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Product Test Report

Objectives – To better demonstrate the wear characteristics of **Pilot OEM Stylus** tips versus competing specialty application stylus tips, and to illustrate the potential screen damage that can result from improperly designs and/or materials.

Tip Materials Tested – Three different tips were compared:

- Welch Allyn stylus tip (Delrin)
- Pilot Series E stylus tip
- Pilot Series O stylus tip

Tip Materials Tested – Welch Allyn screen guard (Dupont Marnot XL)

Testing machinery – (2) Custom Pilot write-testing machines (modified pen plotting machines)

Test Parameters – Tests were conducted under the following conditions:

- Pen pressure 250 gf
- Pen velocity 20cm/sec










Note that all tips were tested in a fixed position without aid of a cushioning mechanism.

Testing methodologies – A variety of tests were conducted to subject tips to a variety of operating conditions:


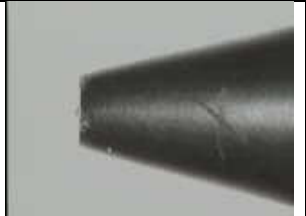







- **Tap Test** – 1,000,000 strokes in an up & down motion on the screen
- **Line Test** – 50,000 6cm lines drawn
- **Grid Test** – 50,000 patterns draw, each consisting of 10mm lines at 2x2mm intervals
- **Character Test** – Write English alphabet, 10x10mm upper case characters 3,847 repetitions = 100,022 characters

Test results – The following images illustrate the results of the specific tests for all three products tested:



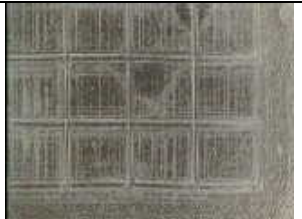






Tap Test – 1,000,000 strokes in an up & down motion on the screen

<p>POS Stylus Tip Wear length – 0.064 mm</p>			
<p>Pilot Series E Wear length – 0.009 mm</p>			
<p>Pilot Series O Wear length – 0.078 mm</p>			







Line Test – 50,000 6cm lines drawn

<p>POS Stylus Tip Wear length – 1.117 mm</p>			
<p>Pilot Series E Wear length – 0.044 mm</p>			
<p>Pilot Series O Wear length – 0.075 mm</p>			

Grid Test – 50,000 patterns draw, each consisting of 10mm lines at 2x2mm intervals

<p>POS Stylus Tip Wear length – 1.653 mm</p>			
<p>Pilot Series E Wear length – 0.271 mm</p>			
<p>Pilot Series O Wear length – 0.353 mm</p>			

Character Test – Write English alphabet, 10x10mm upper case characters 3,847 repetitions = 100,022 characters

<p>POS Stylus Tip Wear length – 0.916 mm</p>			
<p>Pilot Series E Wear length – 0.131 mm</p>			
<p>Pilot Series O Wear length – 0.195 mm</p>	