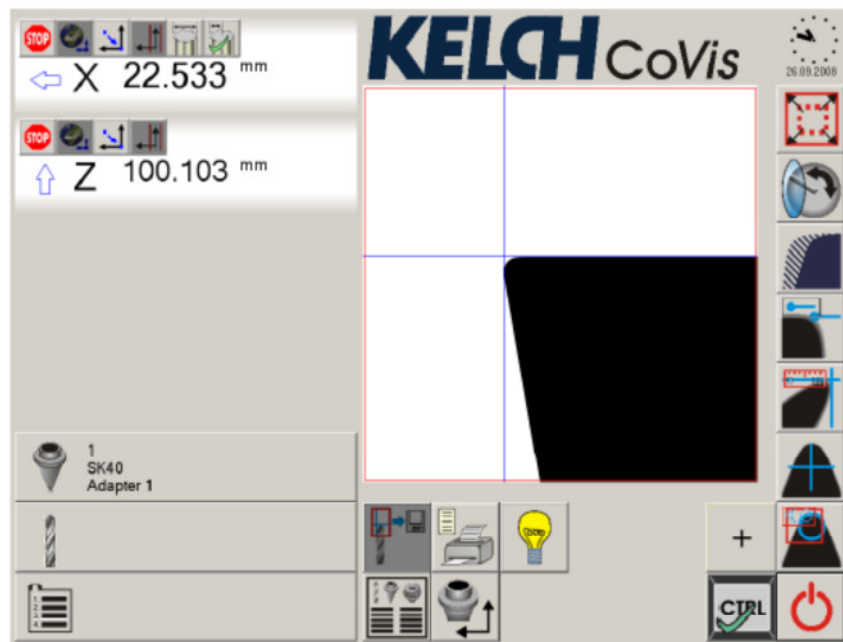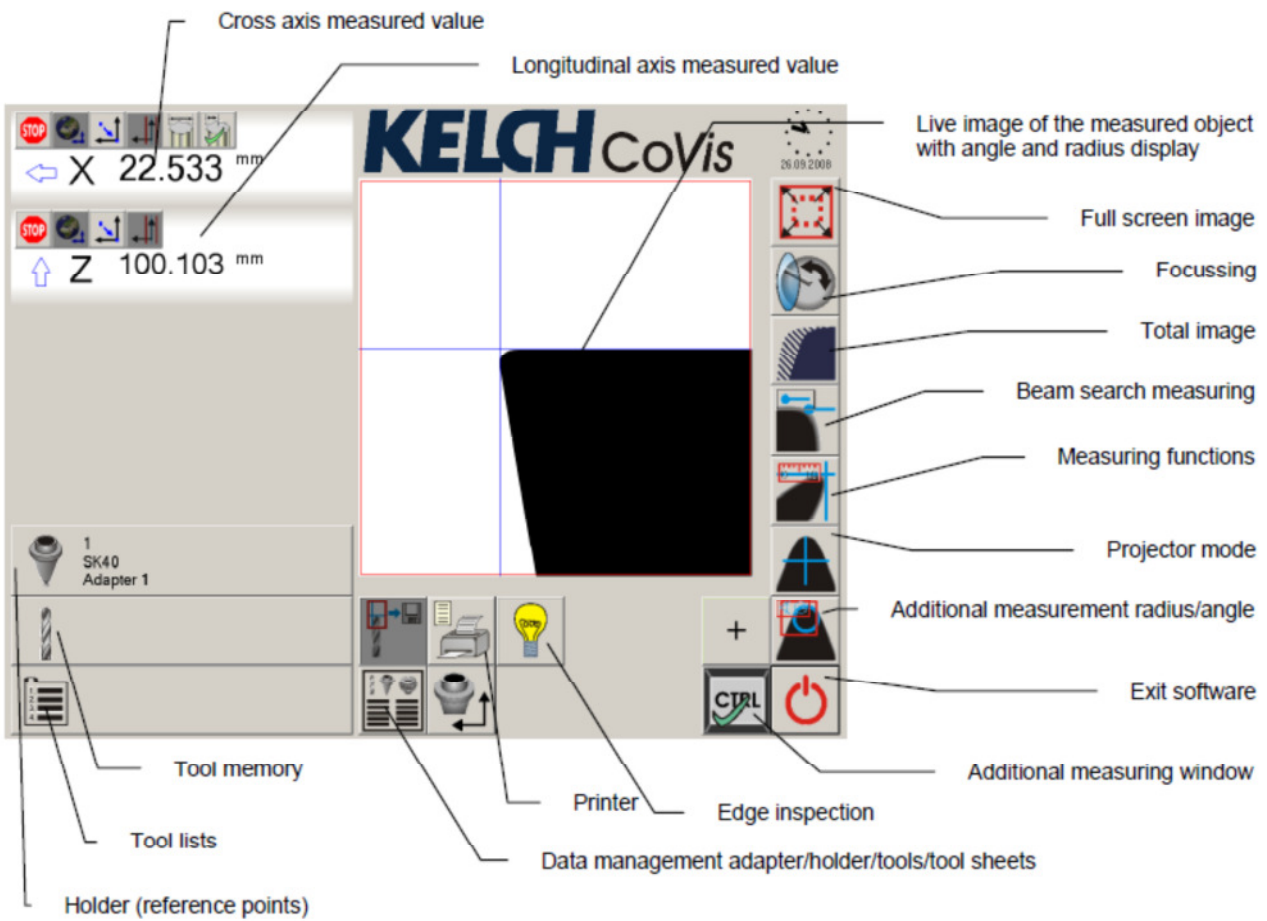# KELCH

