LOOMIS

# The Breaking Process of the Loomis Industries LSD-100 Series Machines

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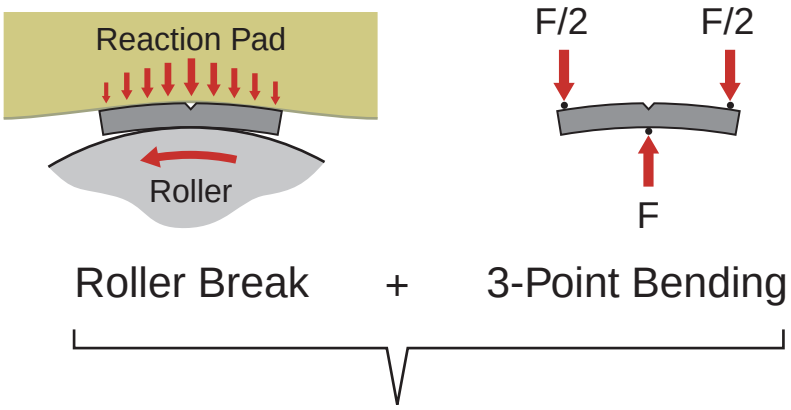
Breaking a semiconductor wafer or thin substrate of glass, ceramic or other material is a breeze once you've created a quality scribe line. Breaking is achieved by applying tensile strain lateral to the scribe line. The Loomis LSD-100 breaking method is a hybrid of two standard methods. The first method bends the wafer over a curved surface ("Roller Breaking"). The second method uses three points to bend the wafer ("Three-point Bending").




## Loomis Controlled Strain Breaking System

By combining these two methods, Loomis takes advantage of the precision and limited contact of three-point beam bending and the controlled strain of a curved surface.

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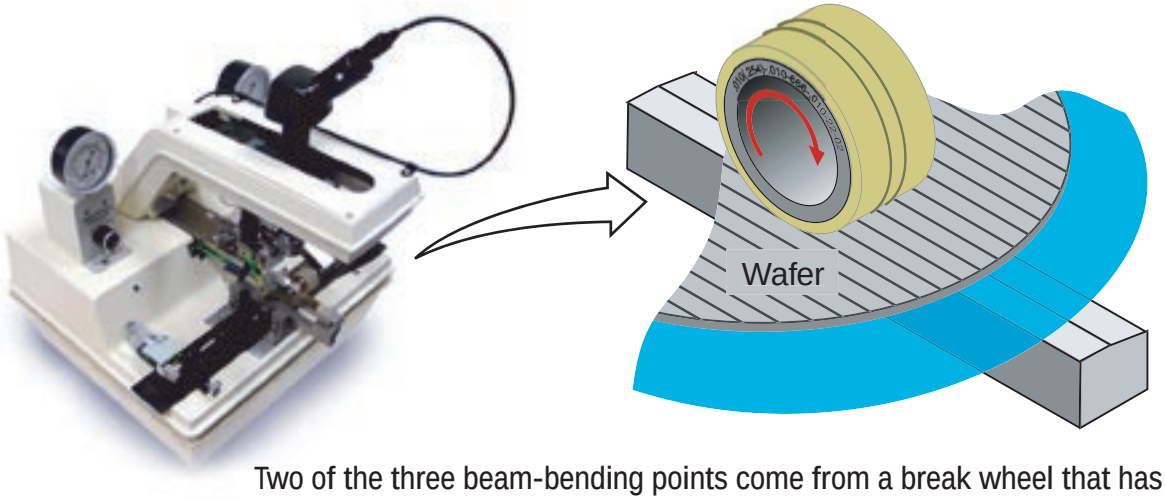
Two of the three beam-bending points come from a break wheel that has raised tracks formed around the circumference. The third point is provided by the wedge-shaped mandrel. The shape of the mandrel also limits the bending angle and therefore the strain that is applied to the wafer. A crack will propagate only if the optimum scribe line exists. If it doesn't exist, nothing happens and that section of the wafer is saved.

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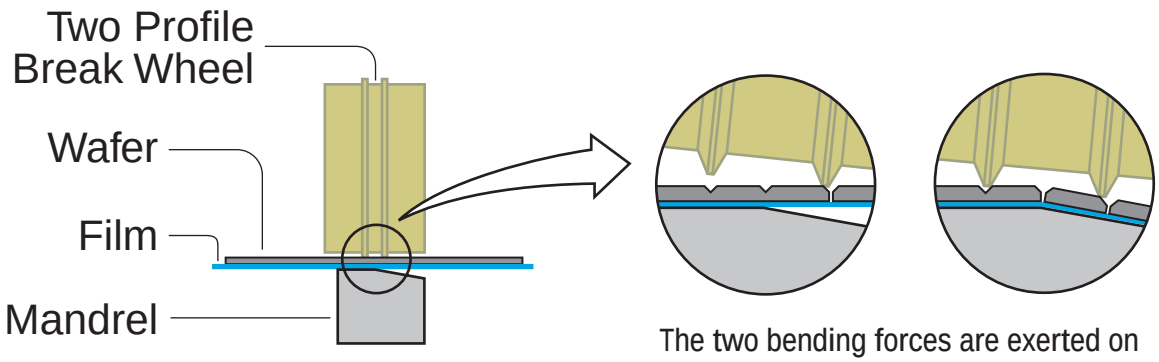
The profiles on the break wheel cause the wafer to conform to the mandrel. They are usually spaced symmetrically on each side of the scribe line at a distance dictated by the die dimensions. The two bending forces are exerted on the separation grids between the dice. This prevents damage to air bridges or other sensitive structures.

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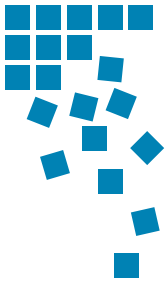

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Loomis Industries designs and manufactures precision wafer dicing machines for the high-technology semiconductor industry. The machines incorporate patented scribe and break components, advanced positioning technologies and a real-time imaging system, yielding dice with unprecedented reliability - that means a lot to our customers' bottom line. The machines are easy to use and customizable, capable of being tailored to the specific installation or application requirements of each customer. For more information, call or visit us online.


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