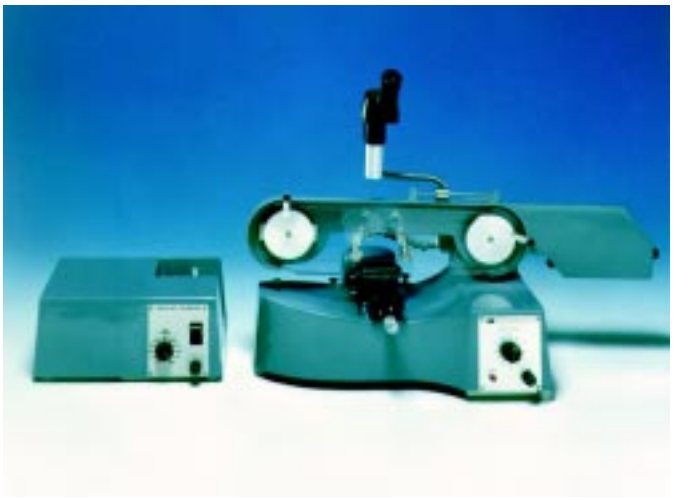
Model 850
Wire Saw

Cutting and Sectioning



The Model 850 Wire Saw

The Wire Saw offers the most gentle mechanical method for cutting virtually any material using either a diamond impregnated wire blade or a plain wire blade with an abrasive slurry. In addition to traditional mechanical cutting, the saw can also be used as a string saw to cut water soluble crystals. It is most useful for cutting fragile crystals, substrates with delicate layers or any material that would be damaged when using a diamond wheel saw. Very brittle materials will cut the fastest, but even soft materials can be cut since there is not the problem of loading the blade that is inherent with diamond or abrasive wheels. The Wire Saw has sample holders available to hold virtually any shape sample including a goniometer to simplify the cutting of oriented crystals.

Special Features

- Variable speed abrasive slurry pump and reservoir with mixing motor keeps abrasive in suspension and ensures that fresh abrasive is constantly applied to the cutting area.
- Easy to replace continuous loop wire blade.
- Micrometer cross-feed mechanism provides precise sample positioning.
- 2 or 3-Axis Goniometers can be transferred directly from an x-ray or optical track for cutting oriented crystals.
- Counterbalanced arm allows for fine adjustments in cutting pressures.
- Optional microscope provides a capability for precise sample alignment.

Operation

When used as an Abrasive Slurry Wire Saw the Model 850 offers the most gentle mechanical method for cutting a material. A sample is mounted to a sample holder and attached to a work table on the base of the saw. An appropriate load is applied by adjusting the counterbalancing weight and the mechanical downstop is set. The sample is then positioned in any starting position relative to the wire blade and then a micrometer is used for precise sample positioning. With the wire rotating, the arm is gently lowered until the wire blade touches the sample. Abrasive slurry is applied by hand from a drip bottle or automatically with the Model 85030 Abrasive Recirculating System. The cutting is accomplished by directing the abrasive slurry to the point of contact between the moving wire blade and the sample. The excess slurry will drain off the contoured base of the saw into a reservoir. Cutting will continue until the mechanical downstop is reached.

When used as a Diamond Wire Saw the Model 850 uses a diamond impregnated wire blade and a water coolant in place of the abrasive slurry. Diamond wire cutting is used for cutting hard materials or when contamination from an abrasive slurry is undesirable.

When used as a string saw the Model 850 can cut water soluble crystals such as sodium chloride, by having a water soaked wick rub against a standard wire blade. The water is carried on the wire blade to the sample and cuts by dissolving its way through the crystal.

Wire Blades

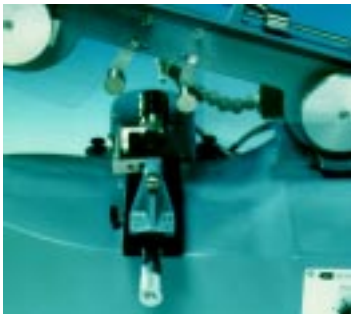
Five different wire blades are available for the Wire Saw: .005", .010" and .015" diameter plain wires and .010" and .015" diameter diamond impregnated wires. The wire blades will last .75 - 4 hours of cutting time with the average being from 1 - 2 hours. The .005 diameter wires will last from .5 - 1.5 hours of cutting time. The life of the blade depends on many factors including wire speed, pressure, blade diameter, material being cut and type of abrasive slurry. It is important to note that the blades used with the abrasive slurry will decrease in diameter as they are used while the diamond impregnated wires will maintain the same diameter.

