

Probe Cleaning

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Southwest Test Workshop

San Diego, California
June 1998



Agenda

Problem Statement

Methods of Cleaning

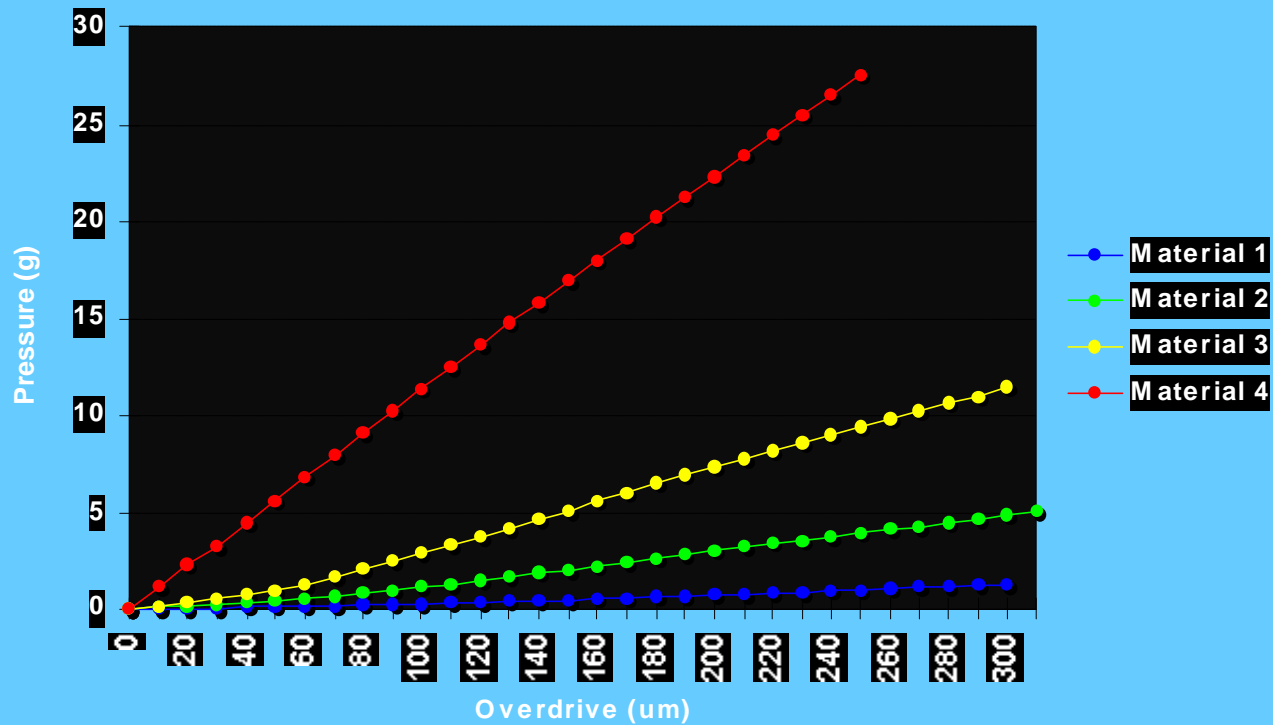
Engineering Results

What's next?

