



INSTRUCTIONS FOR:  
**DIAL BORE GAUGE**  
 MODEL NO: **DBG5010**

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions, and properly maintained, give you years of trouble free performance.

**IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.**

**1. SAFETY**

- WARNING! Ensure Health and Safety, local authority and general workshop practice regulations are adhered to when using tools and equipment.**
- DO NOT** use the dial bore gauge if damaged.
- DO NOT** drop.
- This is a precision instrument, always return gauge components to the internally lined storage case.
- Maintain the gauge in good and clean condition for best and safest performance.
- Keep the work area clean, uncluttered and ensure there is adequate lighting.
- Ensure the work area floor is not slippery; wear non slip shoes.
- Components to be measured and the dial bore gauge to be stored at room temperature (21°C).

**2. INTRODUCTION**

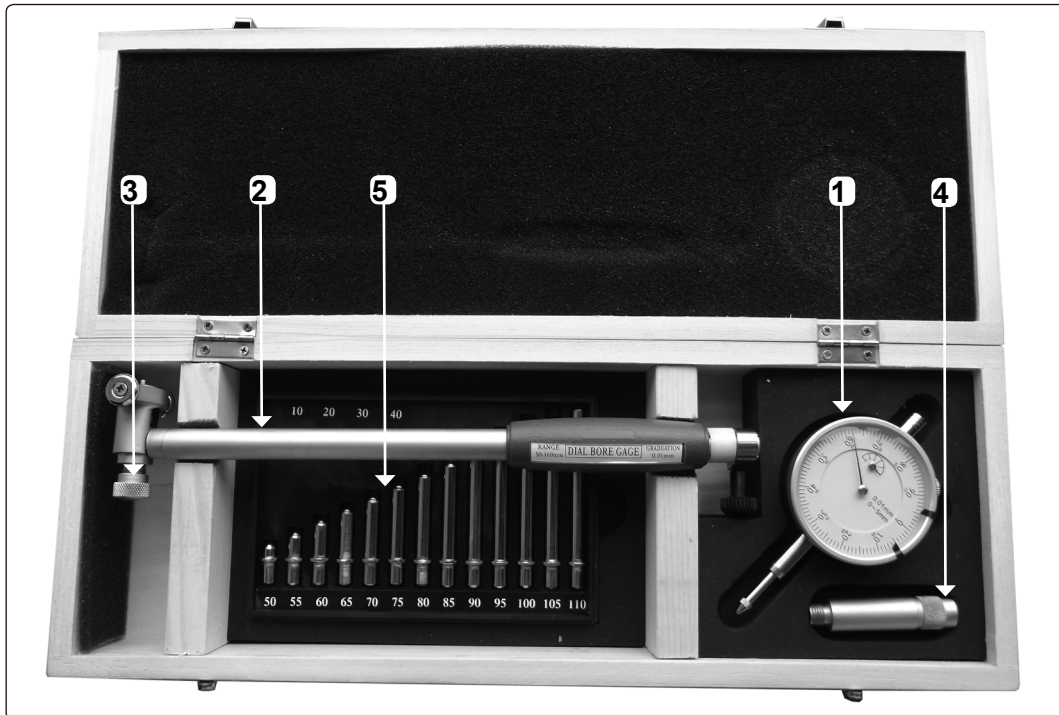
Precision mechanism with Ø55mm dial and locking rotating bezel, offering an accurate method of measuring a bore or detecting a taper or ovality. Will indicate the deviation from set size by up to 1mm with an accuracy of 0.01mm. Included with the bore gauge are; probe body, dial indicator, anvils, spacer rings. Supplied in wooden storage case. .