Abrasive Slurry

South Bay Technology provides premixed abrasive slurries in boron carbide, silicon carbide, aluminum oxide and diamond for use with the wire saw. Boron carbide is most commonly used as it is very hard and it's relatively low density allows it to stay in suspension better than silicon carbide.

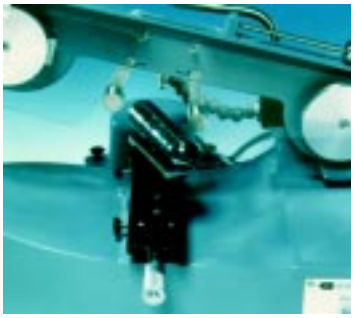
Work Tables

A work table is mounted onto a slide assembly and is where a sample is actually mounted. It is important to carefully examine your requirements in order to make a proper work table selection. In some cases, multiple work tables will be required to offer maximum flexibility. One work table is required for proper operation of the Wire Saw.



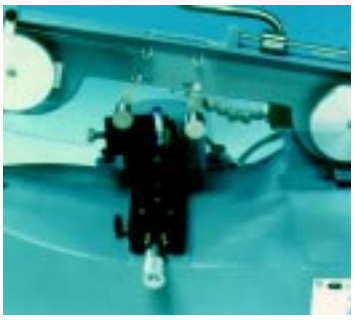
Model 85013 Work Table

This table is designed to be mounted on the Model 85011 Goniometer Mount and is used in place of the Model 85015 Work Table to provide a quick means of transferring between oriented cutting with the Model 250 and standard, non oriented cutting. The Model 85013 can be used to cut either parallel or perpendicular to the mounting block without removing the Model 85011 which has been previously aligned with the wire blade. The mounting blocks are also directly transferable to SBT Lapping & Polishing Fixtures.



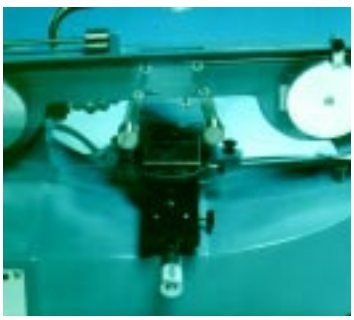
Model 85015 Work Table

The Model 85015 rotates 360° and is used for cutting operations that do not require precise orientation. The Model 85015 consists of a protective plastic cover for the cross feed and 2 work tables - 1 to hold 1" wide mounting blocks and 1 to hold 2" wide mounting blocks. A sample is mounted by waxing it to a graphite plate which is attached to an aluminum block. The aluminum block is then clamped into the Model 85015.



Model 85014 Vise

The Model 85014 Vise is designed to hold flat, round and irregularly shaped samples without the need of 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.

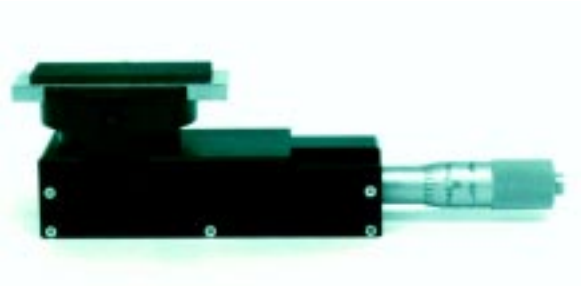


Model 85016 Indexing Table

The Model 85016 has a calibrated 360° rotation with a vernier reading of 6 minutes of arc and is used when precise sample orientation is required. The Model 85016 consists of a protective plastic cross-feed cover and a work table to accommodate 2" wide mounting blocks. A sample is mounted by waxing it to a graphite plate which is attached to an aluminum block. The aluminum block is then clamped into the Model 85016.

Cross-Feed Mechanisms

A precision cross-feed mechanism, onto which a work table is mounted, is required for proper operation of the Wire Saw.



