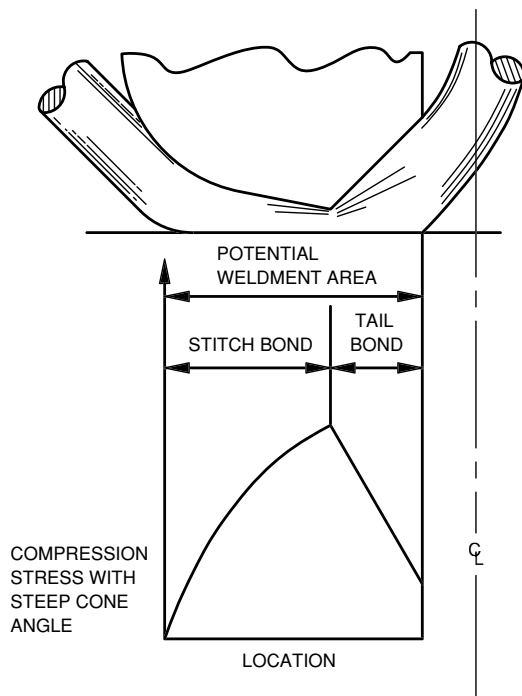


**Face angle -  
Stress on Second Bond**

The impact of stresses during the second bond formation is an important subject in order to understand the mechanism behind it. Stresses applied to the wire during the formation of the second bond are responsible for the integrity and strength of that bond.

The following generic diagram illustrates the stress distribution occurring during the second bond.

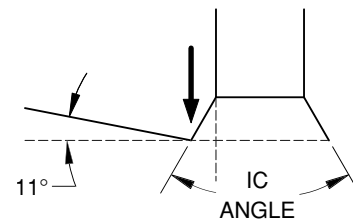
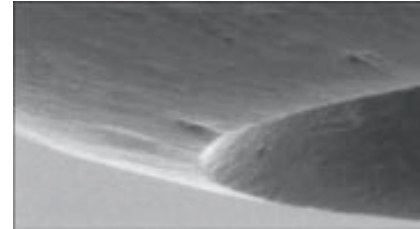


**Compressive Stress Graph**

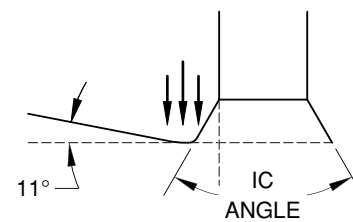
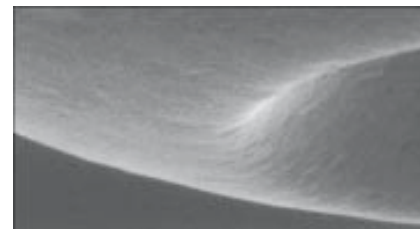
Another way of illustrating the stress points is shown in the adjacent figures where a fixed face angle capillary is compared against a CDR2B type capillary.

The standard face angle capillary shows a Vertical Force component concentrated at the intersection of the IC and Face Angle. If this component is excessive, the results are cut wires resulting in missing balls.

The CDR2B design shows the same type of Vertical Force component but distributed over a larger surface area resulting in smaller components that reduce the potential cutting the wire during the bonding operation.



**Standard Capillary**



**CDR2B Capillary**

FACE ANGLE	BOND STRENGTH	PARAMETER SETTINGS	PLANARITY SENSITIVITY	SURFACE CHARACTER
0°	Highest	Highest	Highest	Rough, Thin, Thick and Clean (Au)
4°	High	High	Lower	Thin, Thick and Clean (Au, Cu, Pd)
8°	Good	Average	Low	Soft, Rough, Thin, Thick, Hard (Ag, Au, Cu, Pd)
11°	Good	Low	Minimal	Soft and Thick (Ag, Au)

**Face angle comparison table**