**3. SPECIFICATION**

Model No: .....**DBG5010**  
 Measuring Range: .....50-160mm  
 Maximum Deviation Measurement (dial bore gauge): .....1mm  
 Maximum Deviation Measurement (dial gauge separate): .....5mm  
 Dial Bezel Diameter: .....Ø55mm  
 Resolution: .....0.01mm (0.0004")

**4. CONTENTS**

4.1. There are 5 main components:-



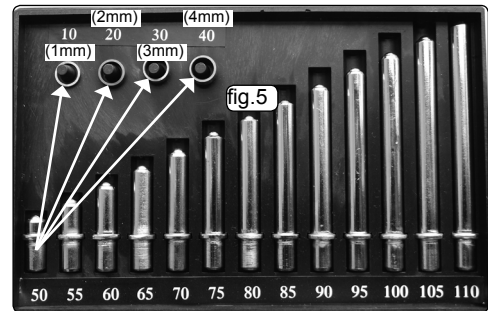
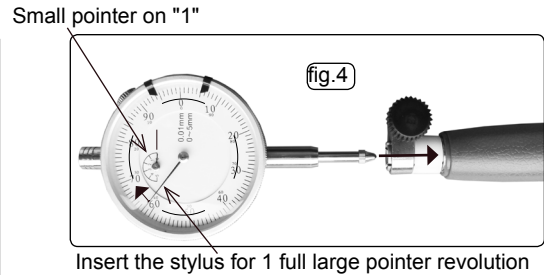
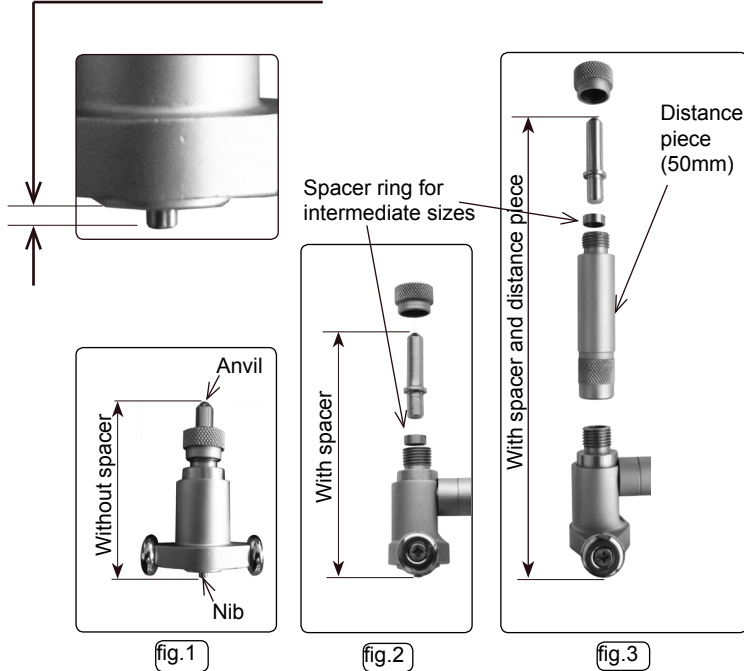
Item	Description	Qty
1	Dial gauge indicator	1
2	Probe body	1
3	Clamp screw	1
4	Distance piece (50mm)	1
5	Anvils and spacer rings	1-set

## 5. OPERATION

### 5.1. Setting up (The dial ball gauge is a comparator not a measuring tool)

- 5.1.1. Measure the bore diameter or gap to be measured to the nearest millimetre with a rule or vernier callipers. The bore or gap must range between 50mm and 160mm nominally with this tool. (Up to 164.5 with spacers)
- 5.1.2. Select the range of parts required, anvils, spacers and 50mm distance piece using the table on the last page.
- 5.1.3. Assemble the dial bore gauge with selected parts as shown in fig.1, fig.2 and fig.3. Ensure all components are clean and when assembled are finger and thumb tight; no tools are to be used.
- 5.1.4. Insert the dial stylus into the probe body as shown in fig.4. The stylus will meet with resistance internally and the dial pointer will begin to rotate clockwise. One complete cycle of the pointer is recommended for registration and will be indicated by the secondary dial indicator annotated 1-5. The small pointer should now be indicating "1" [one].
- 5.1.5. Clamp the dial stem with the thumb screw. **DO NOT** overtighten.

Be aware, nib projection is 2mm.  
Aim for 0.5mm to 1.5mm as the measurement zone.



Use the spacer rings to achieve "x" = 51,52,53,54,56 etc..

