



Lab Manual

[Marvell Nanolab](#)[Member login](#)[Lab Manual Index](#)[Mercury Web](#)[Berkeley Microlab](#)

Sink9

(sink9)

1.0 **Title**

Sink9 Operation

2.0 **Purpose**

Sink9 with two heated and two non-heated bath, as well as two quick dump rinse stations is reserved for specific projects, approved by the Microlab management. THIS SINK IS NOT TO BE USED FOR GENERAL CLEANING, UNLESS THE WORK HAS BEEN REVIEWED/APPROVED!

3.0 **Scope**

This document provides information about the operation of sink9 and processes that are allowed in this sink, located in the VLSI area of the Microlab.

4.0 **Applicable Documents**

[Revision History](#)

4.1 [Chapter 2.1](#) of the lab manual, which explains wafer boxes, tweezers, and other tool cleaning prior to using VLSI sink.

4.2 [Chapter 2.2](#) - Dummy Wafer Preparation and Rework for Tystar LPCVD Furnaces and Lam Etchers

4.3 Definitions & Process Terminology

4.4 Full Plenum Lockout Alarm: Early warning alarm indicating sink drain failure.

4.5 Quick dump (QD): DI water fills the sink followed by a quick dump to get ride of excess acid and/or contaminants.

4.6 Spin Rinse Dryer (SRD): DI rinse followed by dry cycle.

5.0 **Safety**

Never touch any surface while wearing chemical-resistant gloves that other lab members may come into contact with, such as the table tops, door handles, computer keyboards, face shields, aprons, etc. If you need to step away from the sink at any time, rinse off gloves at the glove wash, dry with technicloths, and put away in your drawer until you are ready to resume your work at the sink.

Follow general safety guidelines for the lab, safety rules outlined in [Chapter 2.3](#) and the following:

5.1 This sink contains HF acid and Piranha bath, therefore appropriate safety attire should be worn, while working at this station. This means chemically resistant gloves on top of the surgical gloves, face shield and apron has to be worn while working at or around sink9. Do not use metal tweezers at this sink.

5.2 Do not adjust the heater controllers as they have been preset to produce proper bath temperatures (currently set for piranha).

- 5.3 Only use chemically resistant cassettes provided at the station (Teflon type - black STAT-Pro 1000 for MOS), Failure to do so can cause damage to the station and/or compromise the operator's safety.

6.0 Statistical/Process Data

N/A

8.0 Available Processes, Gases, Process Notes

- 8.1 Piranha solution can be prepared in two heated quartz tank at this sink, also HF solution in two middle Teflon tanks. HF solution should never be placed in the heated quartz tanks (far left/right side tanks). Other chemistries such as **ethylenglycol-buffered HF** can be used in the middle tanks, as well (consult with the staff, if other solutions needed).
- 8.2 There are two QDRs available in this sink to properly rinse off the acid/clean the wafers prior to going into spin rinse dryers (4"/6" spin rinse dryer stations).
- 8.3 Sink9 is supplied with designated cassettes (and handles) marked as **sink9**. Cassettes from other sinks are restricted at this sink, use sink9 dedicated cassettes, only.
- 8.4 Please refer to the [Appendix](#) for deck hose operation.

9.0 Equipment Operation

The sink operation is relatively easy, however special care must be taken to control cross contamination from other sinks, equipment or processes in the lab in this VLSI sink.

9.1 **Control Key Description**

There are three control/displays at this station, see Figures [1](#) and [2](#) for more details. Members should only use the control key marked as **SPS Filterchem**. This is the control pad for the quick dump (QD) station. QD is currently set up for two dump rinse cycles. Wafers are initially showered with DI water followed by two DI fill-dump cycles. These cycles end with wafers submerged in the water for operator to extract and place them in SRD. During the QD cycle resistivity as well as the heated bath temperature can be read from **Thorton display monitor** in front of the station. See [Figure 2](#) for more details. The station performs an automatic self-cleaning, every 60 minutes by one QD cycle.

9.2 **Quick Dump Rinse Operation**

- 9.2.1 Place wafers in the sink, sink initially should be full of water.
- 9.2.2 Press START button to activate the dump rinse cycle.
- 9.2.3 Upon completion of two rinse cycles remove wafer and place in SRD.
- 9.2.4 Dump the QDR water by pressing the **OPEN** button. As soon as the water is drained, press the **STOP/RESET** button. Leave the QDR with no water in it and close the lid before leaving the station.