Visualisierung **CoVis**
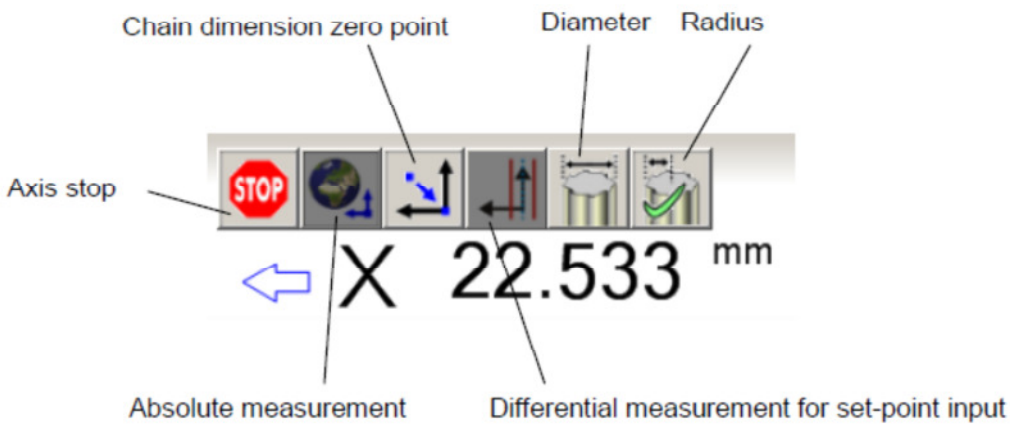

EN Brief instructions CoVis

1. Screen Display

Cross axis measured value

Longitudinal axis measured value

Live image of the measured object with angle and radius display

Full screen image

Focussing

Total image

Beam search measuring

Measuring functions

Projector mode

Additional measurement radius/angle

Exit software

Additional measuring window

Edge inspection

Printer

Data management adapter/holder/tools/tool sheets

Tool memory

Tool lists

Holder (reference points)

X 22.533 mm

Z 100.103 mm

1
SK40
Adapter 1

KELCH CoVis

Axis display

Chain dimension zero point

Diameter   Radius

Axis stop

Absolute measurement

Differential measurement for set-point input

X 22.533 mm

2. Measuring Methods

	1. Focussing: This relates to the edge focus, i.e. the highest point in X is determined. Move the tool edge into the camera's field of vision and position the edge behind the focus point. If necessary, adapt the focus window for focusing. Now turn the edge above the highest point until a red bar appears in the camera image. Subsequently turn back the edge until the bar turns green. Focus to X-min using CTRL+ Focus.
	2. Total image: Move the tool edge into the camera's field of vision and activate the measuring type. Turn the tool (365°) to ensure the camera captures continuous images, placing them one above the other to display the contour left by the tool in the workpiece.
	3. Projector mode: Use the fine setting to position the tool edge until the edge is precisely on the crosshairs.

