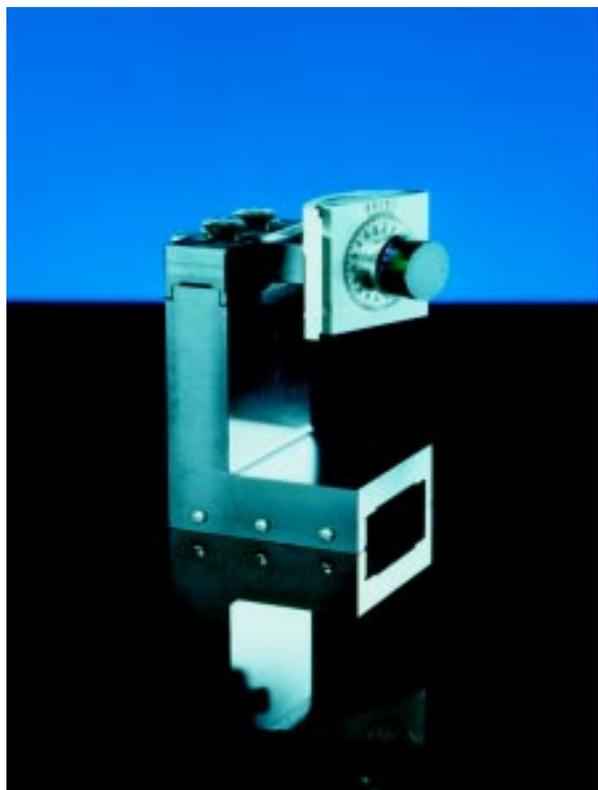


# Crystal Orientation



Model 250 mounted on Model 25002 Track Mount

## Model 250 2-Axis Goniometer

The Model 250 2-Axis Goniometer is used to hold crystals in the process of determining crystallographic orientation using either Laue back reflection or optical orientation techniques (See SBT Model 210 Optical Orientation Instrument). A crystal can be rotated  $360^\circ$  while held in a plane which is adjustable  $\pm 30^\circ$  with respect to the goniometer mounting surface. There is a  $0.2^\circ$  vernier on the  $360^\circ$  adjustment and a  $0.1^\circ$  vernier on the  $\pm 30^\circ$  adjustment. The goniometer combines rugged stainless steel construction with ease and accuracy of adjustment. After orientation, the Model 250 can be mounted on the following SBT equipment for subsequent processing:

- Model 25010 Oriented Crystal Lapping Fixture
- Model 451 Electrolytic Polishing Instrument
- Model 460 Electrolytic Polishing Instrument
- Model 660 Low Speed Diamond Wheel Saw
- Model 750 Acid Saw
- Model 850 Wire Saw

## ACCESSORIES

### Model 25002 Track Mount

The Model 25002 Track Mount is designed to fit either 2.19" or 1.99" wide tracks. It has a horizontal adjustment perpendicular to the x-ray or optical beam and a fixed height of 3.625" from the track to the center of the mounted Model 250 Goniometer.

### Model 25005 Track Mount

The Model 25005 Track Mount is identical to the Model 25002 except it has a fixed height of 4" from the track to the center of the mounted Model 250 Goniometer.

### Dimensions:

Model 250:	2" W x 2" D x 1.5" H
Model 25002:	2.75" W x 3" D x 4.5" H
Model 25005:	2.75" W x 3" D x 5" H



Model 260

### Model 260 3-Axis Goniometer

The Model 260 3-Axis Goniometer is constructed of hard anodized aluminum and is used to hold crystals in the process of determining crystallographic orientation using either Laue back reflection or optical orientation techniques. (See SBT Model 210 Optical Orientation Instrument). The integral track mount is designed to fit a 2.19" wide or narrower x-ray or optical track. There is  $\pm 25^\circ$  of rotation in two of the axes and a full  $360^\circ$  degrees of rotation in the other. The Model 260 is designed so that a 2" diameter crystal mounted on the goniometer with a 1/2" high mounting block is 3.625 inches above the track. The P/N 01-02531 riser can be used to raise the Model 260 by 1 inch when working with smaller crystals. The Model 260 can also be mounted on the following SBT equipment for subsequent processing:

- Model 660 Low Speed Diamond Wheel Saw
- Model 850 Wire Saw

**Dimensions:** 3.5" W x 3.5" D x 3.25" H



Model 265

### Model 265 3-Axis Goniometer

The Model 265 is a larger version of the Model 260 and is mounted on a 7" square flat base which can be adapted for a wide range of applications. There is  $\pm 25^\circ$  of rotation in two of the axes and a full  $360^\circ$  of rotation in the other. The Model 265 is ideal for the orientation and cutting of large crystals and can easily be adapted to existing equipment.

