Model 650

Low Speed Diamond Wheel Saw

SBT
Cutting and Sectioning

The Model 650 Low Speed Diamond Wheel Saw

The Model 650 Low Speed Diamond Wheel Saw is a compact, multipurpose, precision saw designed to cut a wide variety of materials with minimal subsurface damage. It's low speed makes it possible to cut fragile materials that would otherwise fracture and soft materials that would load the diamond wheel on a higher speed saw. A variety of sample holders provides a means for mounting any shape sample while goniometer adaptability simplifies cutting oriented crystals.

Operation

A sample is mounted to a sample holder and attached to the arm. An appropriate load is applied by adjusting the counterbalancing weight and the automatic stop switch is set. The sample is positioned in any starting position relative to the diamond wheel and then a micrometer is used for precise sample positioning. With the diamond wheel rotating slowly and coolant in the reservoir, the arm is gently lowered until the sample touches the diamond wheel. Cutting will continue until the automatic cutoff switch is triggered.

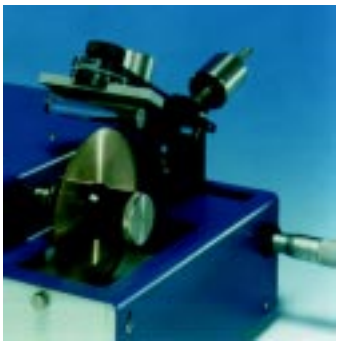
Cutting Wheels

The Model 650 is designed to cut with diamond, CBN and abrasive wheels. Diamond wheels are used for most applications while CBN wheels are primarily used for cutting ferrous based materials. Abrasive wheels (Al_2O_3 and SiC) can be used for cutting both ferrous and nonferrous materials and have also been used for dry cutting of superconductor materials. SBT provides a wide selection of cutting wheels and the separate consumables catalog provides details on selecting the proper cutting wheel for your application.

Special Features

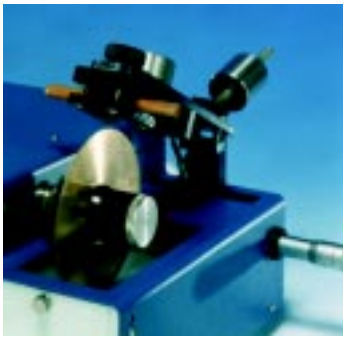
- Belt drive system eliminates gear breakage which is common with less reliable fiber gear driven designs.
- Coolant reservoir is lowered and easily removed by opening an access door located on the front panel.
- Both coarse and fine sample position adjustments allow rapid and accurate sample positioning.
- Polyethylene coolant reservoir enables the use of both water soluble and oil based coolants.
- Automatic termination of the cutting process is controlled by an electromechanical downstop which minimizes supervision.
- Cutting arm pivots on a set of precision bearings rather than on the micrometer shaft which ensures accurate and repeatable sample positioning.
- Multiple diamond wheels can be used to gang slice materials up to 2" in length.
- Utilizes a high torque 1 / 15 HP DC motor to provide sufficient power for difficult materials.
- The 3 standard sample holders allow mounting of virtually any shape sample.
- 2-Axis Goniometer can be transferred from an x-ray track for cutting precisely oriented crystals.
- It's small size and simple operation make it ideal for glove box or hot cell adaption.

ACCESSORIES



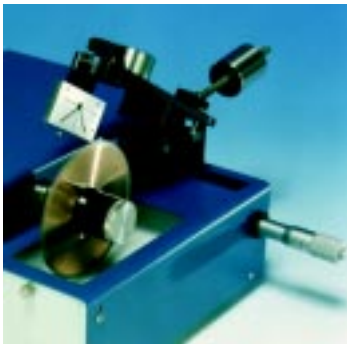
Model 65001
Single-Axis Goniometer

The Model 65001 has a graduated scale with a 0.2° vernier and can be rotated 360°. This rotational capability makes it ideal for precisely slicing single crystals. The sample is mounted to a block using a low melting point wax and the block is subsequently clamped into the Model 65001. Wax mounting of the sample ensures that the cut piece will remain attached to the holder and will not be damaged by falling after being cut.



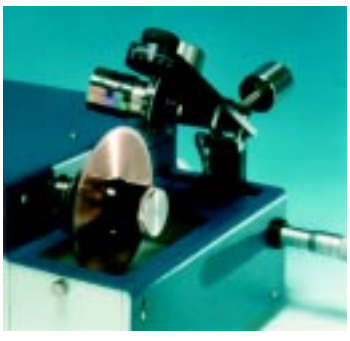
Model 65003
Double Clamp
Sample Holder

The Model 65003 is a clamp type holder designed to clamp both ends of a round or rectangular rod while cutting between the two clamped positions. The Model 65003 can also be used as a single clamp holder to hold encapsulated metallurgical samples up to 1.25" in diameter.