3. Data Management Adapter/Holder
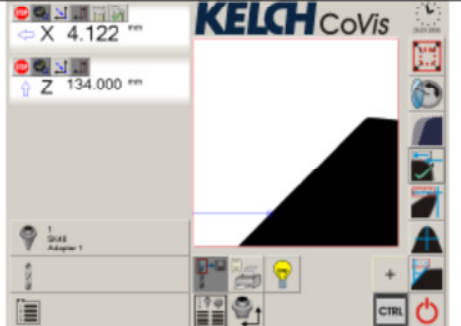
Position the setting mandrel or integrated calibration gauge in the camera image. Subsequently open the data management.

Total data management	Adapter New Holder Edit Tool Copy Tool sheet Delete
Adapter data input mask	Select adapter, enter adapter data and reference values, and select the calibration type. Then specify the zero point. Calibration type setting mandrel Calibration type integrated calibration gauge Specify zero point
Holder input mask	After defining an adapter, a holding fixture must be created for the adapter. **Data Maintenance – Holding Fixture** For example, it is possible to swap axes or alter the counting direction here. Furthermore, a correction value can also be entered, e.g. when using reduction sleeves which do not have a calibration edge. To achieve this, the engraved height is entered in the Offset field.

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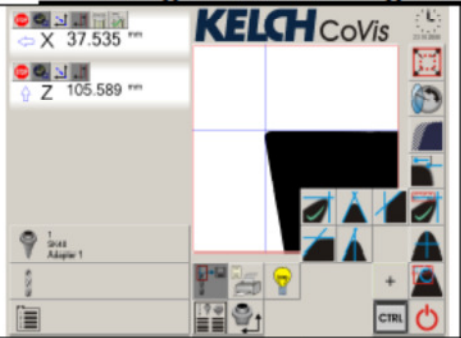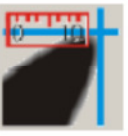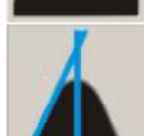
4. Data Management Tools/Tool Sheets

Data management tools		
		New
		Edit
		Copy
		Delete

Tool data input mask		
		Absolute tolerance
		Tolerance difference
		Measure tool
		Save tool

Data management tool sheets		
		New
		Edit
		Copy
		Delete

Tool sheet input mask		
		Accept tool from list
		Delete tool
		View tool sheet
		Save tool sheet

5. Search Beam Measurement
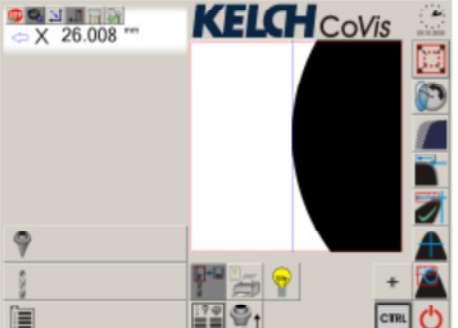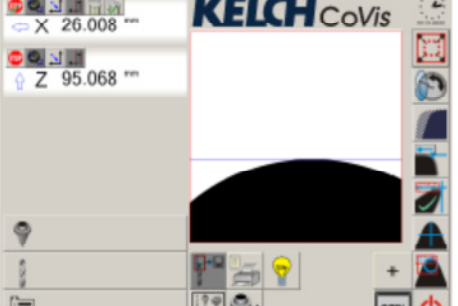
Long press the button for selecting the search beam function. The beam search functions appear.	? Z 80.000 mm	Button for the search beam measurement diameter for a pre-determined length. Window opens for the set-point input.
	? X 10.000 mm	Button for the search beam measurement length for a pre-determined diameter. Window opens for the set-point input.
KELCH CoVis X 4.122 mm Z 134.000 mm		After confirming the set-point input, the search beam is automatically placed on the edge. If necessary, move the edge into the camera image until the search beam is located directly on the edge.

