

BEE 3-D

Bore Evaluation Equipment

C-K Engineering, Inc.



BEE 3-D System Components and Software Features



BEE 3-D Computer Screen

What the Operator Sees

BoreGage 2.07.12 [X]

File Gage Reports Tools Help

C:\BoreGage.dat\RepeatabilityTrials\S.21.1b.set, 11/12/2009 3:27:04 PM

Sample
 Engine Run Cylinder

Definition

Cylinders Bore Diameter
 Configuration Bore Circumference
 Orientation Operator
 Units Of Measure

Cylinder Sections

1 2 3 4 5

1

Climb		Spin	
Climb	<input type="text" value="400.05"/>	Spin	<input type="text" value="360"/>
Steps	<input type="text" value="63"/>	Steps	<input type="text" value="6"/>
Start	<input type="text" value="6.35"/>	Start	<input type="text" value="60"/>
Stop	<input type="text" value="400.05"/>	Stop	<input type="text" value="360"/>
Step	<input type="text" value="6.35"/>	Step	<input type="text" value="60"/>

PreHome PostHome
 ProbeExtend Pattern
 ZeroProbes

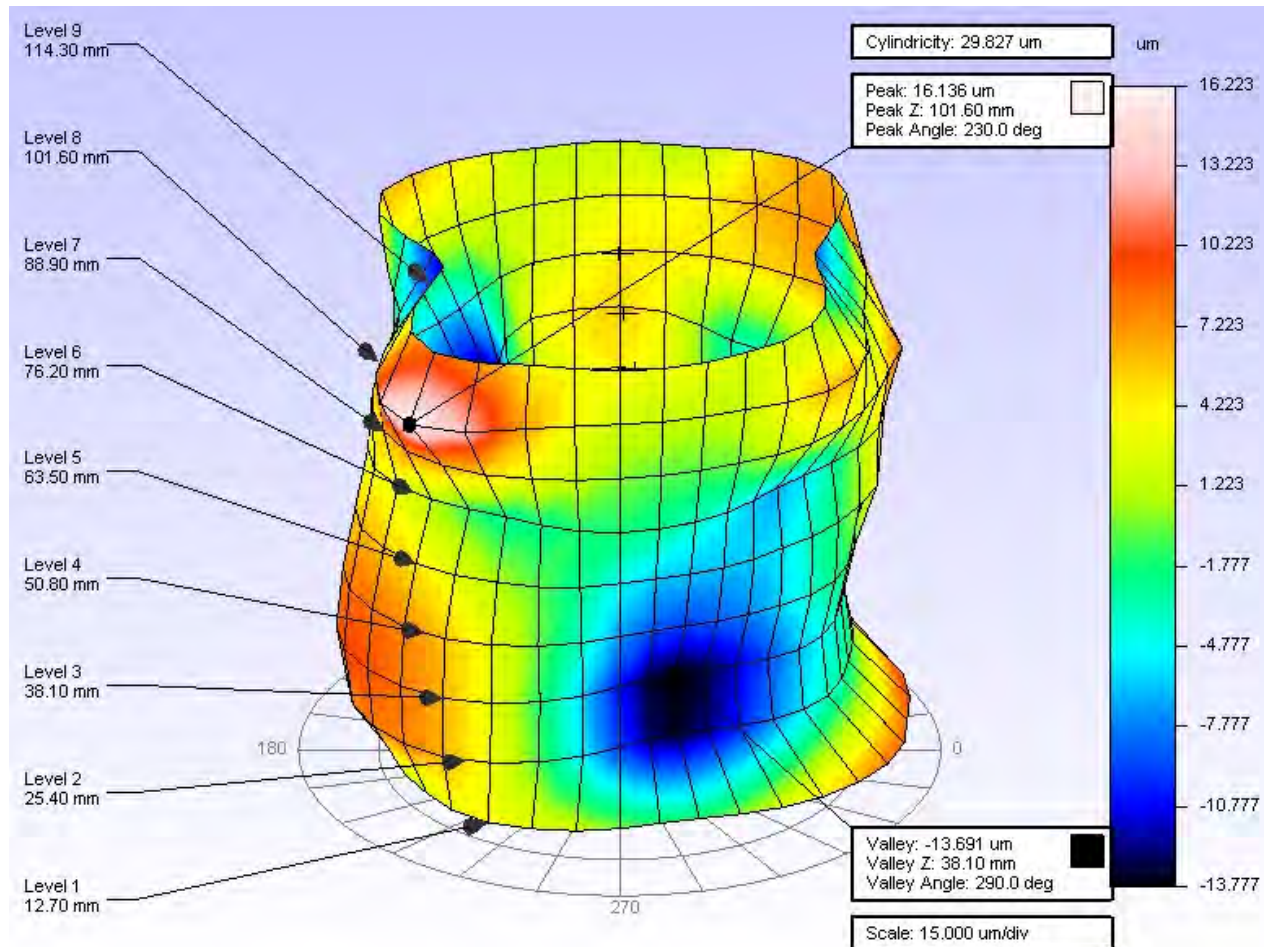
Level	Level (mm)	Climb	Angle	Angle (deg)	Spin	Probe1Read	Probe2Read	Time