### 5.2. Calibration

- 5.2.1. Depending upon accuracy requirement, calibration can be achieved with slip gauges, micrometer or vernier callipers. In our instructions example the micrometer is suggested, which has similar accuracy to the dial gauge.
- 5.2.2. Set the micrometer (50mm-75mm) to the target size "x", for example  $\text{Ø}63.50$  and lock. In our example the tolerance required is H9 from BS 4500:1969 (+.074/-0).
- 5.2.3. From instruction 5.1.2 and the tables on the back page; parts required are the anvil 60 plus spacer ring 30 or 40, from item 5 in fig.1. Assemble as shown above.
- 5.2.4. Maneuvre the gauge anvil and nib inside the measuring gap of the micrometer (fig.11). This activity could be eased by assistance or carefully clamping the micrometer with toolmakers clamps on to an angle plate.
- 5.2.5. Observe the large dial pointer movement. It is essential that the axis of the gauge anvil and spring loaded nib are centralised in the micrometer measuring faces. It is essential to observe the total sweep of the dial pointer using the small dial. Remember from the initial setting the pointer had rotated one full cycle.
- 5.2.6. When satisfied with alignment, hold the position and rotate the dial bezel until the "0" [zero] aligns with the pointer. Lock the bezel with the thumb screw. Your dial bore gauge has now been calibrated for use in a  $\text{Ø}63.00$  to  $\text{Ø}64.00$  bore ie +/-0.5mm of target.
- 5.2.7. The tolerance band can now be set using the two "markers" on the bezel. Our example states the tolerance band to be +0.074 to -0. Set one marker opposite and in line with "0" [zero] (fig.6) and the other +7.4 (fig.7) divisions apart. Note! the larger the deflection the smaller the bore.

Bezel clamping screw.  
Please note the tolerance markers will not pass the screw when clamped.

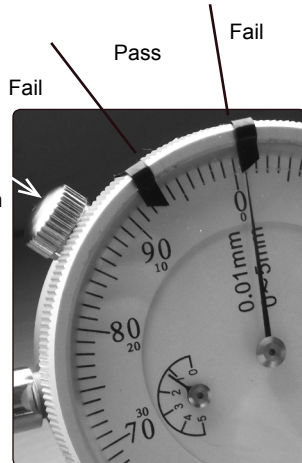


fig.6

Example for reference only

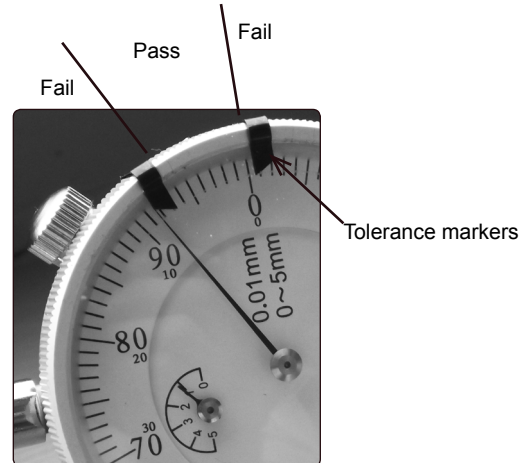


fig.7

### 5.3. Accurate Measurement

5.3.1. Follow procedure 5.1.1 through 5.1.4.

5.3.2. The bore or gap machined finish must be clean with surface texture  $3.2\mu\text{m}$  to  $6.4\mu\text{m}$  or better than for fiducial indication.

5.3.3. Offer the anvil end into the bore slightly tilted (fig.8) with the sprung loaded carriage entering just ahead of the anvil tip. Rock the dial gauge tube to the upright position (fig.9) and beyond, observing the pointer sweep. The three point location offered by the two skirts on the spring loaded carriage and the anvil tip will centralise the head.

5.3.4. Rotate the bezel such that the "0" [zero] aligns with the largest sweep position of the pointer (fig.10). It is essential to observe the total sweep of the dial pointer using the small dial. Remember from the initial setting the pointer had rotated one full cycle. Mark the position on the component of where the measurement was taken, if required.