6. Selecting the Measuring Functions
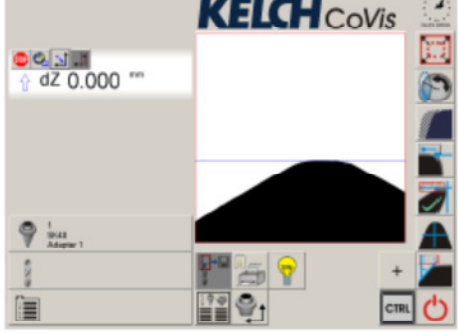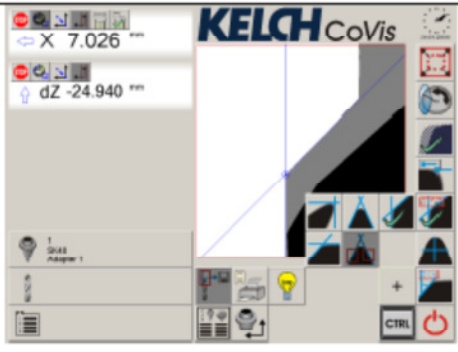
KELCH CoVis X 37.535 mm Z 105.589 mm	Long press the button for selecting the measuring functions. The measuring functions appear.

	Xmax/Zmax
	Theoretical intersection point
	Theoretical length
	Theoretical radius
	Theoretical apex

7. Separate Axis Measurement
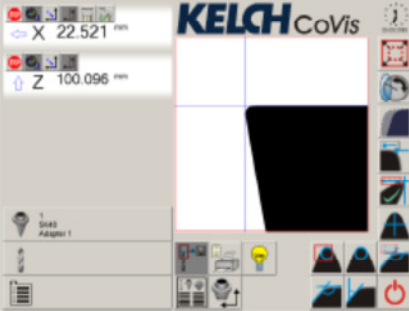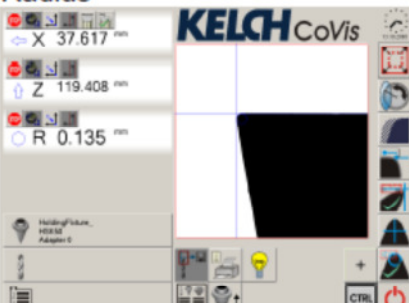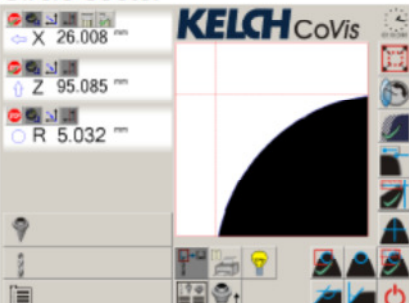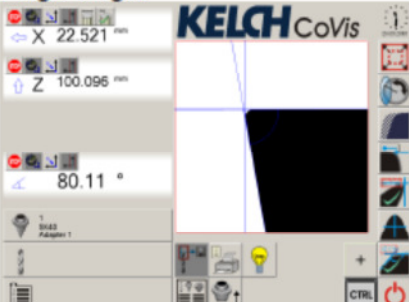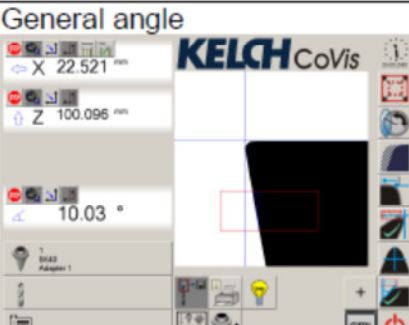
Edge measurements during which the maximum X and Z value cannot be simultaneously captured in the measuring window (edges with a large radius >6 mm).

X 26.008 mm	Approach the edge in the cross axis and then measure it. Press the STOP button on the axis display.
X 26.008 mm / Z 95.068 mm	Approach the edge in the longitudinal axis and then measure it. Both axis values are now displayed.

8. Incremental (chain dimension zero point)

dZ 0.000 mm		For example, when measuring a stepped tool from the tip to the step. Measure the tip, then press the button for setting the chain dimension zero point in the longitudinal axis.
X 7.026 mm / dZ -24.940 mm		Subsequently travel with the axes to the second measuring point and select the measurement task. The axis display now shows the incremental measuring value.