10.0 Troubleshooting Guidelines

- 10.1 Rinse cycle stopped in the middle QD cycles: press open to dump the water out. Press stop/reset key followed by restart the dump rinse cycle from the start.
- 10.2 Plenum alarm activated, an early warning alarm indicating sink drain failure: stop processing wafers at the sink, specifically, do not activate the quick dump rinse. Push the **ALARM SILENCE** button on the sink, immediately notify staff, also post the problem on Faults, as a full plenum lockout as an early warning indicating sink drain failure. Do not discard/aspirate any acid out of the tanks, until this issue has been resolved.

10.3 Let staff know if there are any cassettes missing from this sink and/or cassettes from other sinks are present at this sink.

11.0 Figures & Schematics

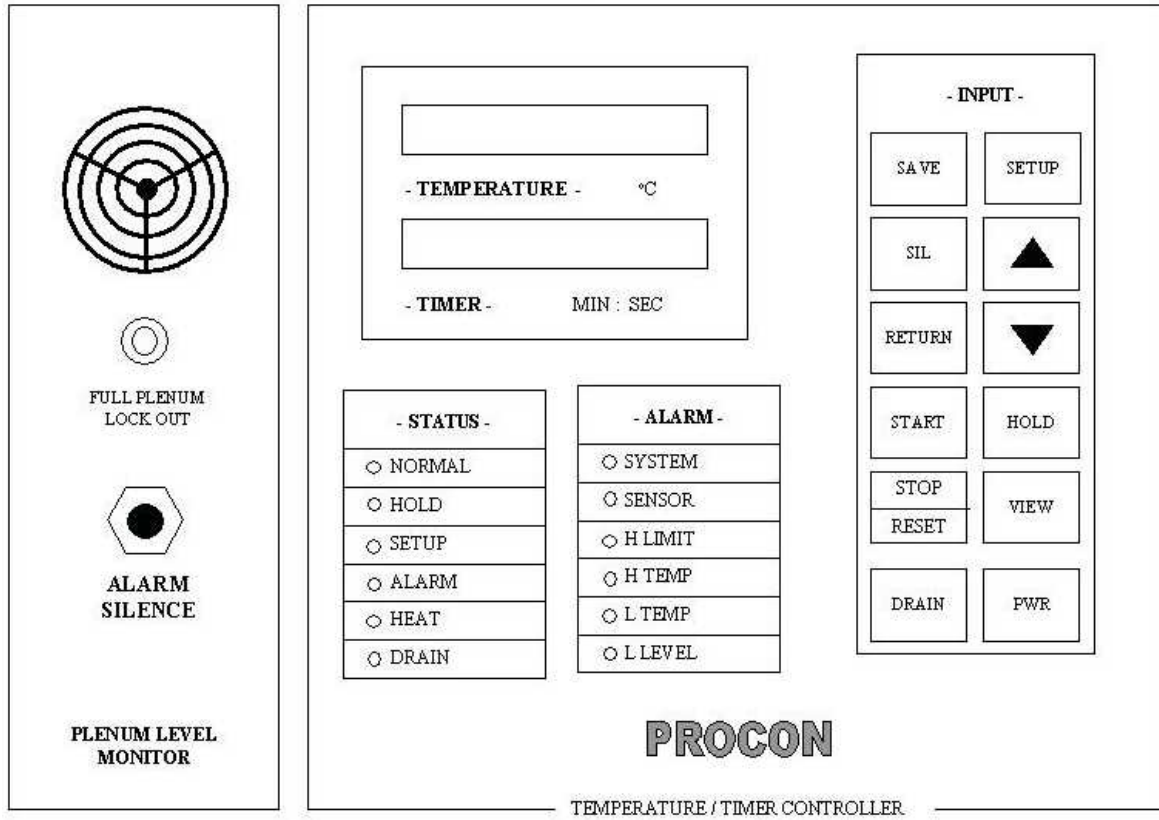


Figure 1

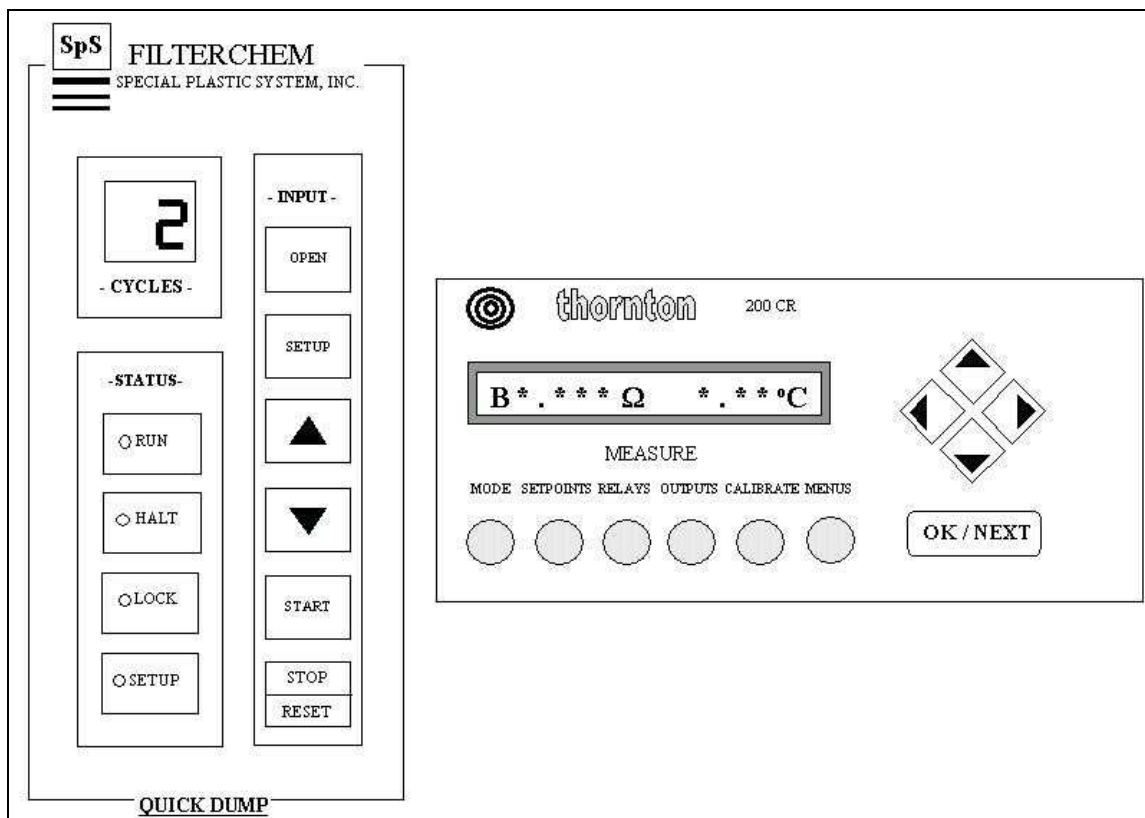


Figure 2

12.0 Appendix

DECK HOSE Instructions

The de-ionized (DI) water deck hose for the sinks is **ALWAYS** available for emergencies; it provides a good safety backup in the event of exposure to chemicals.

If this hose (the black curly cord) develops a leak, please observe the following procedure:

- 1) Locate the self-closing, stainless steel **quick connect** fitting at the end of the black curly cord.

Caution! This hose is under pressure, so be sure to wear the following safety apparel before proceeding further:

- ▶ **Face shield**
- ▶ **Lab apron**
- ▶ **Chemical resistant gloves**

(as the water will spurt a bit)

- 2) Depress the **quick connect** locking mechanism. The fitting should snap apart quickly, thereby disconnecting the deck hose from its base.
- 3) Report as a problem on FAULTS.
- 4) Set the deck hose at the rear of the sink deck for replacement.

Sink9 Study Guide

Be sure to know....

1. What processes are allowed in sink9.
2. What full plenum lockout means; what to do.
3. Protection for hands and body.
4. Tweezers allowed in the sink.
5. Adjusting heater controls.
6. How much H₂O₂ to use for piranha.
7. A complete dump rinse cycle.
8. What to do if it stops in the middle of a quick dump cycle.
9. Easy-to-make mistakes that would contaminate sink station.