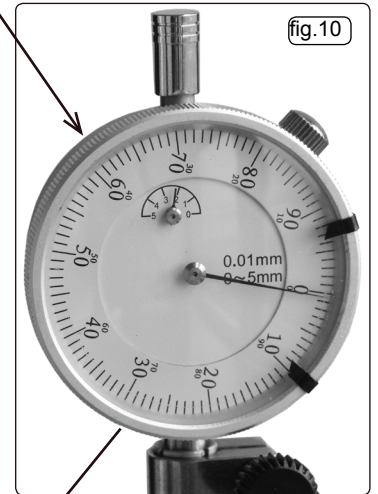
5.3.5. With a micrometer, measure across the anvil and the nib (fig.11), rotate the barrel of the micrometer until the dial pointer aligns with the same "0" [zero] as the measured bore. Take the reading from the micrometer and record.

5.3.6. With the bore dial gauge now set, the bore can now be measured for taper and ovality by reference back to the initial datum "0" [zero] reading and counting the 0.01mm divisions between datum and new. Note! the larger the deflection the smaller the bore.

"Rock the dial gauge tube to the upright position....."



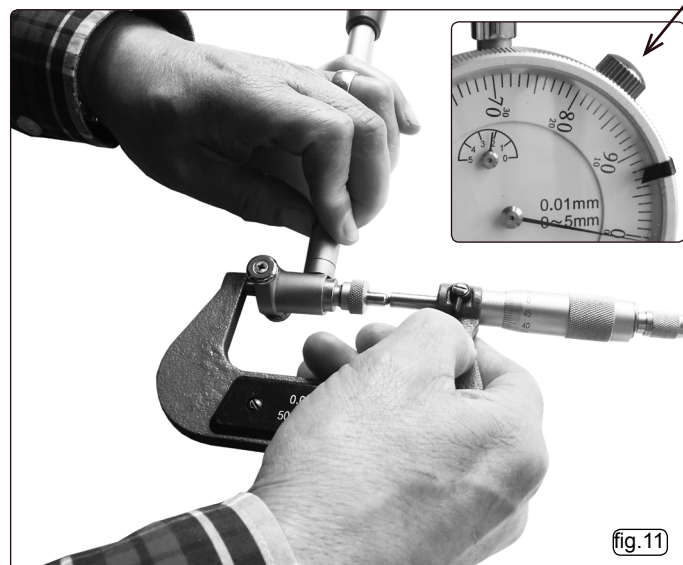
"Rotate the bezel such that the "0" [zero] aligns....."



"Offer the anvil end into the bore slightly tilted...."



"With a micrometer, measure across the anvil and the nib....."



## 6. MAINTENANCE

- 6.1. Keep all components dry and clean with a soft micro fibre cloth.
- 6.2. Return all items to the presentation case after use.
- 6.3. Store indoors in a temperature controlled dry environment, circa  $21^{\circ}\text{C}$ .
- 6.4. This is a precision instrument intended for use by engineers and engineering inspectors, keep out of reach of children.

**Guide to Parts required versus measured size. (1mm graduations)**

"x"	Anvil size	Spacer ring
49.5-50.5	50	No
50.5-51.5	50	1x1mm(10)
51.5-52.5	50	1x2mm(20)
52.5-53.5	50	1x3mm(30)
53.5-54.5	50	1x4mm(40)
54.5-55.5	55	No
55.5-56.5	55	1x1mm
56.5-57.5	55	1x2mm
57.5-58.5	55	1x3mm
58.5-59.5	55	1x4mm
59.5-60.5	60	No
60.5-61.5	60	1x1mm
61.5-62.5	60	1x2mm
62.5-63.5	60	1x3mm
63.5-64.5	60	1x4mm
64.5-65.5	65	No
65.5-66.5	65	1x1mm
66.5-67.5	65	1x2mm
67.5-68.5	65	1x3mm
68.5-69.5	65	1x4mm

"x"	Anvil size	Spacer ring
69.5-70.5	70	No
70.5-71.5	70	1x1mm
71.5-72.5	70	1x2mm
72.5-73.5	70	1x3mm
73.5-74.5	70	1x4mm
74.5-75.5	75	No
75.5-76.5	75	1x1mm
76.5-77.5	75	1x2mm
77.5-78.5	75	1x3mm
78.5-79.5	75	1x4mm
79.5-80.5	80	No
80.5-81.5	80	1x1mm
81.5-82.5	80	1x2mm
82.5-83.5	80	1x3mm
83.5-84.5	80	1x4mm
84.5-85.5	85	No
85.5-86.5	85	1x1mm
86.5-87.5	85	1x2mm
87.5-88.5	85	1x3mm
88.5-89.5	85	1x4mm
89.5-90.5	90	No
90.5-91.5	90	1x1mm
91.5-92.5	90	1x2mm
92.5-93.5	90	1x3mm
93.5-94.5	90	1x4mm