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9. Additional Measurement Radius/Angle

Additional measurement selection KELCH CoVis X 22.521 mm Z 100.096 mm	+	Press the plus button to attach another measurement. Long press the additional measurement button. Further measurements are now displayed.
Radius KELCH CoVis X 37.617 mm Z 119.408 mm R 0.135 mm		The camera captures the radius between two lines in the active window during this measuring task.
Circle sector KELCH CoVis X 26.008 mm Z 95.085 mm R 5.032 mm		The camera captures the sector in the active window and calculates the best possible circle from all the visible points in the window.
Edge angle KELCH CoVis X 22.521 mm Z 100.096 mm 80.11 °		The enclosed angle is captured.
General angle KELCH CoVis X 22.521 mm Z 100.096 mm 10.03 °		Press the plus (+) button and then the button for the angle measurement, and, if necessary, adjust the measuring window.

10. Theoretical Apex

Position the cutting lips in the camera image. Long press the button for selecting the measuring functions. Further measuring functions are now displayed.

Press the button for the theoretical apex and, if necessary, adjust the measuring window.

11. Theoretical Intersection Point

Long press the button for selecting the measuring functions. Further measuring functions are now displayed.

Press the button for the theoretical intersection point and, if necessary, adjust the measuring window.

12. Edge Inspection

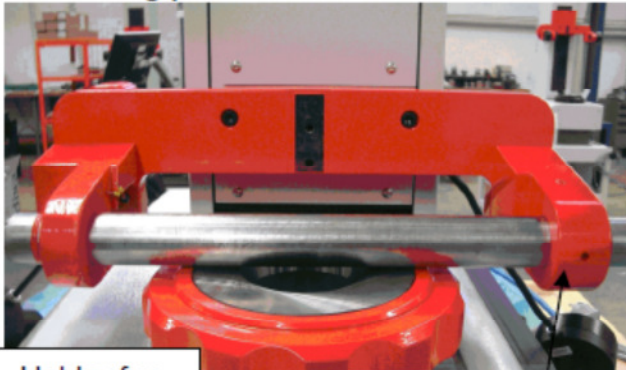Activate the edge inspection.

Zoom in and Zoom out.

Set the light sensitivity.

13. Data Back-Up

Insert the USB stick. Long press the button for selecting the adapter zero point.

Subsequently select data back-up.

Save data.

Recover data.

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14. Camera and Light Adjustment

