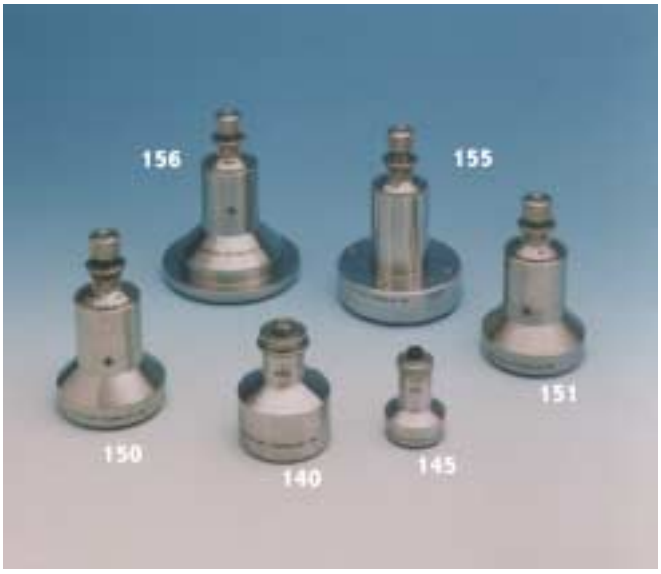
Lapping and Polishing Fixtures

Lapping & Polishing



Description

The South Bay Technology Precision Lapping and Polishing Fixtures are designed to accurately produce polished parallel, tapered or critically oriented samples with minimal sub-surface damage. A series of specialized fixtures has been developed for lapping and polishing samples up to 6" in diameter, TEM samples and oriented crystals. In addition to size and shape, the fixtures differ in the type of thickness control techniques they employ. The Lapping and Polishmg Fixtures are designed to be used either by hand or with a lapping machine. Sample Mounting Fixtures are also designed to be used in conjunction with these fxtures to ensure that the sample is mounted parallel to the mounting block and that a thin, uniform layer of wax exists between the mounting block and the sample.

Micrometer Controlled Fixtures

The micrometer method of thickness control employs a dial with 25 micron or finer graduations, that is adjusted relative to the outside support ring to set the amount of material to be removed. To set the dial, the sample is initially zeroed against the lapping plate and then the dial is adjusted to create a gap between the outside support ring and the center slide. This gap corresponds to the amount of material to be removed and gradually decreases, as the sample is lapped or polished, until the final thickness is reached. The load on the sample is variable by adding weights or finger pressure to the top of the fixture. Due to the ease of adjustment a micrometer controlled fixture is generally used when desired sample thickness will vary from sample to sample.

Special Features

- Tungsten carbide base resists wear and maintains sample planarity.
- Wear ring is replaceable on some fixtures, extending the lifetime of the fixture.
- Micrometer depth control allows precise control over specimen thickness.
- Wide base ensures stability, thereby minimizing specimen damage and edge rounding.
- All fixtures can be mounted onto the Model 910 or 920 Lapping and Polishing Machine for semi-automatic processing.
- Precisely crafted stainless steel construction ensures long life and high precsion.
- Optional digital indicators available on specific fixtures, increasing precision to 1 micron or better.

Fixture Versatility

There are many different fixtures available that can be used for many different applications. Small fixtures which can be used for processing TEM and small SEM specimens are available, such as the Model 145. Larger diameter specimens can be processed using the Model 150 or 155.

Specific applications, such as edge polishing optical devices and wafers can also be accommodated. The Model 147 or 153 can be used for these specific applications where precision and edge quality are keys.

Vacuum mounting and increased precision also are available. The Model 155DV allows both vacuum and wax mounting techniques to be employed for a particular specimen and includes a digital indicator with 1 micron resolution for increased precision. Whatever the application, SBT offers a fixture to solve the most difficult lapping and polishing obstacle.

SBT SOUTH BAY TECHNOLOGY INC.

1120 Via Callejon, San Clemente CA 92673 USA
Voice: 949 . 492 . 2600 • FAX: 949 . 492 . 1499 • Sales: 800 . 728 . 2233
e-mail: sbt@southbaytech.com • Visit us at http://www.southbaytech.com

Model 104 Lapping Fixture

The Model 104 is different from the other micrometer type fixtures in that it uses 3 adjustable tungsten carbide feet rather than an adjustable center slide. The Model 104 can accommodate samples up to 4" in diameter and variations of the fixture are available to accommodate samples up to 6" in diameter.

