Version 1.4

# Best Practice for Cleaning Universal SMT Nozzles

One of the most critical steps to a robust SMT process is having clean nozzles. Contaminated nozzles can lead to miss-picks, skewed placements and even missing components. UIC has developed a vital process to keep nozzles clean. Following this process, while maintaining a proper cleaning schedule, will keep the nozzles performing at an optimal level and maximize their longevity.

Many customers still clean their nozzles with Isopropyl Alcohol or with a cleaner that contains alcohol. Using alcohol on the nozzle will dry out the nozzle tip and destroy the glue holding the part together. This will lead to a much greater cost to the customer by having to replace nozzles at a more accelerated rate than necessary. This can also lead to a degradation of nozzle performance and lead to nozzle errors, until the nozzle is replaced.

Universal recognized the need for a standardized and effective SMT nozzle cleaning application and created the following solution.

## Application Pieces:

### UIC Nozzle Clean – UIC Part # 52792829

- Designed to remove solder paste and other contaminates without negatively affecting the reliability or longevity of the nozzles.
- Tested with the complete UIC nozzle product line
- Sold in a 5 Liter Container
- Purchase on-line at http://parts.uic.com/ or via standard PO Process


### Handling Instructions:

- Before using the “UIC Nozzle Clean” solution, read the supplied Material Safety Data Sheet (MSDS) in its entirety and follow all instructions within the document; including handling, safety and storage instructions. MSDS included in shipment.
- Handle cleaning solution with care and used as prescribed within this document
- Use rubber gloves and protective eyewear

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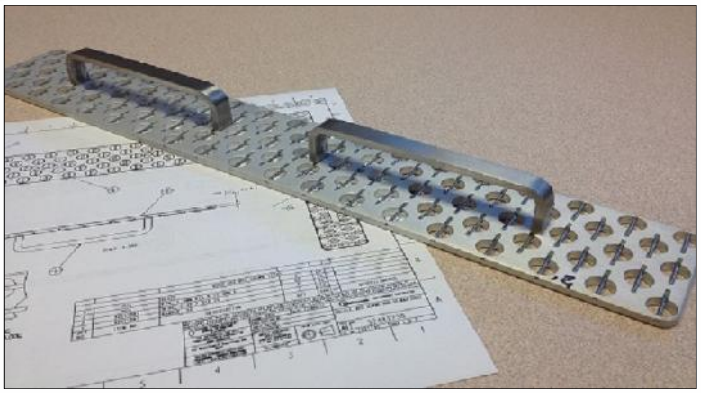
## UIC Removal Tools:

**UIC 35-Nozzle Removal Tool - Part # 52342545**

**UIC 70-Nozzle Removal Tool - Part # 52578980**

**UIC 93-Nozzle Removal Tool - Part # 52449258**



## UIC Removal Tool Advantages:

- An entire set of nozzles, in a nozzle changer, can be picked up at the same time.
- Nozzles can remain attached to the nozzle removal tool during the entire cleaning process, including ultrasonic cleaner.
- Greatly reduces the time it takes to remove and replace the nozzles in the changer without changing the nozzle configuration.
- Using a nozzle removal tool can save several hours for every cleaning cycle.
- Entire set of nozzles can be inserted into nozzle changer for NPI runs and then removed when NPI run is completed, saving additional hours of manual nozzles changes.

## Universal Ultrasonic Cleaner Kits (include cleaner, basket & power cord):

| P/N: | Description: |
|---|---|
| 52792840 | 110V Ultrasonic Cleaner Kit-5-20R Cord (Cleaner/Basket/Cord) |
| 52792841 | 220V Ultrasonic Cleaner Kit-CEE 7/4 Cord (Cleaner/Basket/Cord) |
| 52792842 | 220V Ultrasonic Cleaner Kit-BS546 Cord (Cleaner/Basket/Cord) |
| 52792843 | 220V Ultrasonic Cleaner Kit-SEV 1011 Cord (Cleaner/Basket/Cord) |
| 52792844 | 220V Ultrasonic Cleaner Kit-AS/NZS 3112 Cord (Cleaner/Basket/Cord) |

## Ultrasonic Cleaner Individual Parts:

| P/N: | Description: |
|---|---|
| 52792826 | 110V Ultrasonic Cleaner w/ 5-20R (US) Cord |
| 52792827 | 220V Ultrasonic Cleaner (NO CORD) |
| 52792828 | Basket - Ultrasonic Cleaner |
| 52792845 | Power Cord - 5-20R |
| 52792846 | Power Cord - CEE 7/4 |
| 52792847 | Power Cord - BS 546 |
| 52792848 | Power Cord - SEV 1011 |
| 52792849 | Power Cord - AS/NZS 3112 |

- 1.75 Gallon Tank
- Side mounted drain valve
- Sweep Frequency (to insure no dead spots), enhances cleaning and protects delicate instruments
- Fits objects up to 18 inches in length, including the 93 Nozzle Removal Tool and smaller
- Easy to use time and temperature controller
- Auto shut-off if left on for 12 hours
- Cleaner comes with basket.  Replacement baskets sold separately.
- Use rubber gloves and protective eyewear while using ultrasonic cleaner and while removing nozzles.

## Nozzle Cleaning Wire Kit – UIC Part # 50841901

- Removes obstructions from the nozzles
- Comes with 5 different wires sizes, .004, .005, .008, .014, and .022”
- 12 pieces of wire, for each size, included.