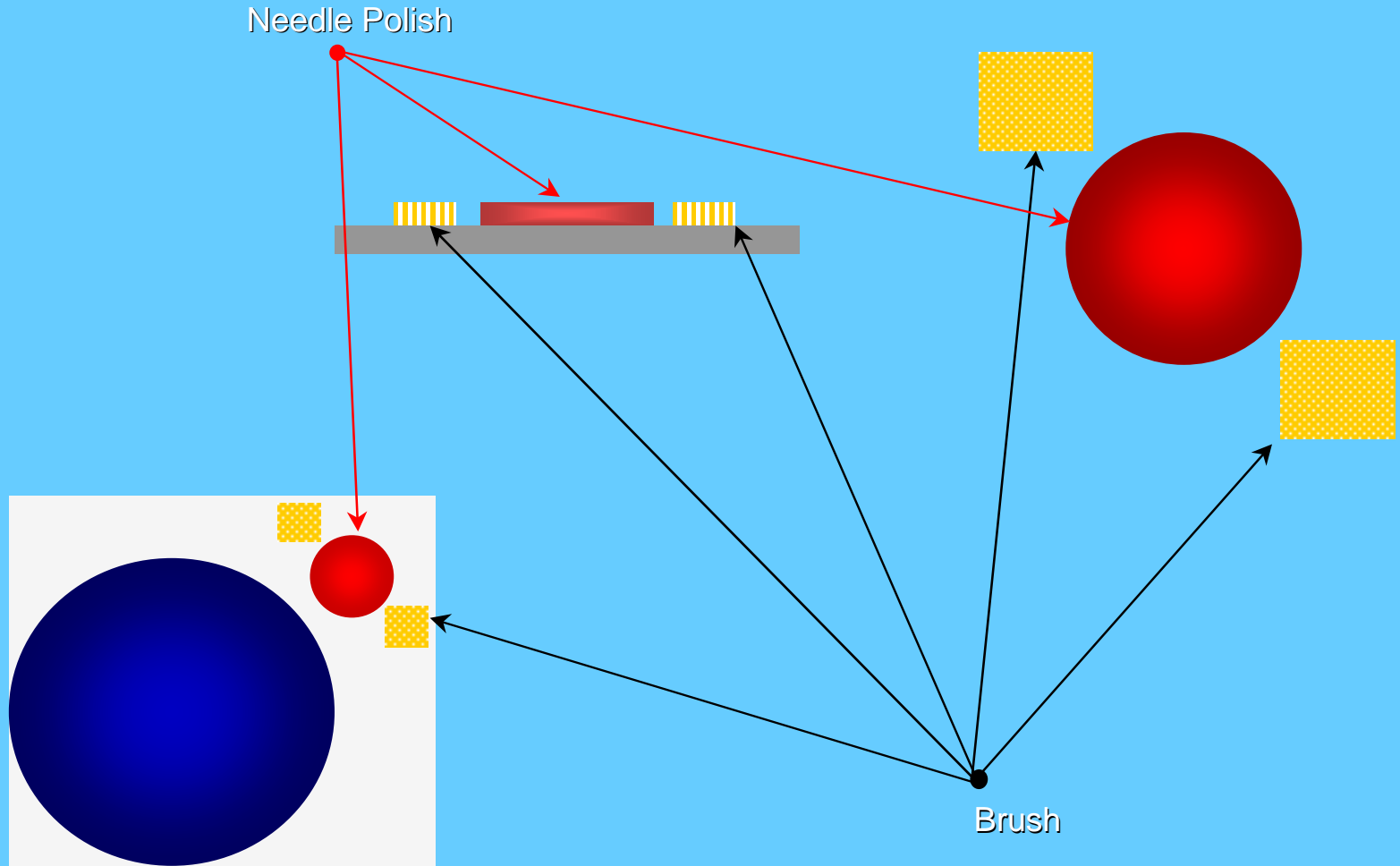
Summary



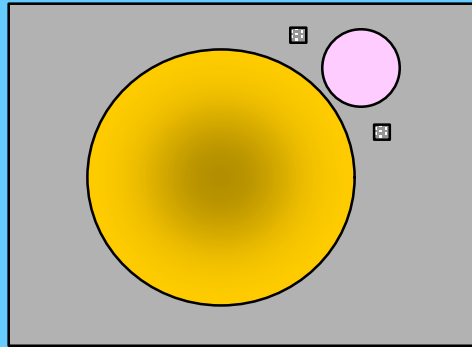
Effect of cleaning material elasticity on total probe force



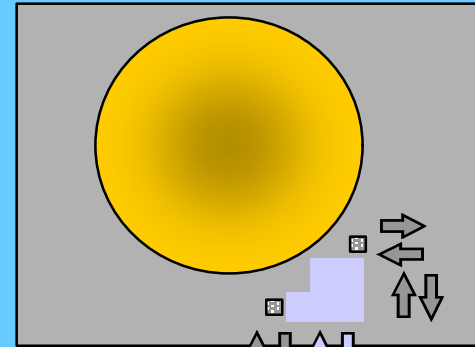
Needle Polish and Brush cleaning



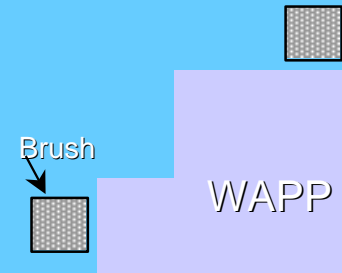
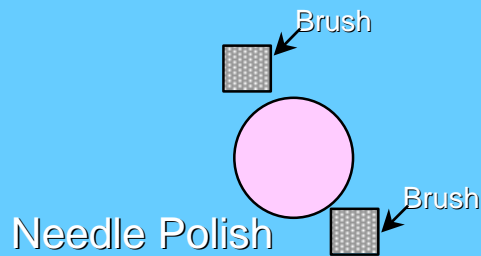
Various cleaning options