Encoder Motor Probes:1 ZeroProbes HomeSpin: 0 AutoSave



BEE 3-D Output

Tilttable, Rotatable 3-D Wire Form

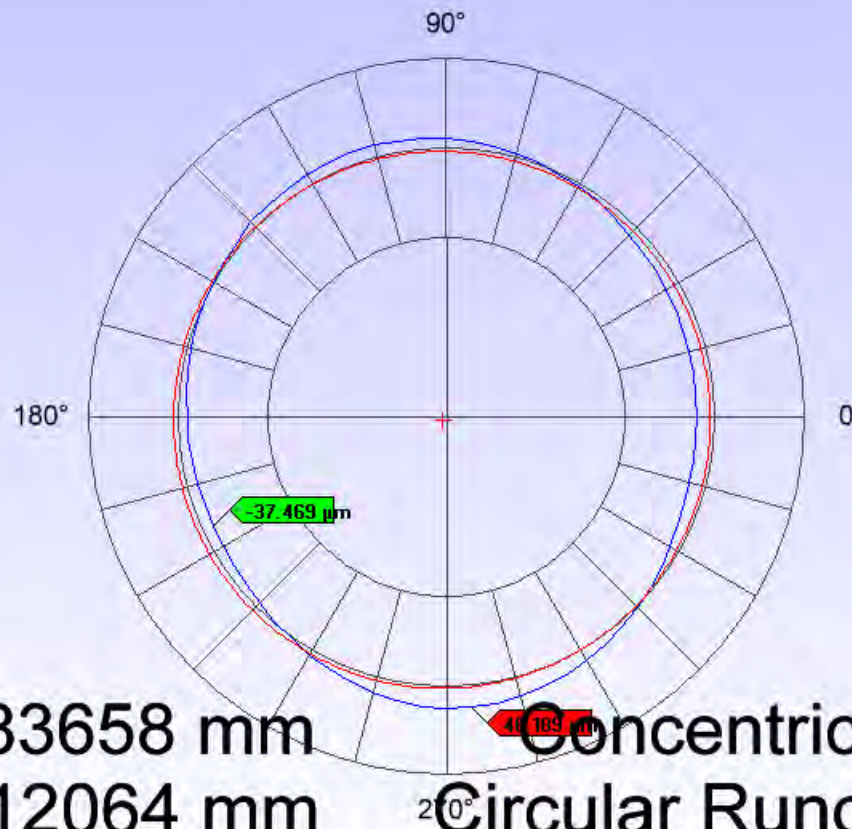


BEE 3-D Output

2-D Roundness at Selectable Level

Level 22
Z: 410.00 mm

200.000 $\mu\text{m}/\text{div}$



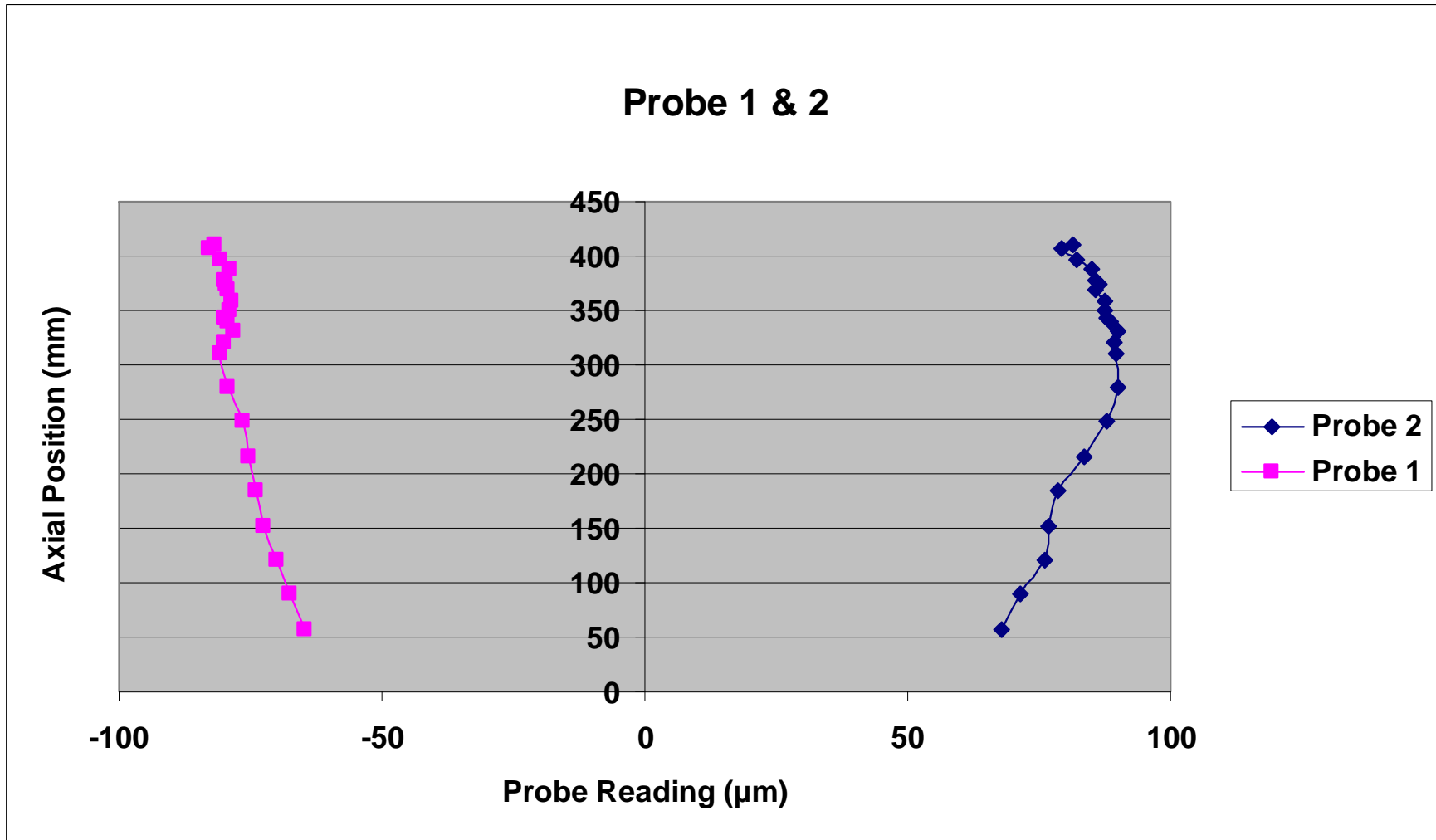
Roundness: 0.083658 mm
