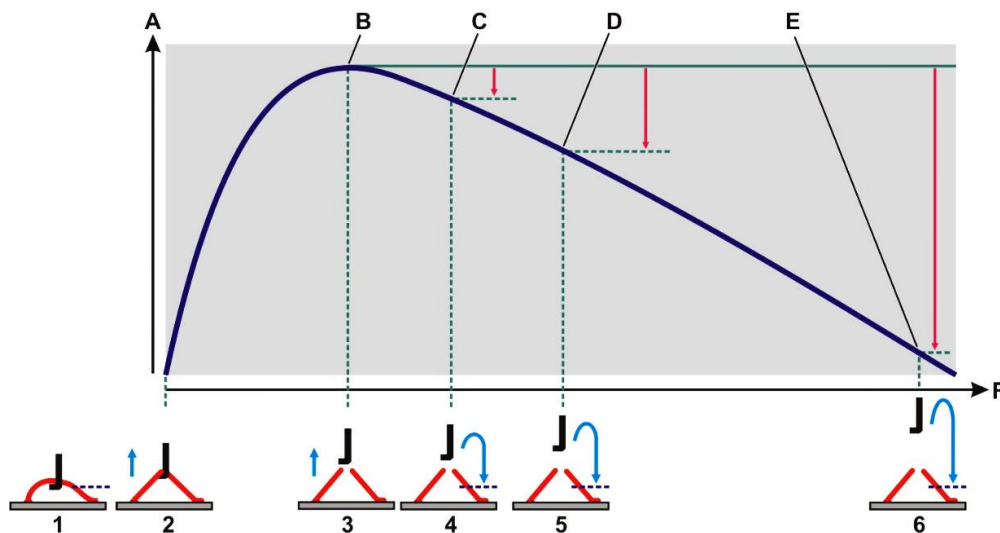
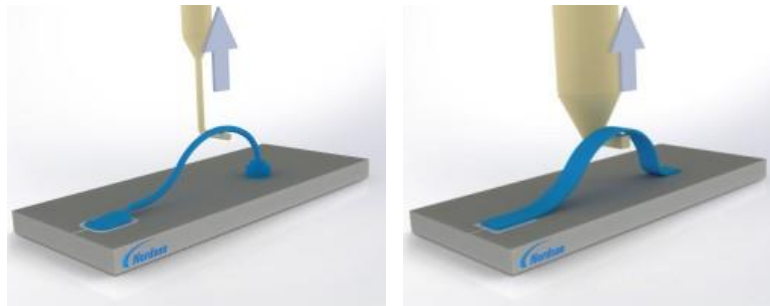


Wire pull

The principle behind basic wire bond testing is positioning of a hook underneath the wire and pulling in the Z axis either until the bond breaks (destructive testing) or a pre-defined force is reached (non-destructive testing).



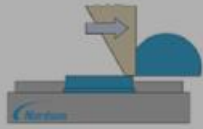
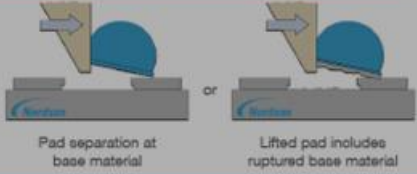
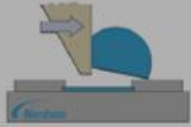
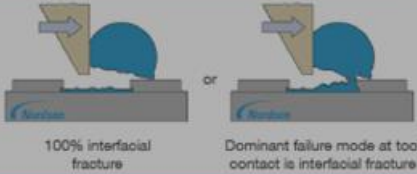
Using appropriate tool is crucial to access complex packaging geometry and deliver accurate results. Nordson T&I loadcell cartridges could achieve a minimum accuracy of $\pm 0.25\%$ full scale load and a maximum pull load of 100kg.

Small geometry (Ultra Fine Pitch and low force) applications are becoming more and more popular and as such Nordson T&I offers wire pulling test equipment optimized specifically for this

function. Heavy wire pull can be conducted on the same platform by simply changing the loadcell.

A wire pull test can be performed manually or semi-automatically to a preprogrammed test recipe.