Front



Front

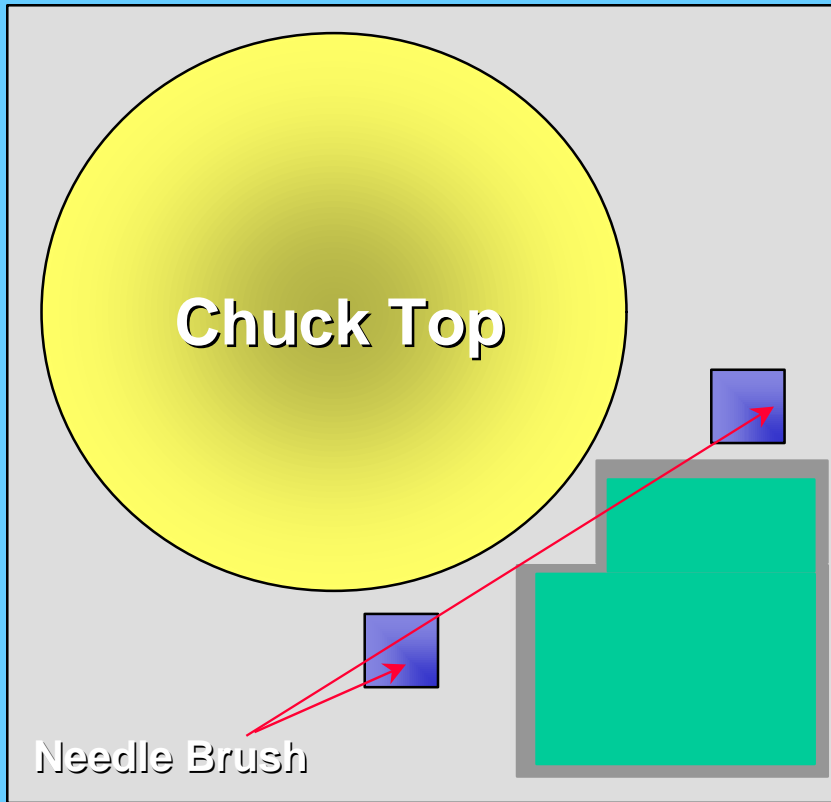


~ 400% larger



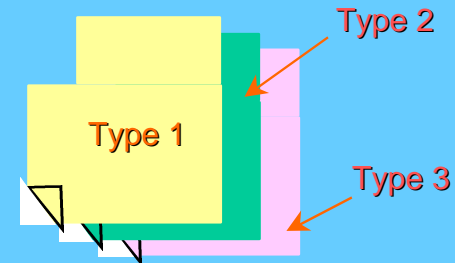
Wide Area Polish Plate

Size, Exchangeable, Effective

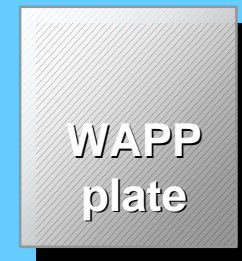


WAPP has separate Z drive motion from chuck

Cleaning Materials



set to
WAPP plate



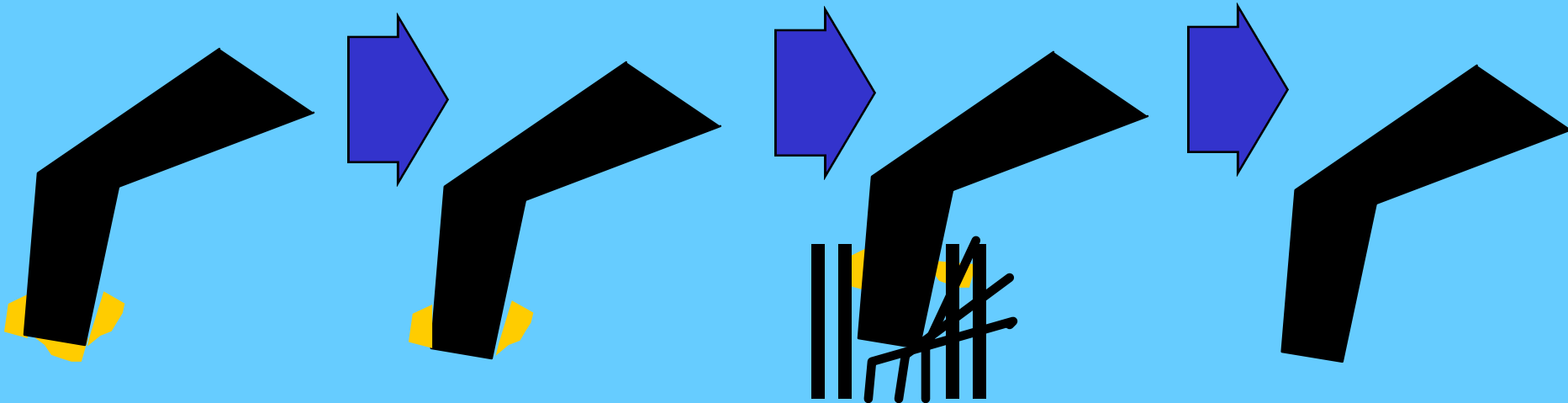
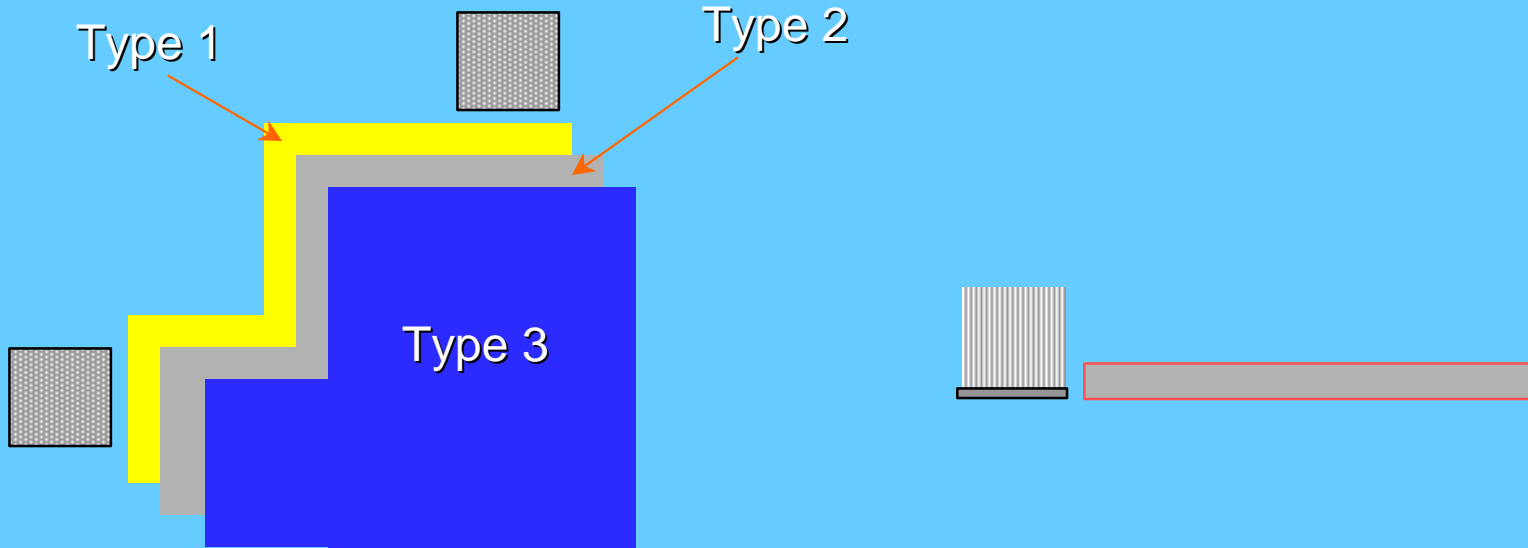
Extra WAPP plate