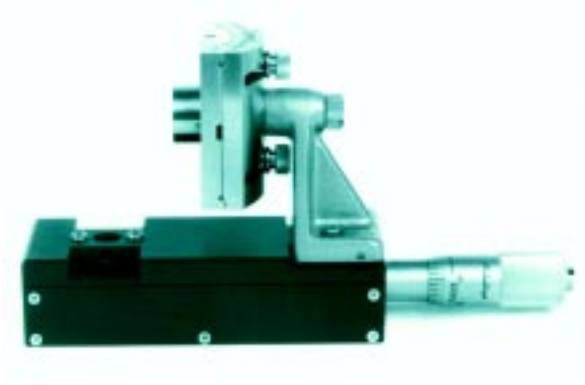
Model 85021
1" Cross-Feed

The Model 85021 utilizes a precision micrometer with a total range of 1" or 25mm. The Model 85021 is shown above with a Model 85015 mounted to it.

Model 85022
2" Cross-Feed

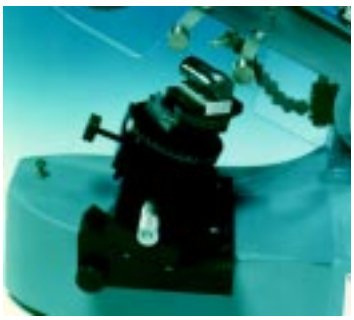
In addition to the 1" or 25mm micrometer, the Model 85022 offers 1" of coarse adjustment for a total range of 2" or 50mm. The Model 85022 is shown above with the Model 85016 mounted to it.

ACCESSORIES



Model 85011
Goniometer Mount

The Model 85011 Goniometer Mount is used to mount the Model 250 Goniometer onto the wire saw's slide assembly. The Model 85011 is initially aligned with the wire so that a precisely oriented cut can be made once the Model 250 has been transferred from an x-ray or optical track. The Model 85011 is shown above with the Model 250 Goniometer mounted on the Model 85021 Cross Feed.



Model 85024
Angular Goniometer Mount

The Angular Goniometer Mount was designed to be used with the Model 85022 Cross-Feed and allows the Model 260 to be mounted onto the Model 850 Wire Saw. The Model 85024 has a 2" cross-feed when used with the Model 85022. It also has the ability to pivot up to 30° parallel to the wire from a horizontal position. To accommodate the Model 260, the Angular Goniometer Mount is typically set at an angle when cutting oriented samples. The Model 85024 is shown above with Model 260 Goniometer mounted to it.

Model 85030
Abrasive Slurry Recirculating System

The recirculating system consists of an abrasive slurry reservoir and a variable speed abrasive slurry pump. The reservoir consists of a cup like cast aluminum container with a mixing motor that attaches to the back of the Model 850. It collects the abrasive slurry which drains from the contoured surface of the Wire Saw and continually stirs the slurry keeping it in suspension. The Abrasive Slurry Pump consists of a peristaltic pump and a variable speed, heavy duty motor. The slurry is pumped from the reservoir and is applied to the sample through an adjustable slurry tube.

Model 85040
Alignment Microscope

The Alignment Microscope is mounted directly to the base of the Model 850 Wire Saw and is capable of viewing the sample through a slot in the top of the Wire Saw's arm. The microscope has a 40x magnification and is ideal for dicing semiconductor wafers along narrow streets or whenever critical alignment of a sample is required.

Model 85099
Starter Kit for Model 850

The Model 85099 Starter Kit includes a conveniently packaged range of consumable supplies and spare parts.

Specifications

Dimensions (850 only):	28" W x 18" H x 9" D
Dimensions (850 with reservoir):	28" W x 18" H x 14" D
Dimensions (pump only):	11" W x 5" H x 10" D
Net Weight (Model 850):	19 Lbs.
Net Weight (Model 850 220V):	24 Lbs.
Net Weight (Model 85030):	17 Lbs.
Wire Speed:	1200 SFM
Wire Types / Diameters	
Stainless Steel:	.005", .010", & .015"
Diamond:	.010" & .015"
Max Sample Diameters:	3"
Motor:	1 / 25 HP AC / DC
Cross Feed Range (max):	2" total (1" coarse + 1" micrometer)
Micrometer Feed:	0 - 1.000", .001 increments or 0 - 25mm, 0.01 mm increments
Electrical Input:	90-120 VAC 50 / 60 Hz 200-240 VAC 50 / 60 Hz

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