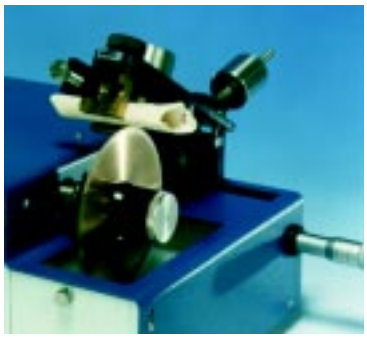
Model 65004
Petrographic
Sample Holder

The Model 65004 is designed to use a vacuum to hold 2.5cm x 5.0cm glass plates, onto which petrographic or other samples are waxed, while making saw cuts parallel to the glass plate. The glass plate is held against a stainless steel support plate with vacuum and is placed firmly against 3 locating pins to maintain its position.



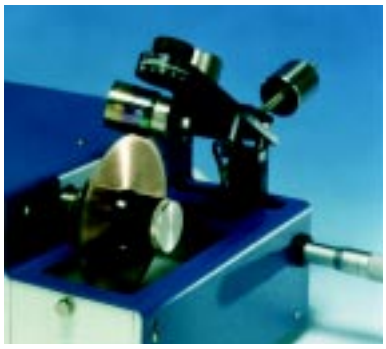
Model 65005
2-Axis Goniometer

The Model 65005 is a 2-axis goniometer used for orienting and cutting single crystals. The Model 65005 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 ±50° from the 0.2° vernier on the arm.



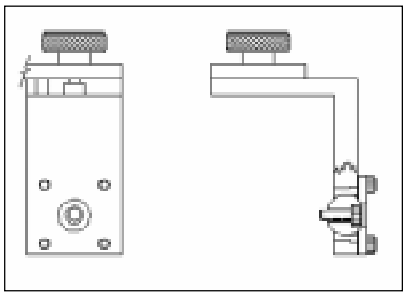
Model 65006
Vise

The Model 65006 Vise is designed to hold flat, round and irregularly shaped samples without the need for a mounting wax. The entire vise can rotate 360° in the horizontal plane. An extended v-notch jaw enables the mounting of cylindrical samples up to 1.25" in diameter including encapsulated metallurgical samples.



Model 65007
Right Angle Holder

The Model 65007 Right Angle Holder is designed to hold mounting blocks parallel to the saw blade. The Model 65007 accommodates stainless steel mounting blocks up to 1.5" in diameter which are directly transferable to the South Bay Technology series of lapping and polishing fixtures.

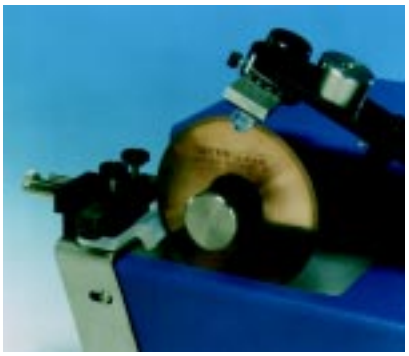


Model 65008
Ball Joint Holder

The Model 65008 Ball Joint Holder is designed to allow a wide range of motion to position the specimen for cutting. The Model 65008 is mounted similar to the Model 65007 Right Angle Holder and consists of a specimen mounting block which is mounted to the ball joint holder. The ball joint allows the specimen to be adjusted in any direction up to 10° maximum. This provides a wide range of motion and flexibility to cut oddly shaped specimens.

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.

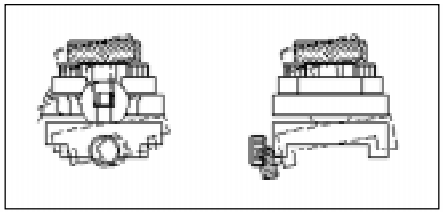


Model 65012 Dressing Stick Holder

To ensure efficient performance from a diamond wheel, it is imperative that the wheel is dressed on a regular basis to expose new diamonds for cutting. The Model 65012 Dressing Stick Holder mounts directly onto the Model 650 and provides a means to carefully apply a silicon carbide dressing stick to and retract from the diamond wheel.

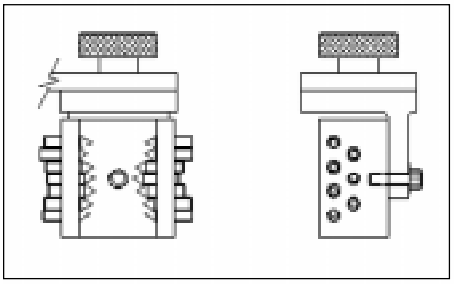
Model 65014 RotaCutter™

The Model 65014 is an optional specimen arm that mounts in place of the standard arm on the Model 650 and provides rotation of the sample during cutting. The RotaCutter™ can cut irregular shapes as well as cylindrical samples up to 2.25" in diameter. Rotating the sample during the cutting process produces thinner samples in a shorter time and with a better surface finish. The RotaCutter™ maintains a point contact between the diamond wheel and the sample which accounts for the increased cutting rate. Materials from hard ceramics to soft metals can now be cut in a fraction of the time required on a standard saw. The Model 65014 RotaCutter™ includes the cutting arm , a specimen holder and a variable speed power supply. The power supply is also equipped with an auxiliary outlet for an optional work lamp. This optional halogen lamp is ideal for illuminating the sample area for inspection while cutting or for alignment when using the Model 65040 Alignment Microscope.