Easy Replacement
from front

Exchange

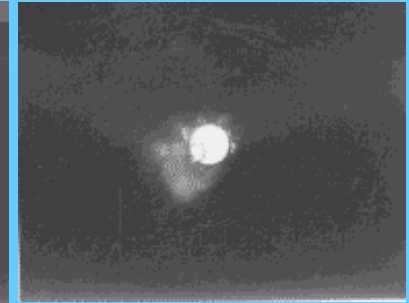
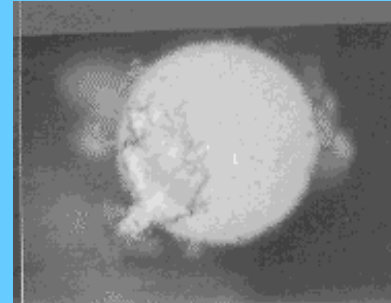
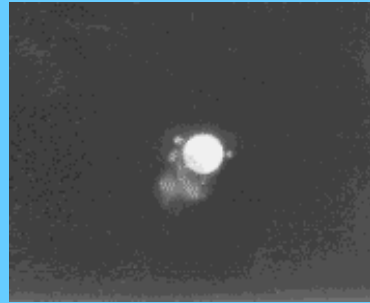
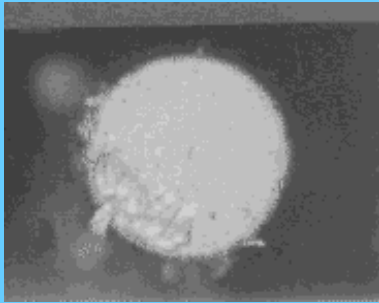


Abrasive and Brush cleaning



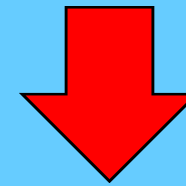
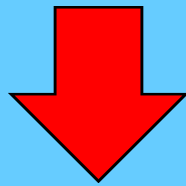
The coexistence of the Type 2 cleaning material and brush

Before cleaning

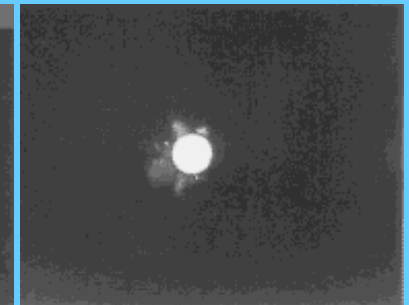
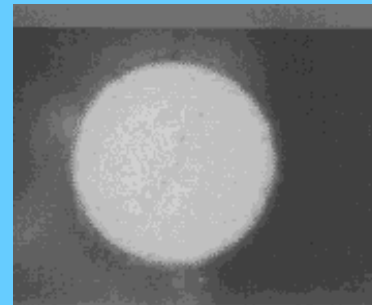
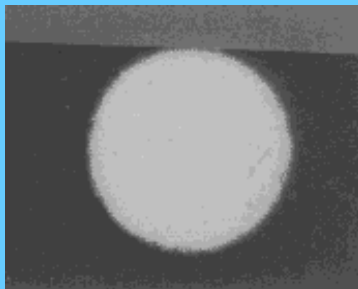


Micro

Macro



After cleaning



Type 2 Material and brush

Type 2 Material

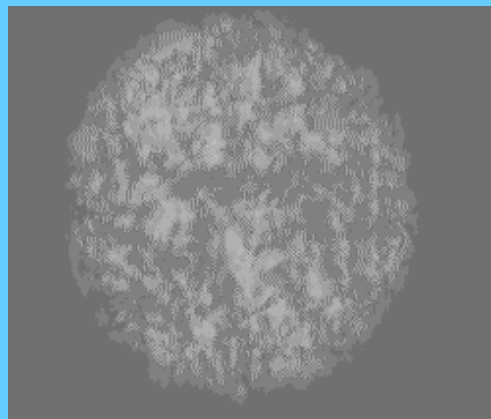
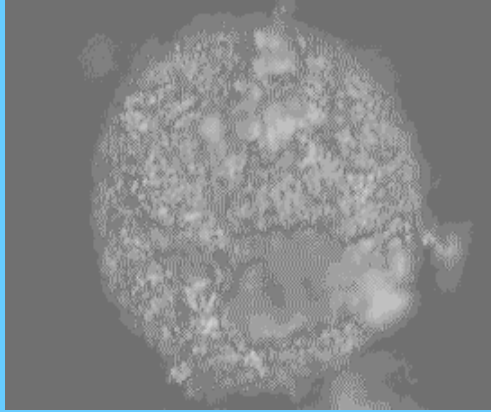
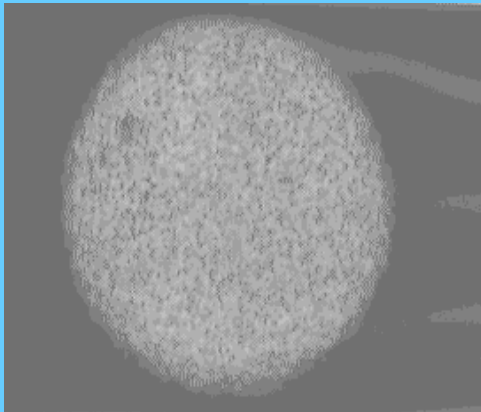


Results of soft cleaner Type 3 and Brush Cleaning

Before contamination

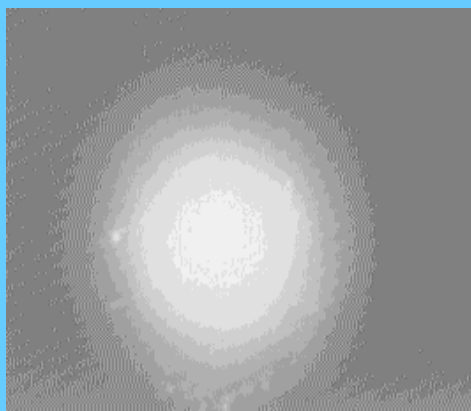
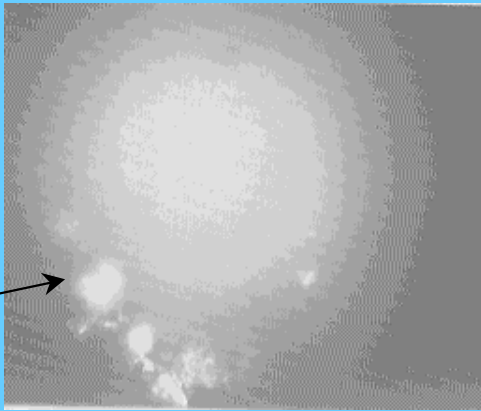
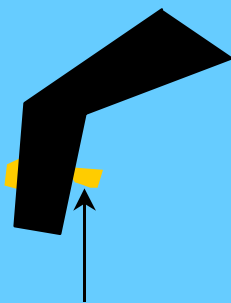
After contamination

