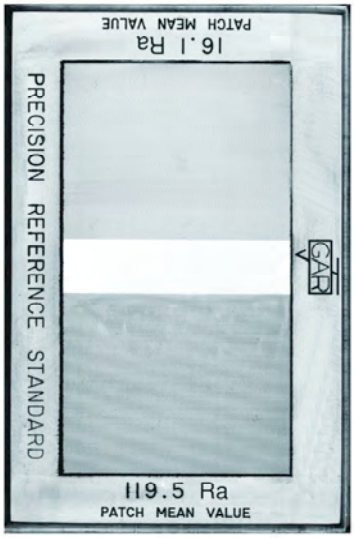
Standard: DIN 861

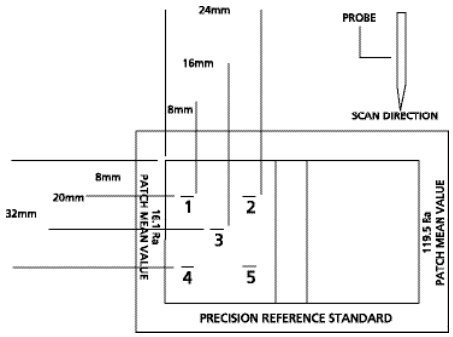
- Made from very tough Zirconia Ceramic with high precision
- Service life is up to 10 times that of steel
- Hardened to HV1350
- Thermal expansion 11.5 x 10-6/K
- No requirements for anti corrosion treatment
- No effects resulting from hand contact
- Antimagnetic, anti-static, and non-conductive properties
- Excellent wringability due to microlite material
- Every gauge block has its own serial number
- Available in 2 grades:
  - Grade 0 for calibration
  - Grade 1 for inspection
- All sets can be issued with a UKAS certificate at extra cost



Model	Description
GB-M87C	Metric Set – M87
GB-M47C	Metric Set – M47

SURFACE FINISH REFERENCE STANDARDS





Model SF-REF

Precision Reference Standard & Stylus Check will calibrate your surface analysing equipment to peak efficiency.

- Economical calibration tool
- Shows actual patch mean values of low and high microinch
- Surface consists of a series of parallel, uniform, V-shaped grooves, having an included angle of 150° between the sides
- Not recommended for use in visual or tactual comparison
- Set contains metric conversion chart plus signed Certificate of Traceability to NIST. Made of pure electro-formed nickel. Supplied with protective case

Patch Mean Values

Area No	P1 16.1 Microinches	P2 119.5 Microinches
1	16.20	119.40
2	16.20	119.16
3	15.66	118.10
4	16.00	119.63
5	16.26	119.50

SURFACE ROUGHNESS STANDARDS

Model SR-REF

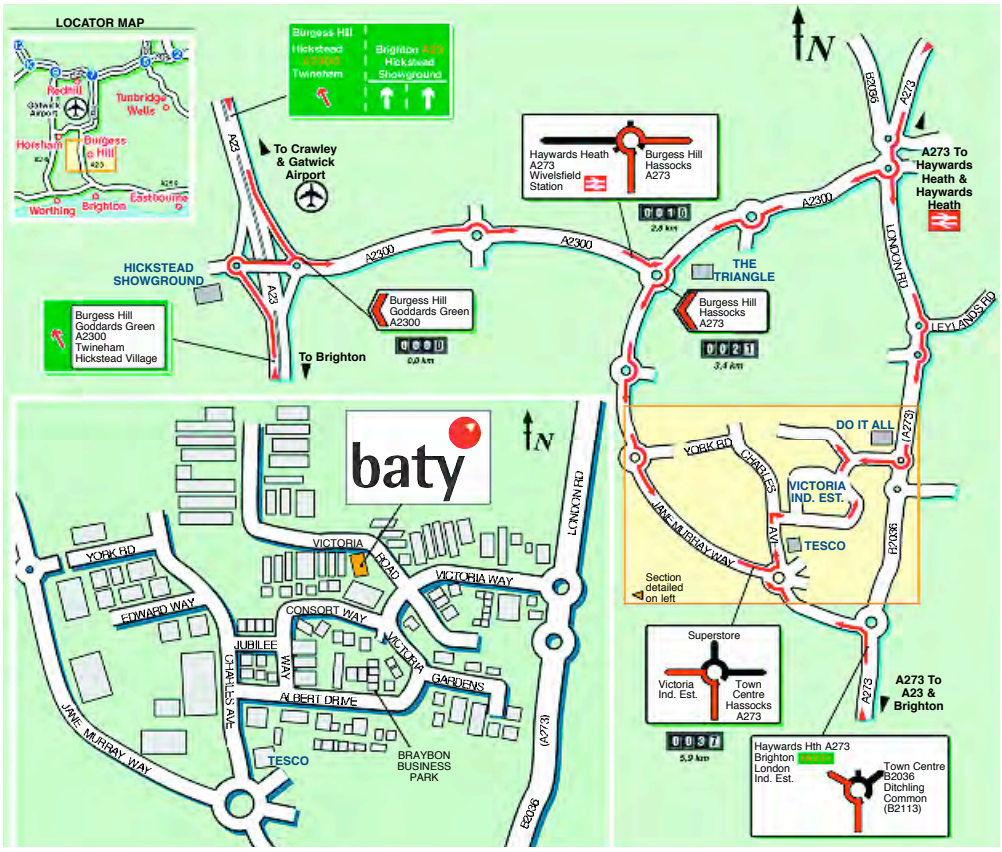
Ideal for use in the drafting room, engineering department or small shop.

- 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" comprising:

3 Specimens Flat Lapping	2, 4 and 8µ" AA
3 Specimens Reaming	16, 32 and 63µ" AA
6 Specimens Grinding	2, 4, 8, 16, 32 and 63µ" AA
6 Specimens Horizontal Milling	16, 32, 63, 125, 250 and 500µ" AA
6 Specimens Vertical Milling	16, 32, 63, 125, 250 and 500µ" AA
6 Specimens Turning	16, 32, 63, 125, 250 and 500µ" AA

How to find us...



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

Distributed by:

Baty International

Victoria Road, Burgess Hill,

West Sussex RH15 9LR

Tel +44 (0) 1444 235621

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