



QA Technology Company, Inc.

A p p l i c a t i o n s N o t e
Probe Insertion and Retention in Used sockets
050, 075 and 100 mil centers

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Background: This study measures the Probe Insertion and Retention Forces for a new probe installed into a used socket. It can be used to predict how many times a probe may be replaced without having to replace the socket. This data is useful for Test Technicians and Fixture Maintenance personnel who replace probes on a regular basis.

Procedure:

1. Three AT7000 test blocks were drilled (with ten test holes each) for three of our probe series: .038/.039 for the 050 mil Series, .053/.055 for the 075 mil Series and .067/.069 for the 100 mil Series.
2. Ten each of the 050-STB255N, 075-SDN250N and 100-SDN250N sockets were installed, using an IT tool, to a .150 set height.
3. Using tweezers, the corresponding probes- 050-PTP2509S, 075-PRP2509S and 100-PRP2509S were dropped (not seated) into their matching sockets.
4. Using the manual Chatillion (force gauge), the probes were pushed to a set height that was .002-.008" above the probes fully seated position and the maximum insertion force was recorded.
5. Using a modified extraction tool, the probes were pulled from the socket using the manual Chatillion and the maximum extraction forces were recorded. See Extraction graphs attached.
6. Steps 1-4 were repeated forty times using new probes with the data exhibited in the graphs attached.

Conclusions/Observations:

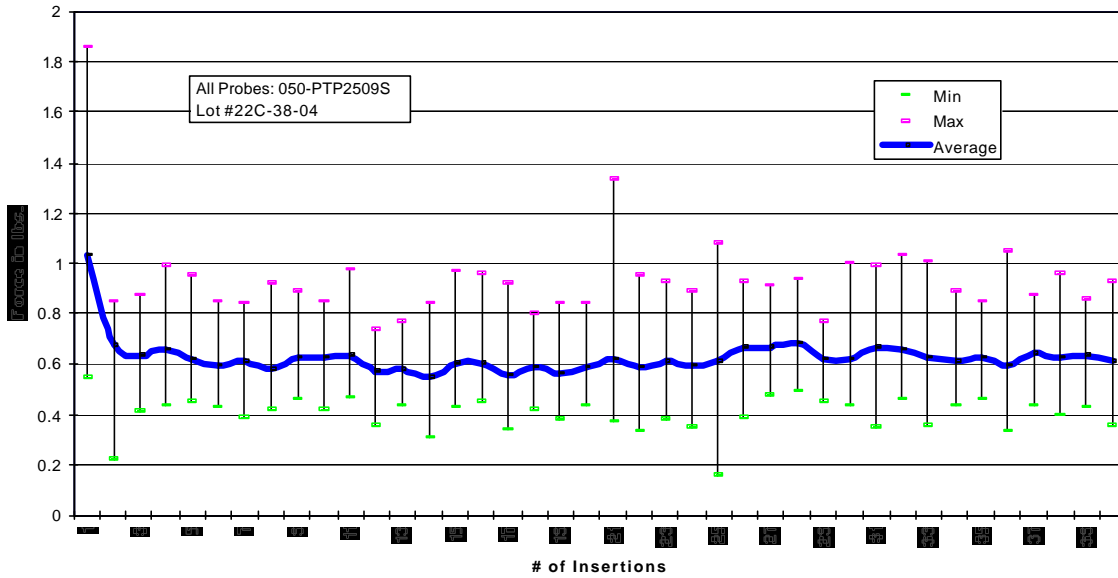
Insertion Test Results- Notice that the initial insertion of a new probe into a new socket was the highest force data achieved. Subsequent new probes recorded lower forces as the sockets' probe retention indent was sized. Testing was stopped at 40 new probe insertions, as the insertion force data continued to be stable (400 probes were used for each test-1200 probes in total).

Retention (Extraction) Test Results- Force data for the 050 mil series was consistent due to the nature of the BeCu material of the socket. Force results only waived slightly from the first extraction throughout the fortieth-with an average of .06 lbs. In the case of the 075 mil extraction testing, two different lot numbers of probes were used, therefore resulting in a change in the force data recorded (as observed from insertion number 20 to 21 on the 075 mil Extraction graph). However, force data recorded within the individual lots was consistent. The 100 mil series extraction followed that of its respective insertion data where the initial force was high with the subsequent extraction forces stabilizing after the first few extractions.