After Type 3 cleaning



Before Brush Cleaning

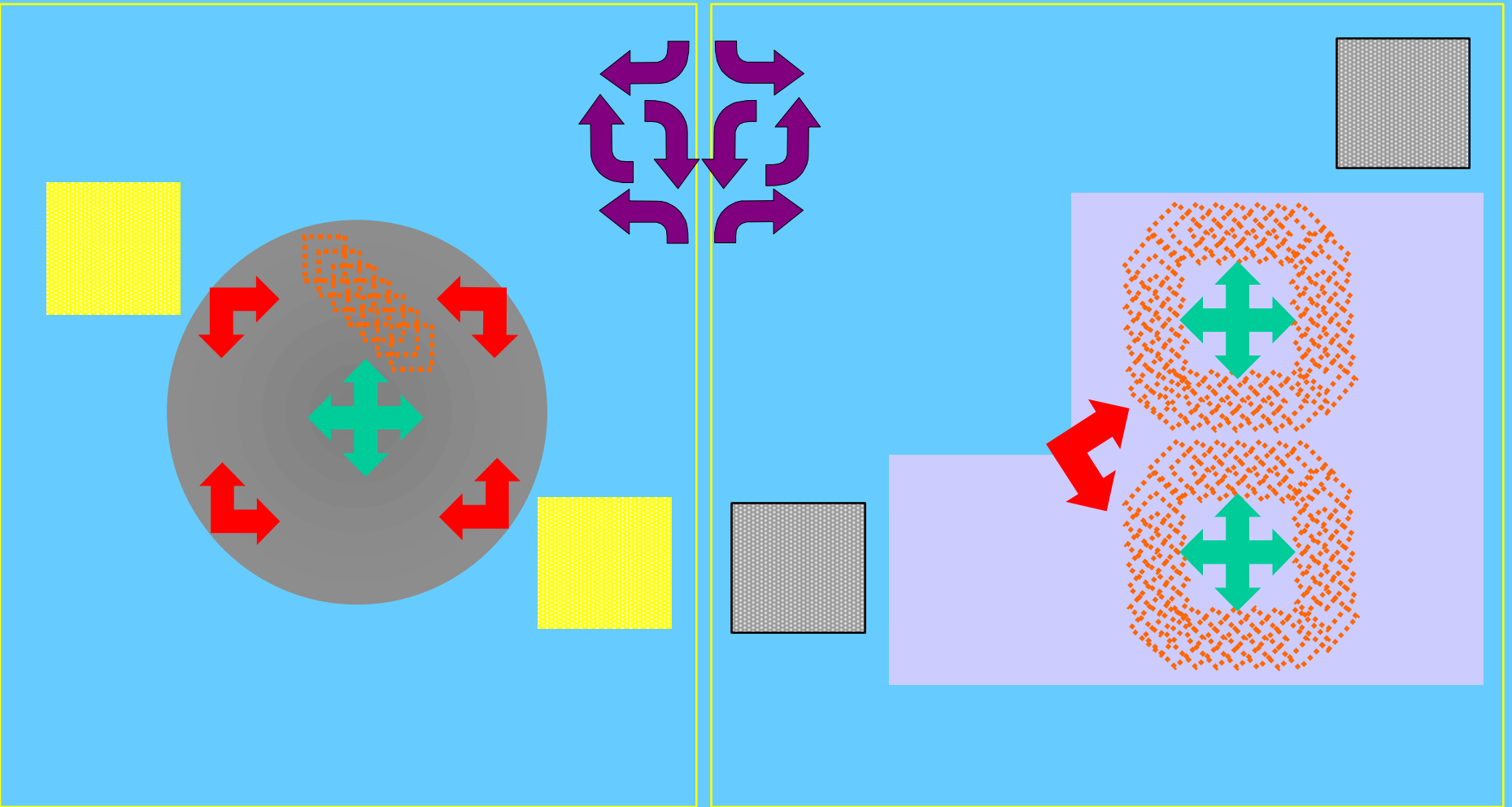
After Brush Cleaning



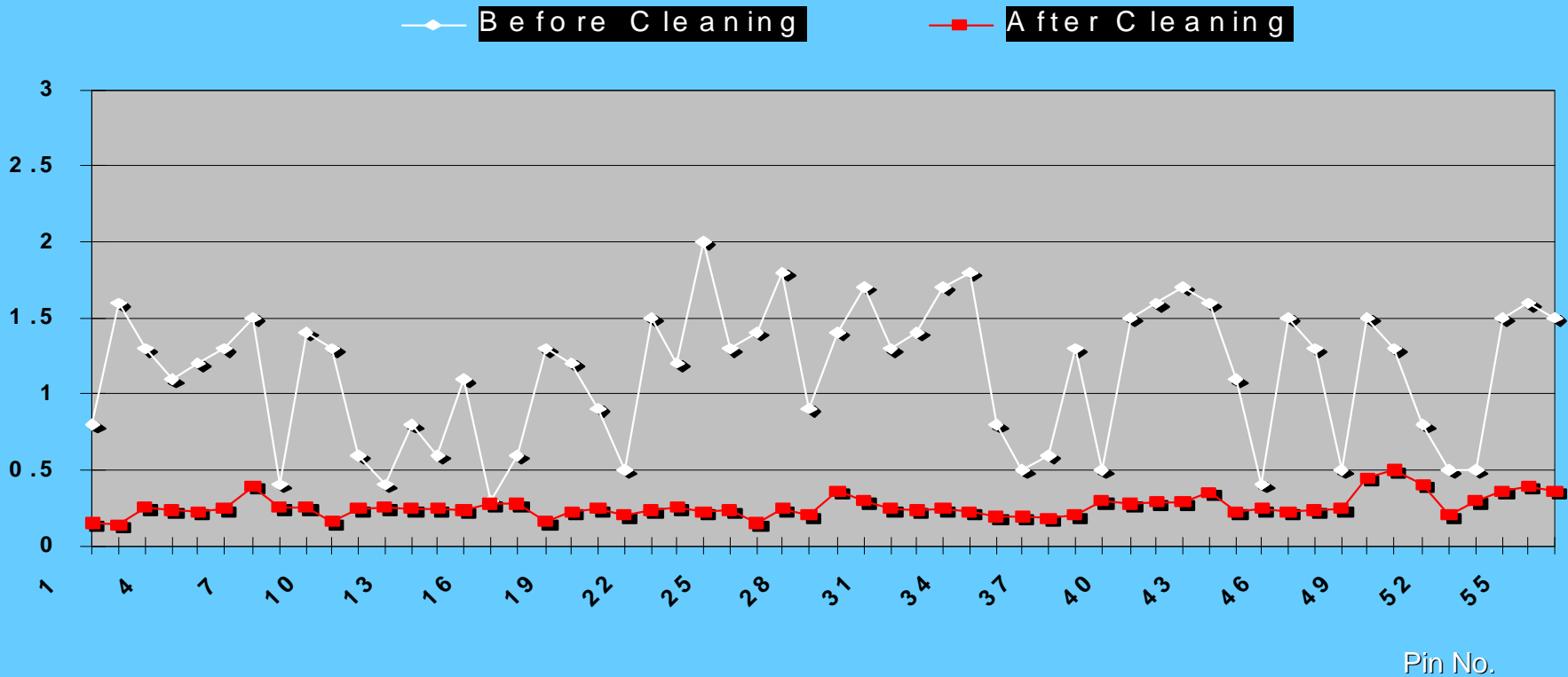
Probe Tip Camera View



Cleaning patterns

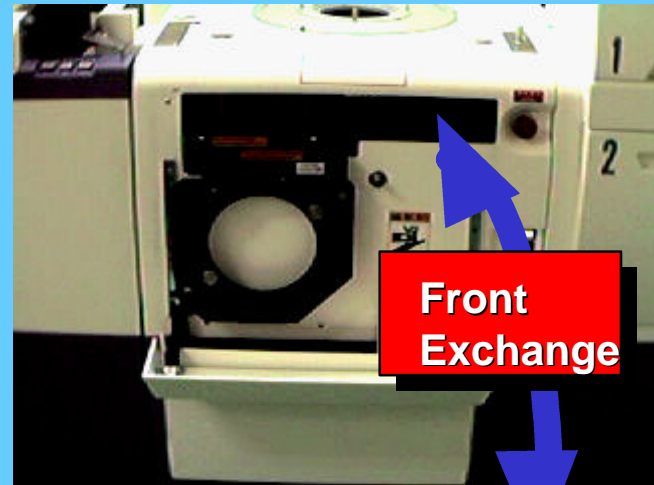