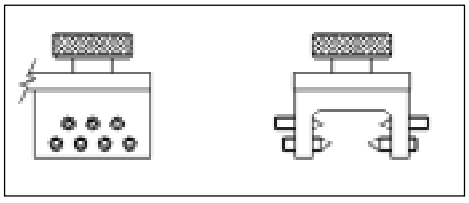
Model 65016 Ball Joint Work Arm

The Model 65016 is a new arm that incorporates a ball joint at the point where the sample holders attach to the arm. This allows the use any of our standard sample holders and provides the ability to swivel them up to 10° in any direction. The ball joint work arm simplifies the specimen mounting process as cutting plane adjustments can easily be made after the specimen has been attached to a sample holder.



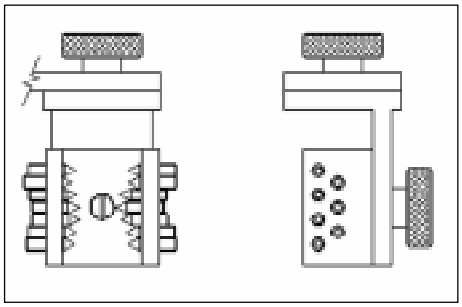
Model 65018 Right Angle Bone Chuck

The Model 65018 attaches to our Model 65007 right angle holder. The 65018 includes a 65007 Right Angle Holder and a 65017. It holds the bone at a right angle relative to the 65017. It can still rotate 360 degrees in the horizontal plane (although the 65017 is now at a right angle), but the 65017 is held in a fixed position within the 65007 utilizing a set of locating pins. The 65017 can be rotated in 90 degree increments as there are multiple sets of pin holes for the locating pins.



Model 65017 Bone Chuck

The Model 65017 allows you to hold the sample utilizing a series of 10 independently adjustable mounting screws. These mounting screws make it possible to hold irregularly shaped specimens and rotate them 360 degrees in a horizontal plane. The Model 65017 Bone Chuck attaches to the standard work arm in place of the standard sample holders.

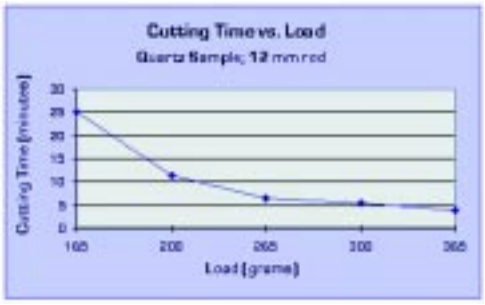


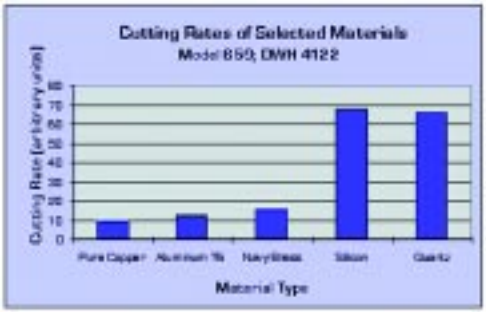
Model 65019 Adjustable Right Angle Bone Chuck

The Model 65019 uses the 65017 holder and it mounts into a specially designed right angle holder. As there are no locating pins in this design, you can rotate the sample 360 degrees in both a horizontal and a vertical plane.

Model 65040
Alignment Microscope

The Model 65040 Alignment Microscope is designed to allow critical alignment of samples while mounted on the Model 650 Low Speed Diamond Wheel Saw. The Model 65040 utilizes a 20x microscope and incorporates precise x-y adjustments. This precision alignment makes the Model 65040 ideal for cutting out devices from semiconductor wafers or for cutting any material where precise alignment and minimal subsequent grinding is desired. The Model 65040 Microscope can be mounted onto any Model 650 Saw in minutes, without modification to your existing saw.





Model 65099
Starter Kit for Model 650

Includes a supply of commonly used consumable items and spare parts.

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This is a plexiglass table which mounts on top of the Model 650 reservoir. It has a slot through which the blade passes and creates a flat surface that can be used as a guide in hand feeding a sample into the blade.

Specifications

Dimensions:	13" W x 9" H x 13" D
Net Weight:	17 Lbs.
Wheel Rotation:	0 - 300 RPM (100 - 975 RPM available)
Wheel Diameter:	3" (75mm) & 4" (100mm)
Max Sample Diameter:	1.3" (33mm)
Specimen Load:	0 - 500 grams
Spindle Diameter:	0.5" (12.7mm)
Motor:	1 / 15 HP DC
Micrometer Feed:	0 - 1.000", .001" increments or 0 - 25mm, 0.01mm increments
Reservoir Capacity:	350ml
Electrical Input:	100 VAC 50 / 60 Hz 115 VAC 50 / 60 Hz 220 VAC 50 / 60 Hz

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