Model 145 Lapping Fixture

The Model 145 accommodates up to a 1/2" sample mount which is held in place using a threaded draw rod and locating pin. This small, lightweight fixture is ideal for hand lapping or polishing of samples less than 1/2" in diameter.

Model 146DV Vacuum Mounting Lapping Fixture

The Model 146DV can be used with an option of vacuum (V) or a digital indicator (D). The Model 146V has the ability to mount specimens up to 2.5” using vacuum. The 146D has a digital indicator allowing 1 micron resolution during the lapping and polishing process. The fixture can be purchased with both options.

Model 147 Edge Polishing Fixture

The Model 147 is similar to the Model 153 and allows edge polishing or angle polishing of wafers, rods, or crystals for critical applications. Specimens up to 1.1” x 0.8” x 4” can be accommodated for edge polishing. The Model 147 can also be used with the vacuum (V) or digital indicator (D) options.

Model 150 Lapping Fixture

The Model 150 accommodates sample mounts up to I” in diameter for both parallel and tapered samples. Angled blocks up to 45° are available and are simply mounted in place of standard parallel mounts when tapered sections are desired. The mounting blocks from this fixture are directly transferable from any SBT saw. The Model 150 is a general purpose fixture and is capable of lapping and polishing multiple small samples or larger samples up to 1" in diameter.

Model 151 Counter-Balanced Lapping Fixture

The Model 151 is identical to the Model 150 except that the center slide is completely counter-balanced which enables the user to precisely vary the sample load. The Model 151 is ideal when lapping or polishing very delicate materials, where only a minimal sample load can be tolerated.

Model 153 Laser Rod Polishing Fixture

The model 153 is similar to the Model 155 in that it accommodates sample mounts up to 2” in diameter. However, the 153 has machined holes in the base to allow long rods, wafers or crystals to be polished. Edge polishing of wafers, rods, or small angle polishing can all be achieved with the fixture.

Model 154 Counter-Balanced Lapping Fixture

The Model 154 is identical to the Model 155 except that the centerslide is completely counter-balanced whichenables the user to precisely vary the sample load. The Model 154 is ideal when lapping or polishing very delicate materials, where only a minimal sample load can be tolerated.

Model 155 Lapping Fixture

The Model 155 works the same as the Model 150, but accommodates sample mounts up to 2" in diameter. A streamlined design reduces the overall fixture weight which makes it ideal for lapping either by hand or on a lapping machine. The Model 155 also has replaceable tungsten carbide feet.

Model 155DV Lapping Fixture

The Model 155DV is identical to the Model 155 in all aspects, however can be used with an option of vacuum (V) or a digital indicator (D). The Model 155V has the ability to mount specimens up to 2” diameter using vacuum. The 155D has a digital indicator allowing 1 micron resolution during the lapping and polishing process. The fixture can be purchased with both options as well.

Model 156 Counter-Balanced Lapping Fixture

The Model 156 works the same as the Model 155, and also accommodates sample mounts up to 2" in diameter. The Model 156 boasts a wider base and longer piston to increase stability and precision. The counter-balancing mechanism is ideal when lapping or polishing very delicate materials.

Model 157 Lapping Fixture

The Model 157 is identical to the Model 156 with the exception of the counter-balance. Sample mounts up to 2” diameter can be accomodated and the wide base increases stability and precision.

Sample Mounting Fixtures

The proper mounting of samples is a critical step in the lapping and polishing process. It is imperative that the sample is firmly mounted parallel to the sample mount surface to ensure accurate results. Sample Mounting Fixtures are designed to both monitor the temperature of the wax and to provide a uniform mounting pressure.

Model 180 Stackable Lapping Tray

The Model 180 consists of a replaceable 12" square glass lapping plate mounted into a cast aluminum tray. The tray is designed to serve as a secure surface for the glass plate while polishing with either abrasive slurries, abrasive papers or abrasive films. The area under the glass plate acts as a reservoir to contain the used slurry or fluids.

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