Eccentricity: 0.012064 mm
Ecc. Angle: 215.1°

Concentricity: 0.024127 mm
Circular Runout: 0.093164 mm
Sector Roundness: NC



BEE 3-D Output

Dual-Probe Vertical Straightness at Specified Locations



BEE 3-D

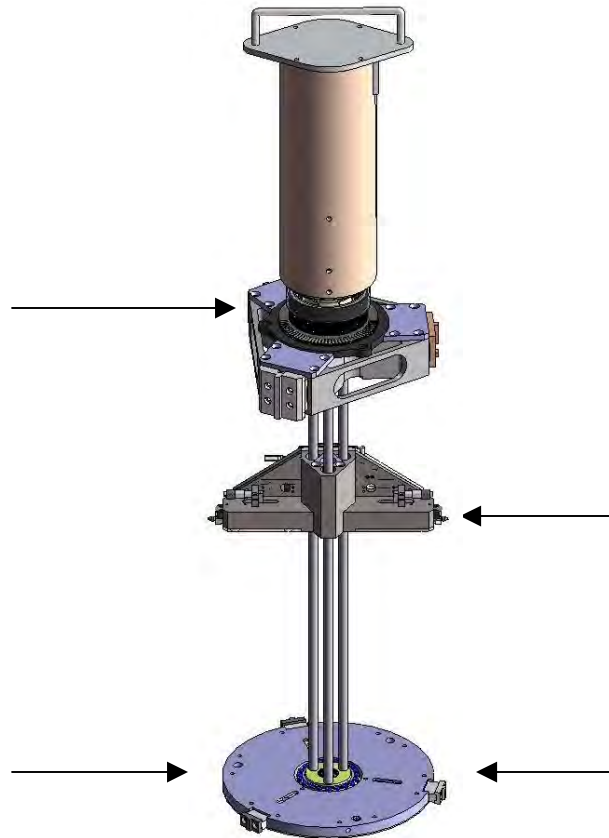
User Friendly Features

Two-position locating clamp:

- 3-point self-centering clamp
- Adjustable height
- Diameter range 228-355mm

3-point self-centering clamp:

- Diameter range 228-355mm



Dual probes:

- Replaceable probe tips
- 12mm total adjustable travel
- Signal transmitted by telemetry (no signal leads to fail)

Bottom locating clamp:

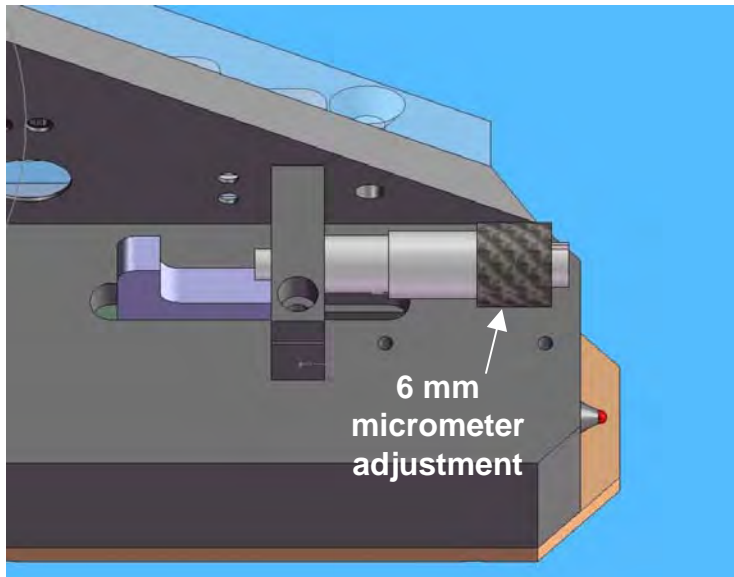
- Measures within 19mm top of bore without head modification



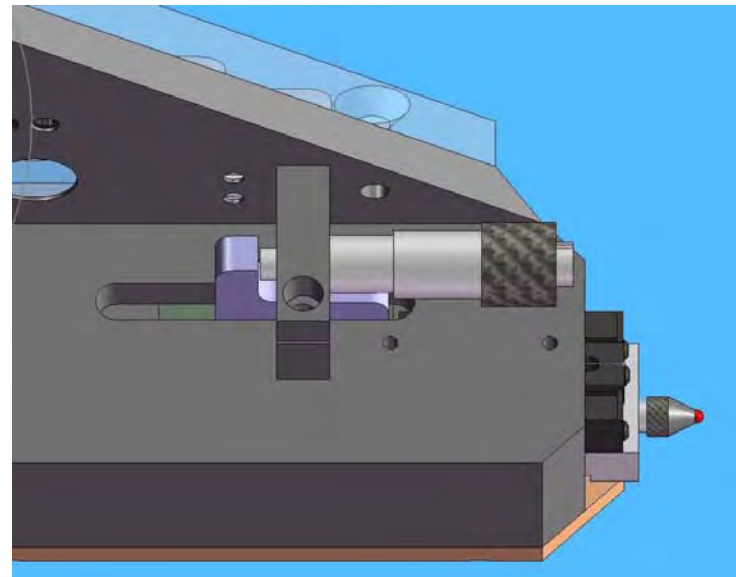
BEE 3-D

Probe Tip Protection

- **Probe tip is protected from damage during installation**

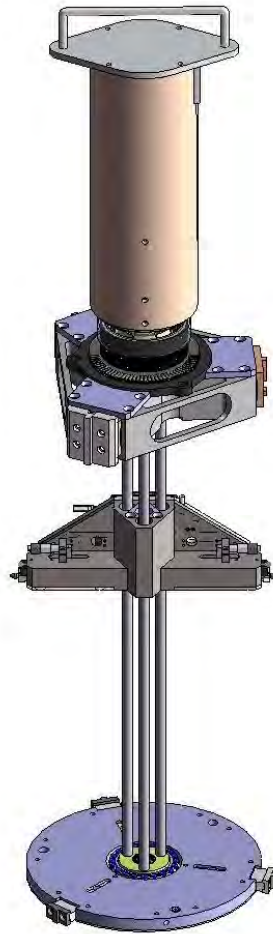


- **Probe tip is extended automatically after mechanical installation in the bore**



BEE 3-D System Components

Measuring Assembly



- **Integrated stepper motor & clutch**
- **Programmable number of levels and circumferential points to be measured**
- **Probes traverse top to bottom for overall liner straightness**
- **Optional continuous measurement for even faster cycle time**