Contact resistance before/after Needle Polish and Brush cleaning



WAPP

Exchange from SACC cover (front of prober)

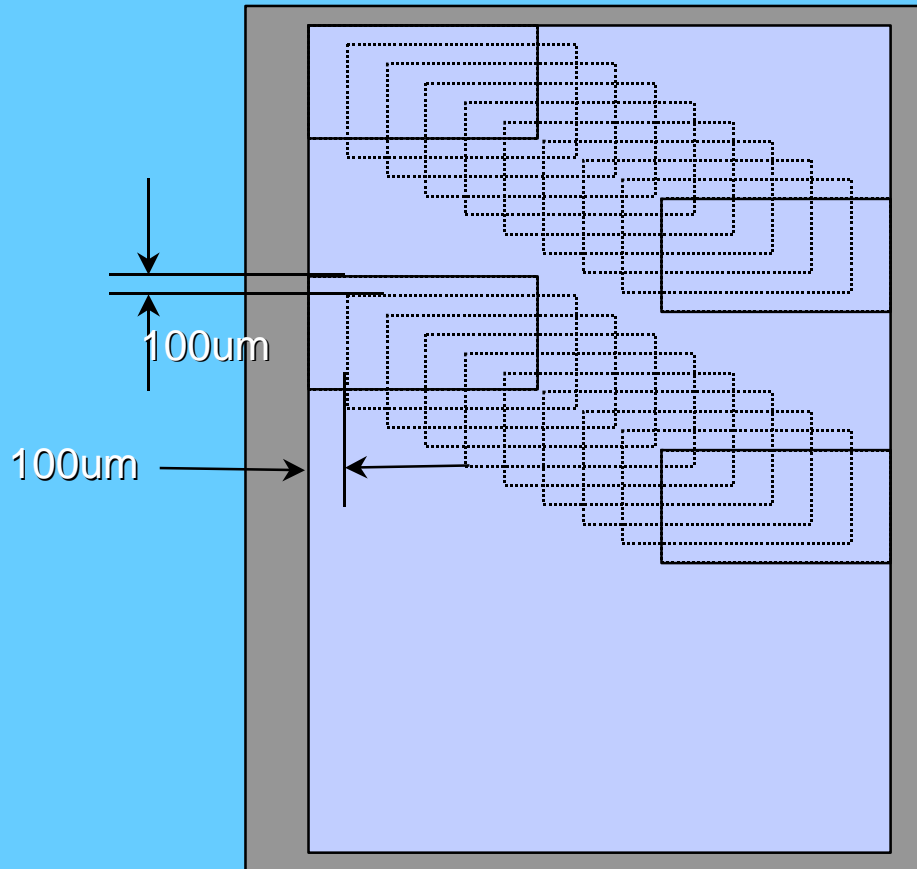


Exchange WAPP plate from front of prober anytime during testing.
Without undocking test head
No planarity adjustment required.