"x"	Anvil size	Spacer ring
94.5-95.5	95	No
95.5-96.5	95	1x1mm
96.5-97.5	95	1x2mm
97.5-98.5	95	1x3mm
98.5-99.5	95	1x4mm
99.5 - 100.5	100	No
100.5-101.5	100	1x1mm
101.5-102.5	100	1x2mm
102.5-103.5	100	1x3mm
103.5-104.5	100	1x4mm
104.5-105.5	105	No
105.5-106.5	105	1x1mm
106.5-107.5	105	1x2mm
107.5-108.5	105	1x3mm
108.5-109.5	105	1x4mm
109.5-110.5	110	No
110.5-111.5	110	1x1mm
111.5-112.5	110	1x2mm
112.5-113.5	110	1x3mm
113.5-114.5	110	1x4mm

"x"	Anvil size	Spacer ring	Distance piece
114.5-115.5	65	No	Yes
115.5-116.5	65	1x1mm	Yes
116.5-117.5	65	1x2mm	Yes
117.5-118.5	65	1x3mm	Yes
118.5-119.5	65	1x4mm	Yes
119.5-120.5	70	No	Yes
120.5-121.5	70	1x1mm	Yes
121.5-122.5	70	1x2mm	Yes
122.5-123.5	70	1x3mm	Yes
123.5-124.5	70	1x4mm	Yes
124.5-125.5	75	No	Yes
125.5-126.5	75	1x1mm	Yes
126.5-127.5	75	1x2mm	Yes
127.5-128.5	75	1x3mm	Yes
128.5-129.5	75	1x4mm	Yes
129.5-130.5	80	No	Yes
130.5-131.5	80	1x1mm	Yes
131.5-132.5	80	1x2mm	Yes
132.5-133.5	80	1x3mm	Yes
133.5-134.5	80	1x4mm	Yes
134.5-135.5	85	No	Yes
135.5-136.5	85	1x1mm	Yes
136.5-137.5	85	1x2mm	Yes
137.5-138.5	85	1x3mm	Yes
138.5-139.5	85	1x4mm	Yes

"x"	Anvil size	Spacer ring	Distance piece
139.5-140.5	90	No	Yes
140.5-141.5	90	1x1mm	Yes
141.5-142.5	90	1x2mm	Yes
142.5-143.5	90	1x3mm	Yes
143.5-144.5	90	1x4mm	Yes
144.5-145.5	95	No	Yes
145.5-146.5	95	1x1mm	Yes
146.5-147.5	95	1x2mm	Yes
147.5-148.5	95	1x3mm	Yes
148.5-149.5	95	1x4mm	Yes
149.5-150.5	100	No	Yes
150.5-151.5	100	1x1mm	Yes
151.5-152.5	100	1x2mm	Yes
152.5-153.5	100	1x3mm	Yes
153.5-154.5	100	1x4mm	Yes
154.5-155.5	105	No	Yes
155.5-156.5	105	1x1mm	Yes
156.5-157.5	105	1x2mm	Yes
157.5-158.5	105	1x3mm	Yes
158.5-159.5	105	1x4mm	Yes
159.5-160.5	110	No	Yes
160.5-161.5	110	1x1mm	Yes
161.5-162.5	110	1x2mm	Yes
162.5-163.5	110	1x3mm	Yes
163.5-164.5	110	1x4mm	Yes



**Environmental Protection**

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment.

Parts support is available for this product. To obtain a parts listing and/or diagram, please log on to [www.sealey.co.uk](http://www.sealey.co.uk), email [sales@sealey.co.uk](mailto:sales@sealey.co.uk) or telephone 01284 757500.

**NOTE:** It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

**IMPORTANT:** No liability is accepted for incorrect use of this product.

**WARRANTY:** Guarantee is 12 months from purchase date, proof of which will be required for any claim.

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