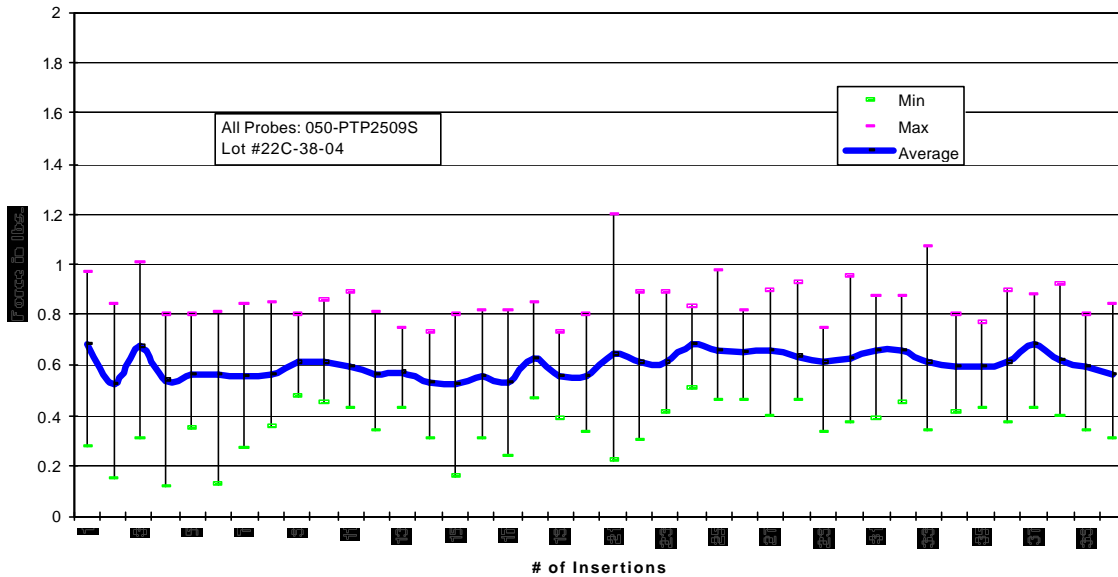
We felt that this was a good representation of the life of a QA socket and what we consider to be the nominal life cycle between fixture rebuilds and socket change outs. For high volume fixtures where probes are changed out more frequently, QA offers a -B socket option, which maintains high probe retention in a heavily worn socket.



