

Cleaning Parameters for TEL Probers P8, P8-XL, and P12-XL

1. Purpose/Scope:

The purpose of this document is to define the parameters for using the International Test Solutions' cleaning products on the TEL P8, P8-XL, and P12-XL Probers. The parameters set forth in this document should be used as guidelines only for establishing basic cleaning routines for "on-line" cleaning methods. Some parameters are specific to prober software version, prober model, and user requirements (*Application Specific* and *Customer Variables*) and should be set based on user intent for optimal performance of cleaning regimens. User parameters may vary with contact surface material (pad), probe tip shape and / or material and may also affect the frequency of cleaning. Misuse of cleaning parameters could potentially cause damage to probe card and/or prober. Please consult appropriate TEL documentation for parameter functional details.

2. Nomenclature:

- TEL: Tokyo Electron Limited
- ITS: International Test Solutions, Inc.
- Touchdowns: Iterations of probe tips contacting a surface (pad or cleaning material)
- WAPP: Wide Area Polishing Plate

3. Materials:

- ITS cleaning product package types
 - i. Wafer (6 inch / 150mm, 8 inch / 200mm, or 12 inch / 300mm)
 - ii. WAPP surface
 - iii. PQL plates (**Plate Quick Loader**; P8i only)
 - iv. Surface mount material
 - v. Probe Clean™
 - vi. Probe Polish™
 - vii. Probe Scrub™

4. Needle Polish Parameters:

For detailed information on TEL cleaning parameters, please reference document – 'Needle Polish Parameters – document # 3297-420099-21'.

IMPORTANT: Cleaning parameters should be optimized for each particular probe application. In order to minimize the possibility of probe damage due to misapplication of cleaning parameters/options, extra care should be taken to ensure a full understanding of all cleaning parameters. TEA/TEL and ITS Applications Personnel will be able to assist in creation of optimal parameter setup solutions for your given application. Please utilize these resources as necessary!

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Cleaning parameters are custom to specific probe types and customer configuration requirements. Therefore available options/parameters will vary from customer to customer based mostly on prober customer specific software. The following examples are basic so please reference specific documentation concerning each parameter for more details.

This document provides **basic** setup guidelines only and not every parameter and setting will be discussed (for specific information please refer to TEL documentation or contact a TEL Applications Engineer).

5. WAPP Cleaning Parameters:

a. On-line Cleaning Operation with WAPP (during normal auto probing)

- i. If necessary, remove the WAPP with the ITS cleaning polymer mounted to the surface from the container and install into the prober.

CAUTION: Latex gloves should be used at all times when handling the cleaning polymer materials. Polymer working surface contamination due to fingerprints and exposure to unapproved materials and chemicals will void the warranty.

IMPORTANT: If cleaning/polishing has not been used before on a particular prober, please ensure all polisher calibrations have been performed and are functional prior to enabling cleaning/polishing function.

- ii. Select appropriate setup file
- iii. Go to: Setup/ Change Wafer Setup Data/ Wafer Parameter/ Parameters/ Page 2/ Polish Needle
- iv. Set Polish needle to Yes
- v. Select appropriate polish mode (*Polisher*)
- vi. Select desired cleaning interval and order of execution (*if applicable*).
- vii. If using WAPP or 50-mm polisher go into: Polisher to set polish parameters
 1. Set recommended overdrive (*refer to probe card vendor documentation and ITS recommendations to determine this setting for your particular application*)
 2. Needle polish height detection FIXED
 3. Z up/down count 1
 4. X/Y scrub amounts = Application specific and not recommended for every probe type.
 5. Valid area 3mm from edge (minimum 1mm)
 6. Distance between rows Standard
 7. Select 'Polish Pattern'
 8. Polish Pattern Up/down
- viii. Now the prober (during normal auto probing) will use WAPP with the aforementioned basic cleaning parameter settings to polish and/or brush the probe tips.

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b. Manual Cleaning Operation with WAPP

- i. This capability is software dependant. If available, use diagnostics with 'use wafer parameters' setting for manual cleaning execution. Can also use diagnostics parameters for cleaning execution by selecting 'use diagnostic parameters' setting.

6. Polish/Cleaning Wafer Parameters:

a. On-line Cleaning Operation with Polish wafer (during normal auto probing)

- i. Remove the ITS cleaning wafer from the container and place the wafer in the wafer table tray.

CAUTION: Latex gloves should be used at all time when handling the cleaning polymer materials. Polymer working surface contamination due to fingerprints and exposure to unapproved materials and chemicals will void the warranty.

- ii. If necessary, transfer ITS wafer to buffer tray.
- iii. Select appropriate setup file
- iv. Same as above only now select 'Polish Wafer'
- v. Select 'Polish Wafer' button
- vi. Basic settings are very similar as with WAPP settings describe above.

b. Manual Cleaning Operation with Wafer

- i. Touch DIAGNOSTICS button from main menu.
- ii. Touch NEEDLE POLISHER.
- iii. Set the following values on the NEEDLE POLISHING MENU –
- iv. Each menu bar must be selected and a value entered from keypad
- v. touch screen followed by OK:
 1. Needle Polish Count: Customer Variable
 2. Needle Polish Drive: 100 μ (Confirm with probe card vendor)
 3. Needle Polish Alignment Z: FIXED
 4. Needle Polish Transfer Amount: 2x probe width
- vi. Touch WAFER PARAMETER SETTING button (cleaning wafer parameters)
- vii. Set the following values on the WAFER PARAMETER MENU. (Note - Each menu bar must be selected and a value entered from keypad touch screen followed by OK)
 1. Wafer Parameter: Cleaning Wafer
 2. Wafer Size: 6, 8, or 12 inch
 3. Flat Direction: Customer Variable
 4. Die Size X: Customer Variable
 5. Die Size Y: Customer Variable
 6. Cleaning Wafer Thickness: Use specified value on wafer container
 7. Valid Die: 87%

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- 8. Touch OK button OK
- 9. Validate Data OK
- viii. The manual cleaning operation is now complete.

7. Brush Cleaning Parameters:

Brush cleaning can be enabled in conjunction with the WAPP and/or Cleaning Wafer polishing operations.

a. *On-line Brush cleaning operation (during normal auto probing)*

- i. Select appropriate setup file
- ii. Same as above only now select 'Brush' or 'Polisher & Brush, etc.
- iii. Go into brush settings:
 - 1. TEL offers two kinds of brushes
 - a. Course brush (white) for larger pin diameters / pitches
 - b. Fine brush (black) for smaller pin diameters / pitches
 - c. See TEL representative for more details on these brushes
 - 2. Brush Parameter settings
 - a. Brush overdrive 100um (application specific)
 - b. Brush contact count 2 times (application specific)
 - 3. Brush X/Y direction amount Application specific and not recommended for every probe type.
 - a. For remaining brush parameters, please refer to TEL documentation or contact TEL Applications Support personnel to determine if they may be of benefit to your application.

For questions regarding the prober operation and specific cleaning operational settings, contact your local **TEL** customer support representative.

For questions regarding the cleaning material, contact **International Test Solutions** at 775-284-9220, or via email at techsupport@inttest.net, to discuss your specific probe card cleaning application and requirements.

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