Failure Mode Characterization

Solder Ball Shear Testing		
Failure Mode	Description	Illustration
Ductile	Solder ball fracture at or above the surface of the solder mask within the bulk solder material.	
Pad Lift	Solder pad lifts with solder ball; lifted pad may include ruptured base material.	 Pad separation at base material or Lifted pad includes ruptured base material
Ball Lift	Solder ball lifts from pad; pad is not completely covered by solder/intermetallic and the top surface of the pad plating is exposed.	
Interfacial Break	The break is at the solder/intermetallic interface or intermetallic/base metal interface. The interfacial fracture may extend across the entire pad or be the dominant failure mode at the tool contact region.	 100% interfacial fracture or Dominant failure mode at tool contact is interfacial fracture

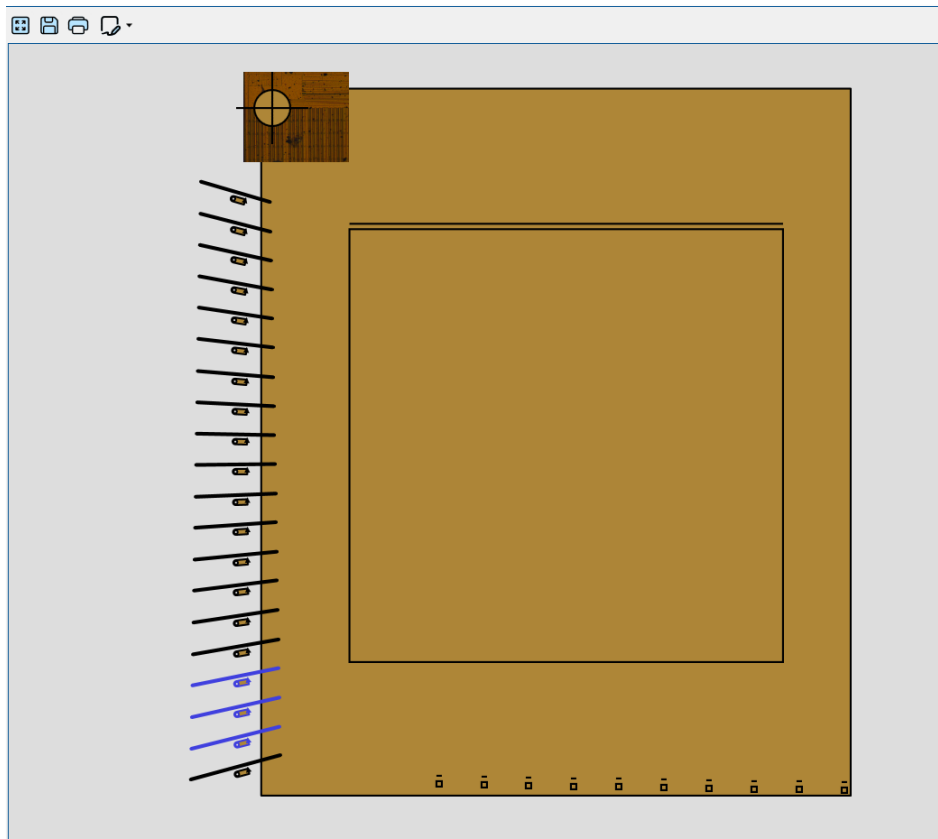
Exceptional Repeatability

The Nordson T&I bond testers are equipped with state-of-the-art features to ensure test accuracy and repeatability.

- Precision multi-axis control
- Low landing forces
- Advanced tool modes
- Semi-automatic tests

Automation

Nordson Bondtesters' automation technologies brings great benefit to bond testing because of not only the minimum workforce requirement but also level of test consistency it provides. Auto tool modes along with visualised programming panel make the automation a effortless process.



Standards

Industrial standard MIL-STD-883 (Methods 2011.7 for destructive testing and 2023.5 for non-destructive) is adopted for the wire pull tests. DVS2811 models the pull angle and position. Nordson T&I bondtesters fully conform to or exceed these standards. The standards contain specifications for Nordson T&I acceptance or rejection criteria.