New Probe Insertion Forces into Used Sockets
Socket 050-STB255N: Lot #23T-3870

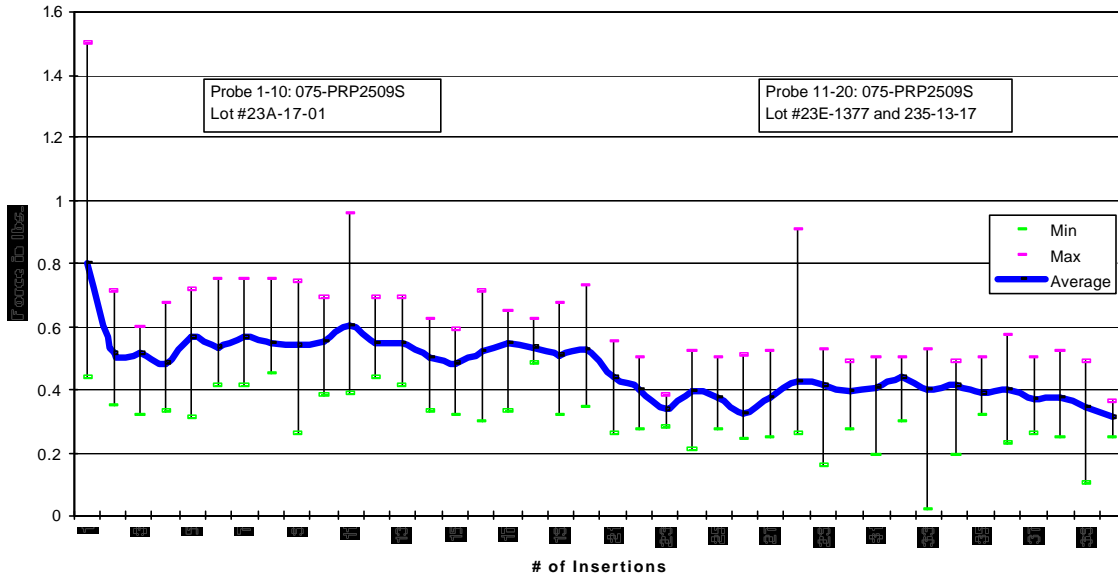


New Probe Extraction Forces from Used Sockets
Socket 050-STB255N: Lot #23T-3870

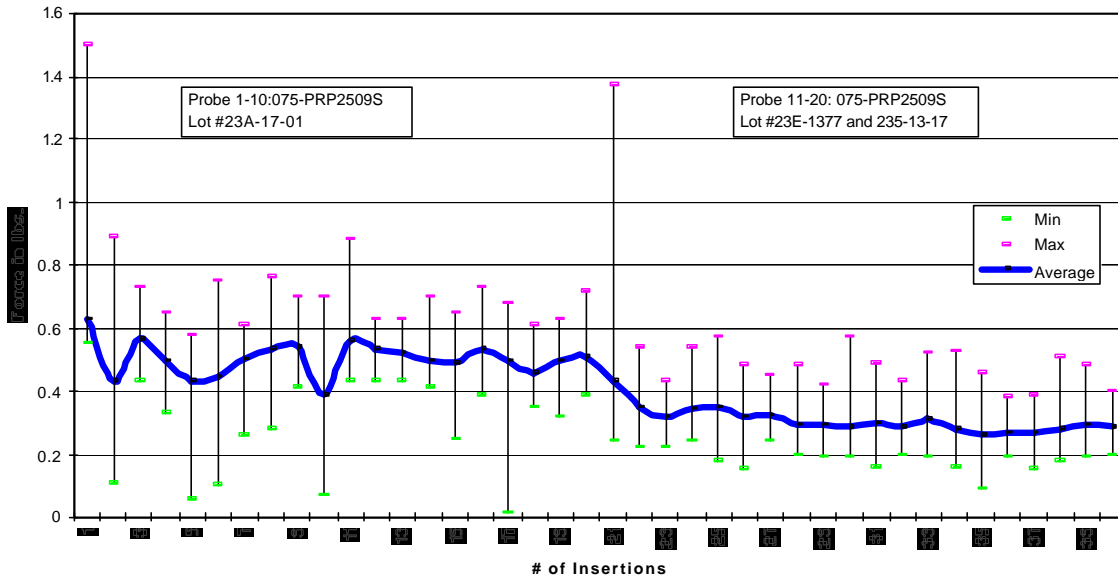




New Probe Insertion Forces into Used Sockets
Socket 075-SDN250N Lot #23A-17-01

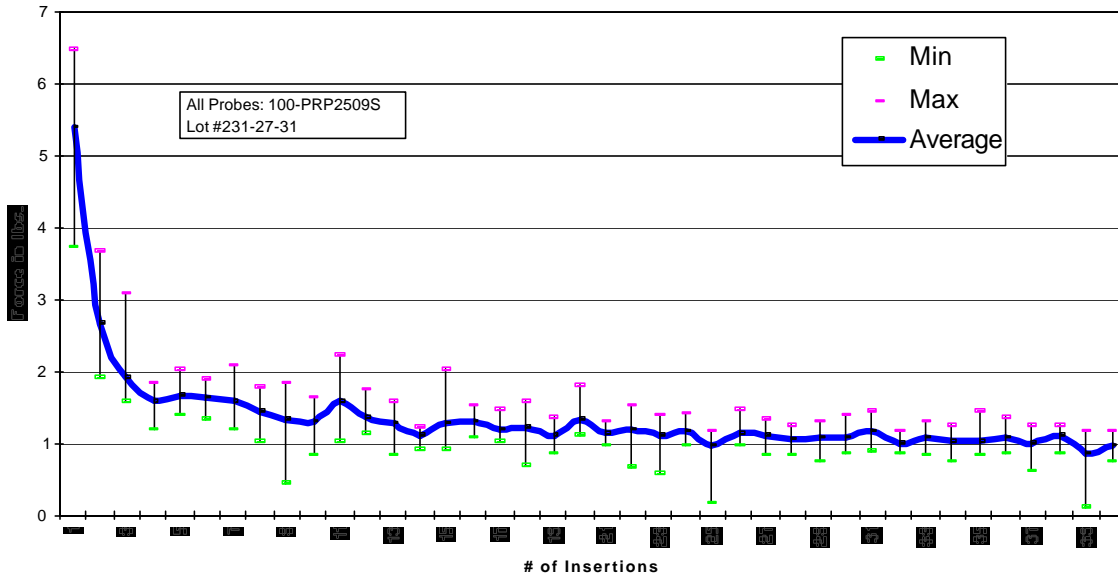


New Probe Extraction Forces from Used Sockets
Socket 075-SDN250N Lot# 23A-17-01





New Probe Insertion Forces into Used Sockets Socket 100-SDN250N Lot #21Z-17-01



New Probe Extraction Forces from Used Sockets Socket 100-SDN250N Lot #21Z-17-01