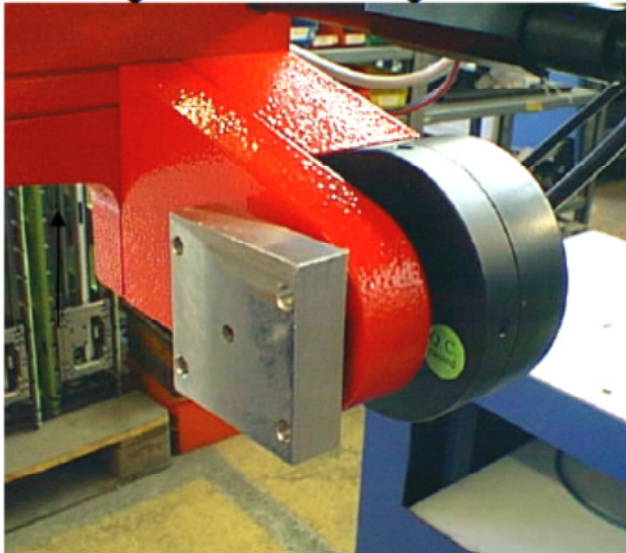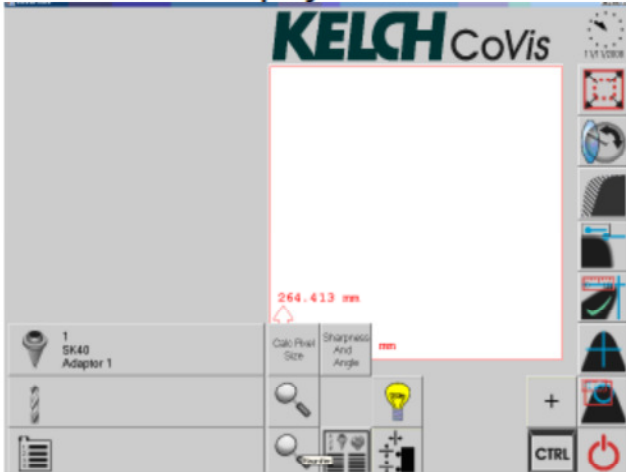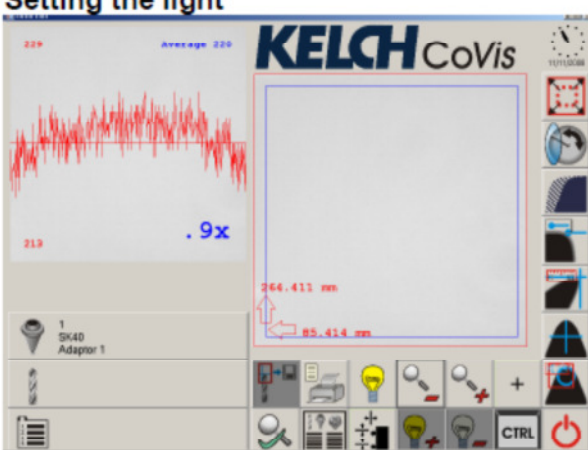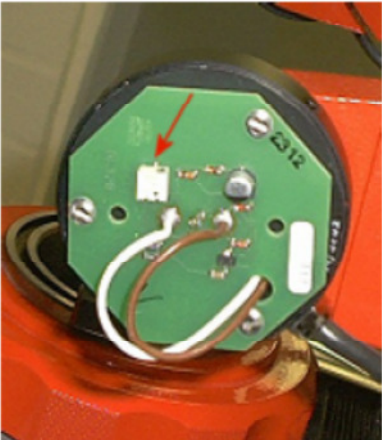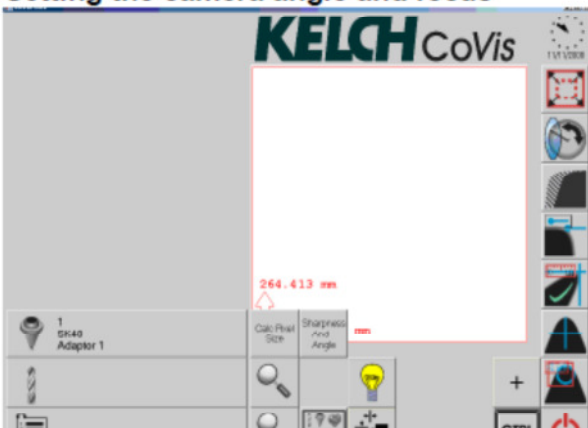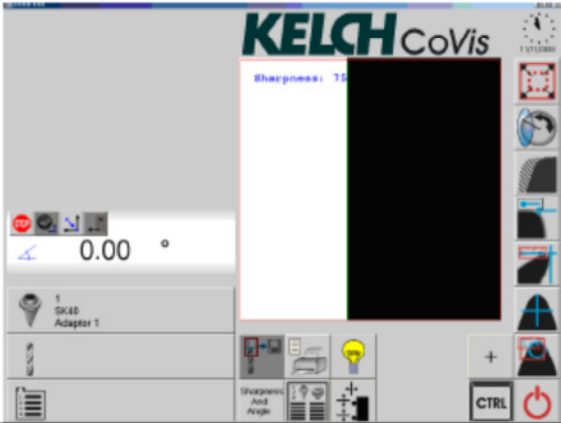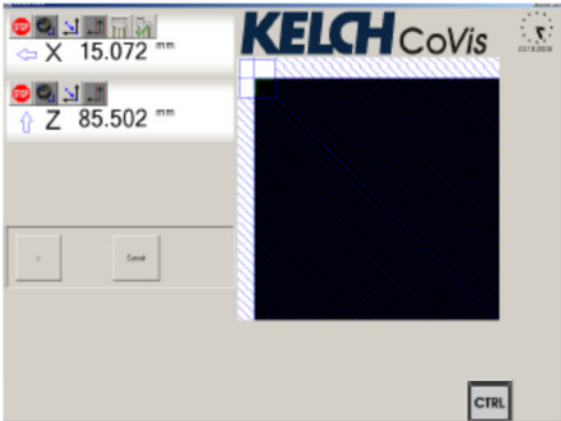|	
Aligning the optical axis to the horizontal measuring plane Holder for the camera Holder for the transmitted light	This guarantees that the camera support is not tilted. Loosen the two screws at the camera support. Then travel with the Z axis and the inserted mandrel down onto the plane surface of the spindle (see picture). From the side, check the parallel gap between the plane surface and the mandrel. Subsequently re-tighten the two screws.
Mounting the camera and light 	Place the camera and the light into the holders and fix them into position. Check the correct alignment of the light with the aid of an aperture placed on the light (approx. 1 mm hole in the middle). The light spot must be visible in the centre of the camera image. If necessary, you can readjust the light by slightly turning or tilting it.
Service mode display 	Calc Pixel Size This button opens the selection box for the angle and focus and light setting and for the pixel correction.