# Recommended Cleaning Process:

- Remove UIC nozzles from placement machine with nozzle removal tool. Place removal tool, at an angle with the nozzles attached and pointing sideways, into the Ultrasonic Cleaner (as shown below).
- Fill cleaner with mixture of “UIC Nozzle Clean” and deionized (DI) water to cover tip of nozzles, up to 12.7mm (.0500in) from top of cleaner.
- “UIC Nozzle Clean” is sold in concentrated form. Use 10% “UIC Nozzle Clean” and fill remaining portion with DI water.
- Estimated cleaning time is 3-15 minutes in Ultrasonic Cleaner. Time will be dependent on the nozzles level of contamination. In most cases, 3-5 minutes will be sufficient. (Note: Machine timer, found on Universal ultrasonic cleaner, does not move or count down mechanically once set. Set the timer to the desired number of minutes and the cleaner will stop automatically, after the selected time elapses)
- Nozzles should be removed from cleaning solution as soon as contamination is no longer present.

**Be sure not to leave nozzles in cleaner for extended periods of time.
Excessive exposure to the cleaning solution may affect nozzle markings**

- Minimum cleaning temperature of 68degF/20degC (Room Temperature)
- Heating option of Ultrasonic Cleaner is not recommended for nozzle cleaning
- Run with cover on. Sweep Function may cause solution to spill over the sides if cover is not on.

## Rinsing Process

- Rinse Nozzles with room temperature DI water while still attached to the nozzle removal tool
- Universal recommends purchasing a container wide and deep enough to submerge the nozzle removal tools, in a DI water bath, completely.

## Drying Process

- Dry nozzles with Compressed Air while still attached to the nozzle removal tool
- Install back into machine when sufficiently dry

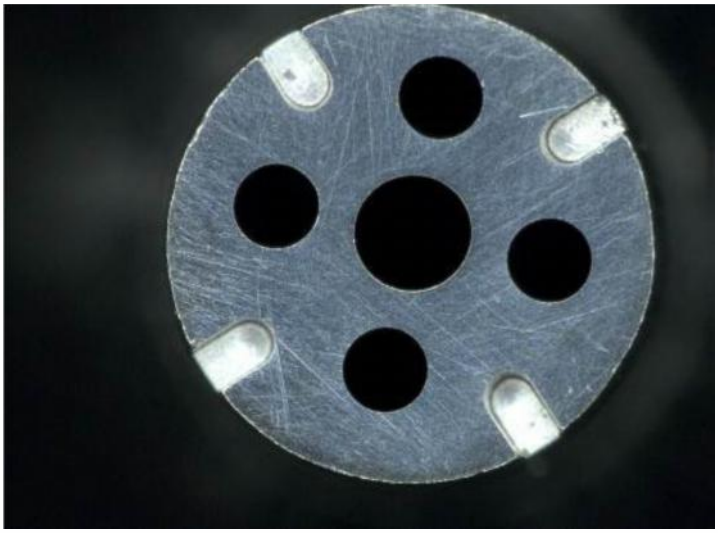
## Cleaning Schedule

- Cleaning cycle is dependent on customer application.
- Nozzle configuration and part diversity will dictate proper cleaning schedule.
- Monitor cleanliness of nozzles and clean as required to remove contaminates.

## Before and after following Best Practices:

**Before:**

**After:**



# FAQ

Q. Is the cleaning process suitable for all UIC nozzles?

A. Yes, the solution and process are both compatible with all UIC nozzles.

Q. Why shouldn't I use Isopropyl Alcohol?

A. Isopropyl Alcohol (IPA) will dry out the tip of compliant nozzles and reduce the nozzles longevity and performance. IPA will affect the glue holding the nozzle together which also reduces the longevity. IPA will also negatively affect the nozzle markings, making them illegible or unrecognizable by the placement machine.

Q. Won't the cleaning solution used in the UIC cleaning process also affect the tip, glue or the part marking of the nozzle?

A. No, through extensive testing, UIC has formulated a cleaning solution that will not affect the longevity of the nozzle or the part marking, when used properly. Strict adherence to the prescribed nozzle cleaning process is required.

Q. Why do I use DI Water?

A. DI water has many of its impurities removed. The minerals and ions typically found in tap water may dry on or inside the nozzle and affect performance or reliability.

Q. What is the cleaning schedule?

A. The cleaning cycle is dependent on the customer's applications, including nozzle configurations and part diversity.

Q. Should I follow a regular cleaning schedule?

A. Yes, following a regular cleaning schedule will help keep the nozzles clean and reduce nozzle contamination, which will negatively affect the performance of the nozzle.

Q. Do I need an ultrasonic cleaner?

A. No, however an ultrasonic cleaner will improve the effectiveness of the cleaning as well as greatly reduce the time the nozzle needs to be in the cleaning solution. Exorbitant soak times may cause nozzle damage over time; therefore, Universal recommends the use of an Ultrasonic cleaner for maximum cleaning effectiveness and reduced exposure to the cleaning solution.

Q. Do I need to use a Universal removal tool?

A. No, a removal tool is not necessary. However, studies have shown a removal tool can reduce each cleaning by several hours. It is also a very valuable tool when a quick change to the nozzle configuration is required.

Q. Can I clean my non-Universal nozzles with the Universal Cleaning solution?

A. "UIC Nozzle Clean" may be an effective solution for many SMT nozzles. The application has only been tested with the Universal Instruments nozzle product line.

Q. How often do I need to change the cleaning solution in the Ultrasonic cleaner?

A. The solution will build up contaminates over time, but customers can expect that it can be used a few times before needing to be replaced. The number of times will depend on the amount of contaminates on the nozzle at the time of cleaning and age/exposure of the cleaning solution.

Q. Can I use my own ultrasonic cleaner?

A. Although we've only fully tested the UIC recommended ultrasonic cleaner, other cleaners may be suitable for use. Refrain from using the heat option if it is equipped with one, excessive heat may cause nozzle damage.