Life of Cleaning Pad

600 Probes Array



$$600 \times 4 = 2400 \text{ Contacts}$$

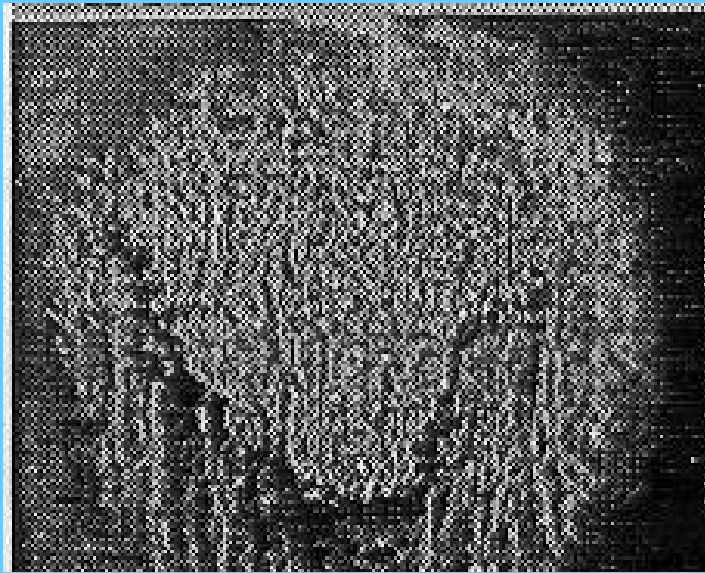


$$2400 / 20 \times 200 / 15 = 800$$

Available
< 800 dies/wafer



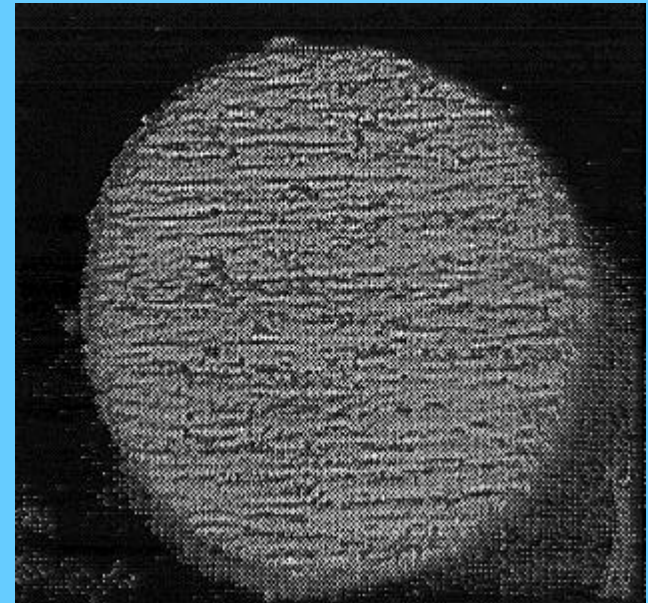
Tip Cleaning with Type 3 abrasive and Brush