Setting the light	**Calc Pixel Size** Press the settings button. Press the button for setting the light.
	Unscrew the cover at the rear of the transmitted light and change the light at the potentiometer (see arrow) until the **average** is somewhere between **217** and **223**.
Aligning the camera mandrel	Use a dial gauge to align the camera mandrel until the calibrating edge is parallel to the cross axis. The alignment should be 2µ.
Setting the camera angle and focus	**Calc Pixel Size** Long press the Calc Pixel Size button. The various setting tasks are now displayed. **Sharpness And Angle** Press the button for the focus and angle.

Position the camera mandrel as shown on the picture. Subsequently align the camera via the edge of the setting mandrel to ensure that the angle is as close to 0° as possible. Tolerance +/- 0.02°. At the same time, adjust the focus by moving the camera backwards and forwards. Ensure that the highest possible focus value is set.
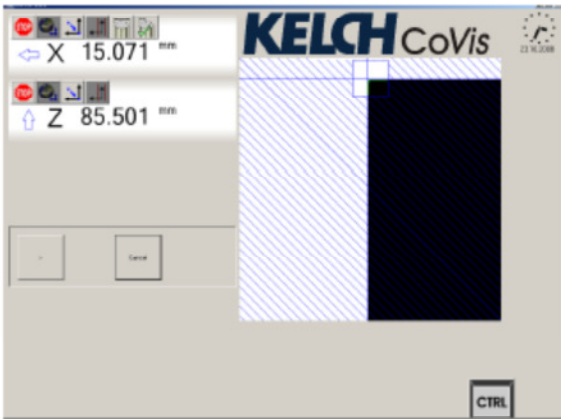
Pixel correction

Press the Calc Pixel Size button, then travel to the lower right-hand window in the camera image with the setting mandrel.
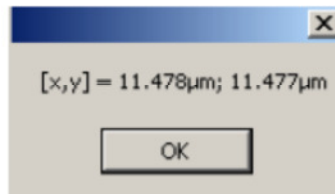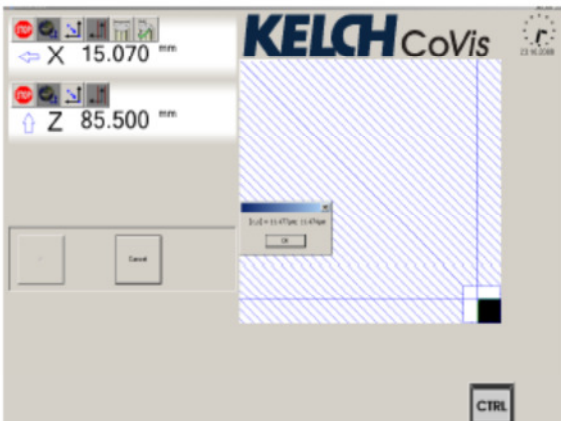
Press the > button.

Now travel to the next window in the camera image and press the > button. Execute this process until you have travelled to all the positions.

$[x,y] = 11.478\mu m; 11.477\mu m$

OK

A window appears with the calculated pixel correction values. Click on OK to confirm.