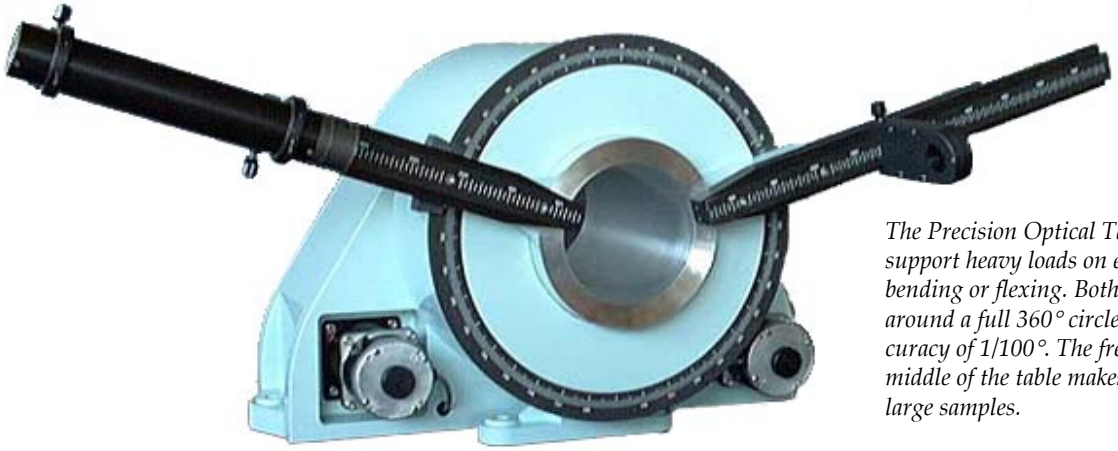
The Precision Optical Table



The Precision Optical Table is designed to support heavy loads on each arm without bending or flexing. Both arms can be moved around a full 360° circle with an absolute accuracy of 1/100°. The free aperture in the middle of the table makes it easy to mount large samples.

The Precision Optical Table is the standard base of the Beaglehole Instruments Modular System. It has a very high rigidity, an important feature in imaging applications where any vibration or flexing of the arms can reduce the resolution of the image. The table has been designed to maintain a resolution of at least 3 µm per pixel when used with the Imaging Ellipsometer.

Optical encoders ensure an absolute position accuracy of the table arms of better than 1/100°. Computer control is implemented through our universal Measurement Controller interface. The arms can also be positioned manually through front panel controls on the arm drive control unit.

The table can support masses of more than 3 kg at the end of each arm – even more if components are mounted further towards the centre of the table. Consequently, larger components such as spectrometers can be mounted directly on the arm instead of coupling them into the system from the outside through optical fibers. By eliminating this additional coupling the light intensity throughput of a given setup can be significantly increased, improving the signal to noise ratio. The result is a shorter measurement time and a better signal quality.

A free diameter of 140 mm in the centre of the table makes it easy to mount large samples. The closest angle between both arms is as small as 20° for near-normal incidence measurements without the need to rearrange the components. This feature makes the table a convenient tool not only for ellipsometry, but other optical measurements such as transmission and reflectivity.

Both arms can rotate around the full perimeter of the table, which can be used to reflect off both surfaces of a liquid interface, or to move the imaging arm of the Imaging Ellipsometer to the 0° position for video microscopy.

The Modular System

The mounting tracks on the arms of the table accept any Beaglehole Modular System component. The components can slide into any position along the length of the arm, and can be easily positioned and rearranged. Distance marks on each mounting track help to find the optimum positions when set-ups are changed.

The standard arms are designed for vertical mounting of components. They can be replaced by horizontal double track arms, which allow two optical paths to be set up simultaneously. Both paths reflect off the same spot on the sample surface. The double track arms are used in the Image Enhanced Ellipsometer to operate both Picometer and Imaging Ellipsometers at the same time.

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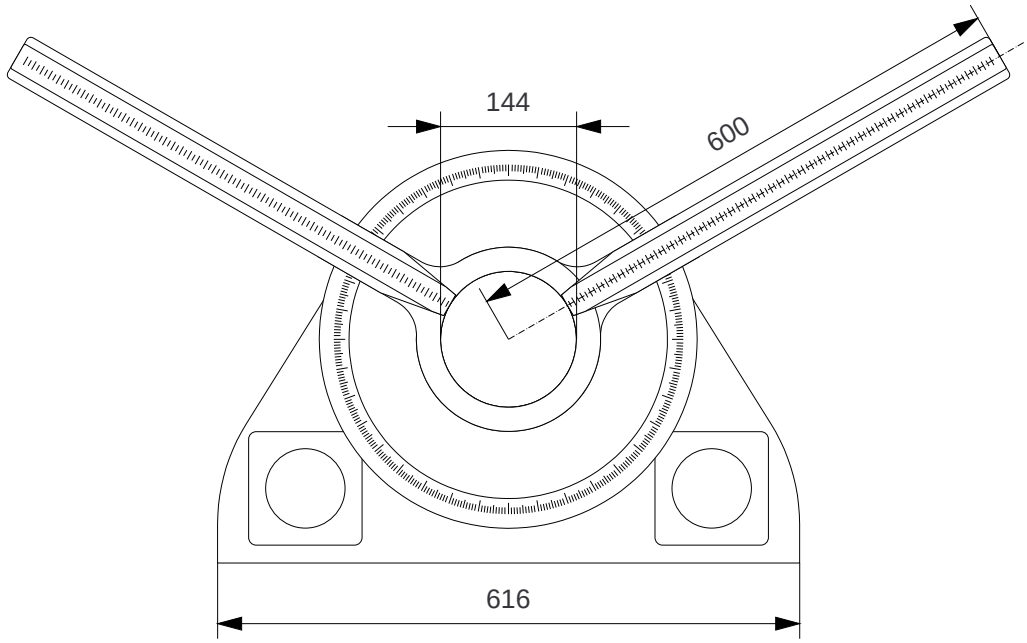
Specifications and Dimensions



Angular Resolution: Absolute arm position monitored to better than 1/100° (40,000 steps per 360°) by optical encoders on each arm.

Arm Movement: Each arm can rotate to any position around 360°. Closest position between arms is 20°.

Arm Drive: Geared stepping motor/belt drive.

Load: Each arm can support up to 3 kg at its end. Larger loads can be mounted towards the centre of the table.

Mechanical Stability: Flexing of arms smaller than resolution limit when used with Imaging Ellipsometer at highest magnification (3 μm/pixel).

Computer Control: Absolute position readout and control through Beaglehole Instruments Measurement Controller (compatible with any PC or Macintosh with one free serial port).

Variable Angle Measurements: Fully supported through Measurement Controller interface.

Mounting: Two mounting holes are provided for bolting the table to a vibration damped support

Weight: Approx. 30 kg with standard arms.

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