Before



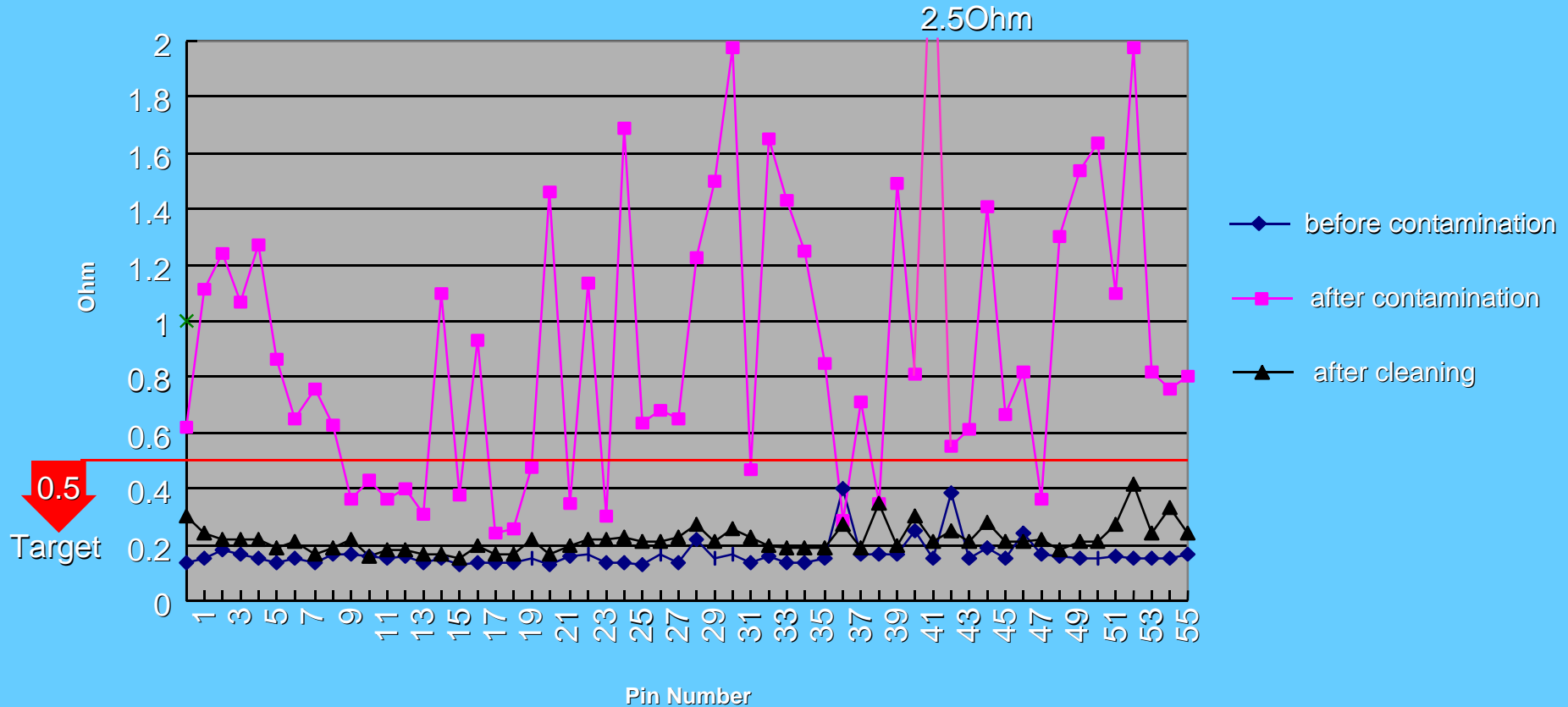
X Y motion



After



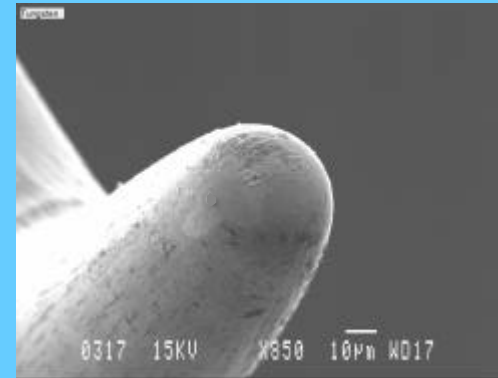
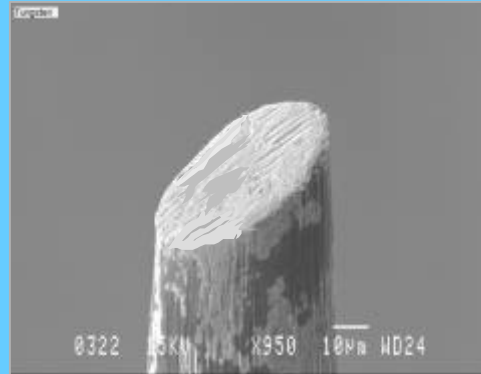
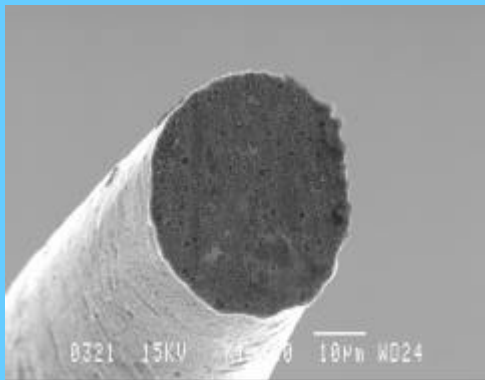
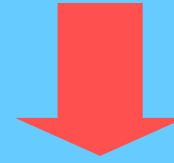
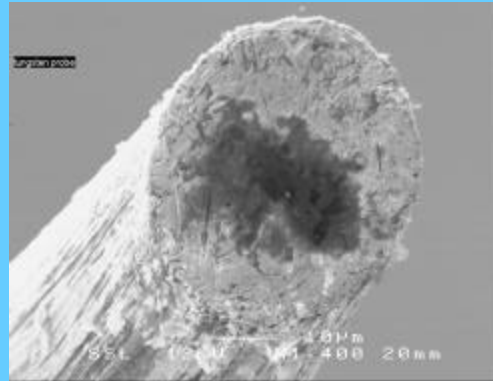
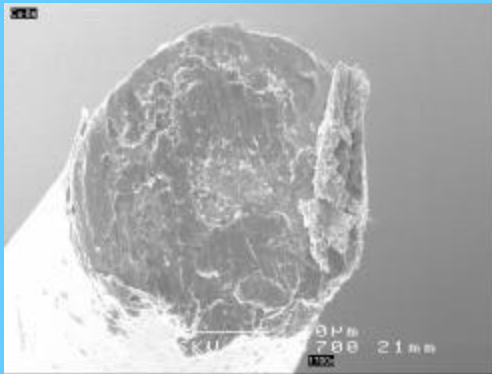
Contact resistance before/after Type 3 abrasive and brush cleaning



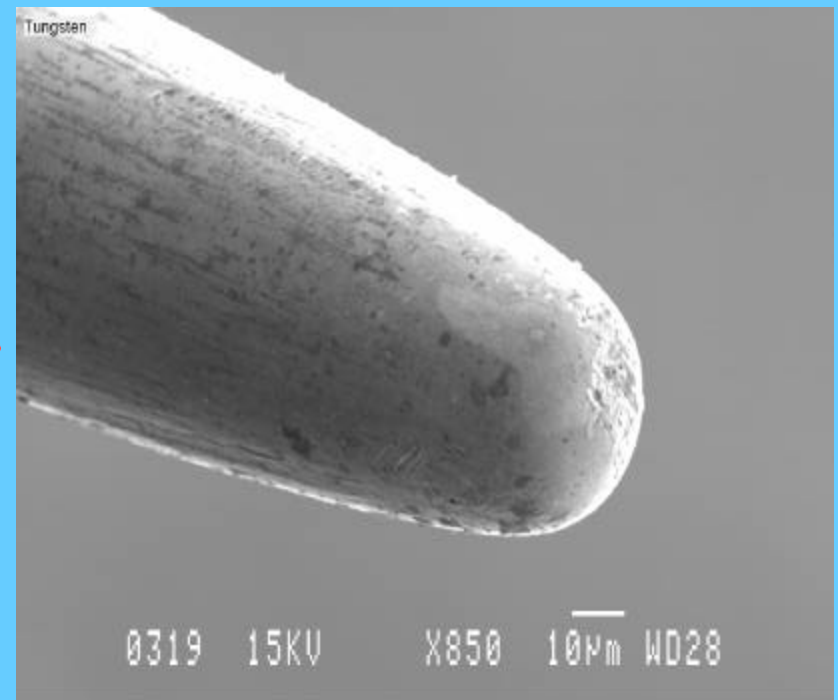
What's next?



Probe tips before/after nonabrasive cleaning



Probe tip after nonabrasive cleaning



Contact resistance before/after nonabrasive cleaning