**Dimensions:** 7" W x 7" D x 5" H



Model 65005 shown mounted on Model 65011 Track Mount Model

### Model 65005 2-Axis Goniometer

The Model 65005 is a 2-axis goniometer used for orienting and cutting single crystals. It can be mounted on an x-ray track for orientation using the Model 65011 Track Mount and then transferred to the Model 650 for cutting. With the sample mounted to the goniometer, the vertical axis can be rotated  $360^\circ$  within  $0.2^\circ$  while the horizontal axis can be rotated  $\pm 50^\circ$  from the  $0.2^\circ$  vernier on the arm.

**Dimensions:** 1.5" W x 1.5" D x 2" H

### Model 65011 Track Mount

The Model 65011 Track Mount is designed to mount the Model 65005 2-Axis Goniometer onto a 1.99" or 2.19" wide x-ray or optical track for crystal orientation.

**Dimensions:** 3.25" W x 3" D x 4.25" H



Model 66005 shown mounted on Model 66011 Track Mount

### Model 66005 2-Axis Goniometer

The Model 66005 is a 2-axis goniometer used for orienting and cutting single crystals. It can be mounted on an x-ray track for orientation using the Model 66011 Track Mount and then transferred to the Model 660 for cutting. With the sample mounted to the goniometer, the vertical axis can be rotated  $360^\circ$  within  $0.2^\circ$  while the horizontal axis can be rotated  $\pm 50^\circ$  from the  $0.2^\circ$  vernier on the arm.

**Dimensions:** 2" W x 2" D x 2.5" H

### Model 66011 Track Mount

The Model 66011 Track Mount is designed to mount the Model 66005 2-Axis Goniometer onto a 1.99" or 2.19" wide x-ray or optical track for crystal orientation.

**Dimensions:** 3.25" W x 3" D x 5" H

### The Model 220 Laue Polaroid Cassette System

This system is used in conjunction with SBT Goniometers for recording back reflection Laue patterns. The Model 220 Laue Polaroid Cassette System makes it easy to produce high quality, accurate, instant photographs for crystallographic analysis. The Polaroid film produces 4 x 5 inch black and white photographs in 15 seconds. The system consists of a Laue Polaroid Cassette, A Laue Adapter to hold the cassette on an x-ray track and a 0.75mm collimator. The Laue Polaroid Cassette is designed for use with most x-ray diffraction units and cameras and can be easily adapted for use with special equipment.





Model 170

### Model 170 Multi-Axis Lapping Fixture

The Model 170 was designed in collaboration with Lawrence Livermore National Laboratory and Max Planck Institute for the precision orientation and lapping or polishing of single crystals. This design is based on the work of Mader et al at MPI and is capable of applying a controlled force to delicate samples. The advantage of the Model 170 is that it can be mounted directly on an x-ray track for Laue back reflection. Precision of  $0.1^\circ$  in orientation can be obtained by double exposure with  $180^\circ$  rotation of the fixture in the optional x-ray track mount.



Model 25010

### Model 25010 Lapping and Polishing Fixture

The Model 25010 is designed to complement the Model 250 2-Axis Goniometer and is used to lap or polish oriented crystals either by hand or on a rotating polishing wheel. The Model 250 Goniometer can be mounted on an x-ray track for orientation and then transferred directly into the Model 25010 for lapping or polishing. The Model 250 can also be transferred to an SBT saw prior to using the Model 25010. The Model 25010 utilizes a counterbalanced center slide to completely offset the weight of the center slide and the goniometer and is capable of lapping or polishing oriented crystals within  $0.25^\circ$ .



Model 210

### The Model 210 Optical Orientation Instrument

The Model 210 Optical Orientation Instrument is used to determine the orientation of a crystal or to align a crystal so that specifically oriented surfaces can be cut or polished. The Model 210 uses a laser beam that is reflected off a cleaved or preferentially etched crystal surface back onto a target that is perpendicular to the laser beam. Optical orientation is an orientation technique that can be used as an alternative to more hazardous and expensive x-ray techniques.

