



A Complete Guide for  
EFFECTIVELY CLEANING YOUR  
**TABLET PRESS & TOOLING**





**Cleaning, handling and maintenance procedures should be created and followed in order to keep tablet presses and tooling efficient.**



## **THE IMPORTANCE OF CLEAN TOOLING**

Implementing a cleaning procedure is essential to maintaining your tablet tooling and presses. Dirty tools cause tableting and product quality-related problems, such as sticking & picking. Keeping tools clean also decreases premature tool, turret and cam wear, and reduces the risk of product cross-contamination. While most cleaning methods can achieve similar results, utilizing an automated cleaning system, such as an ultrasonic wash with rinse and dryer, can ensure tooling is properly cleaned and dried consistently with limited handling and potential for damage. A warm air-drying process is ideal for preventing moisture and corrosion by pushing warm air through areas, such as key slots, punch cups, and die bores, that may not be dried properly with a traditional towel or cloth.

## Do You Know the Main Cause of Tooling Damage?

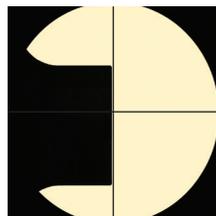
The main cause of tooling damage can be contributed to poor handling of tooling, before or after operation of the tablet press. A proper procedure reduces handling and human interaction, minimizing the potential for tooling damage. The use of a transport cart with proper baskets and racks can decrease the risk of damage to your tooling during cleaning, transportation, handling and storage. By implementing a specialized tooling rack, tools can be transferred, cleaned and stored without having to physically handle a tool. Tooling racks also minimize the risk of punch tips coming together in transport, which can create a burr on the edge, resulting in tablet defects.

## Extend the Life of Your Tooling

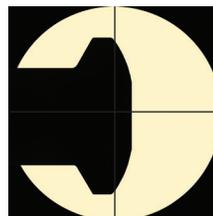
Another way to extend the life of your tooling is to implement a thorough inspection procedure by utilizing equipment that effectively identifies wear. For visual inspection, I suggest utilizing a horizontal optical comparator for checking punch tip wear and wear to the punch's relief, the sharp edge of the lower tool that is used to scrape excess product from the die-bore during the pull-down process. When using an optical comparator, the wear of the tooling can be magnified to allow easy inspection. It can also measure against prescribed limits to ensure proper operation, reducing the possibility of tablet defects.



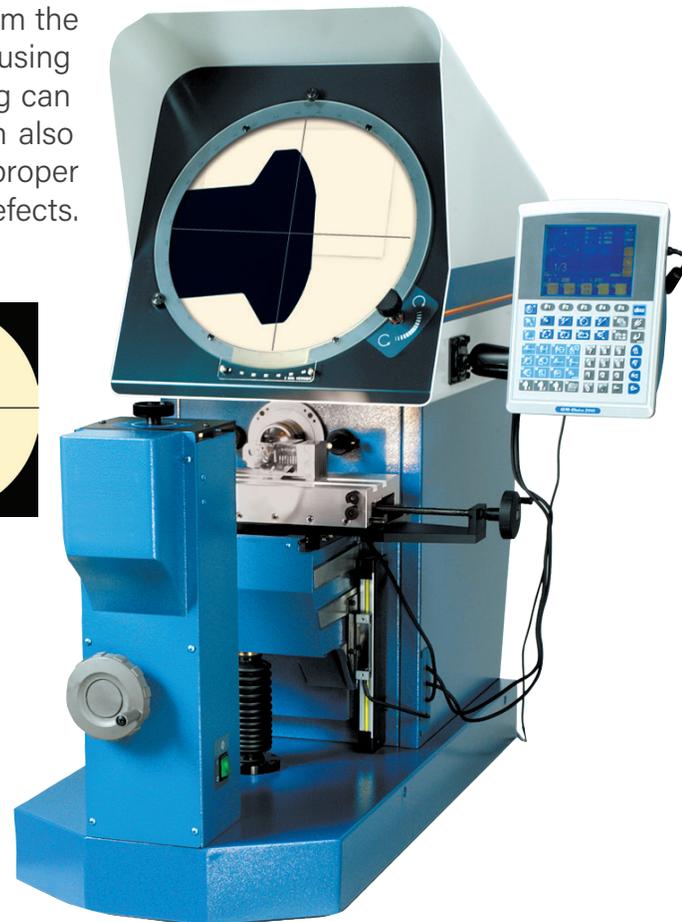
**CHECKS TABLET PROFILE AND FLASHING**



**CHECKS TIP WEAR**



**CHECKS HEAD CONFIGURATON**



## Visual Inspections

A digital indicator affixed to a post and granite base is used to measure the working length and cup depth of tooling. Measuring tools using an allowable within a set of upper or lower punches independently will help ensure proper tablet hardness, thickness and weight consistency.

By visually inspecting dies for wear or ideally using a handheld split-ball bore-gauge to detect wear rings within the die bore, you can reduce the potential for more serious issues. For example, wear rings can lead to tool binding in the die, which can be caused by the buildup of product between the punch-tip and the die wall. Any wear that happens to the punch-tip or within the die wall will allow for additional fines or particles to build-up, leading to punch tip binding or “dark spots” in tablets. This condition can cause other damage, like worn punch guides, punch-head wear or cam damage when operating with bronze or plastic cams.



## Are You Cleaning Your Tablet Press?

In addition to tooling maintenance, proper cleaning of your tablet press is key for optimal operation. New technologies are being offered by tablet press OEM's such as wash-in-place cleaning, which supports reduced product changeovers and improved operator safety when working with high potency drugs through contained cleaning of the compression zone, this can be costly and not necessary for most manufacturers. Traditional press cleanings should begin by vacuuming all excess

formulation dust from the press. You should never use compressed air to clean your press. Compressed air adds to the cleanliness challenge by forcing product into crevices, bearings and other areas where powder does not belong.

You should use a proper soft-bristled brush, die seat cleaner and a noncorrosive

cleaner, such as 95% or greater isopropyl alcohol, or a one-step cleaner and lubricant to help protect against rust and corrosion. An approved H-1 protectant oil can also be used to treat steel surfaces after cleaning when the tablet press is sitting idle for a given period, especially in an area where temperature and humidity are not controlled well. Avoid using cleaners that contains or require water. Like air, water can make its way into crevices, such as under cambodies or into bearings, where it can create rust, leading to costly repairs and/or press failure.

Proper tablet press inspection is crucial to prolonging tooling life. You should regularly inspect tablet press turrets for punch-guide damage, die pocket wear, keyway wear and punch alignment issues.

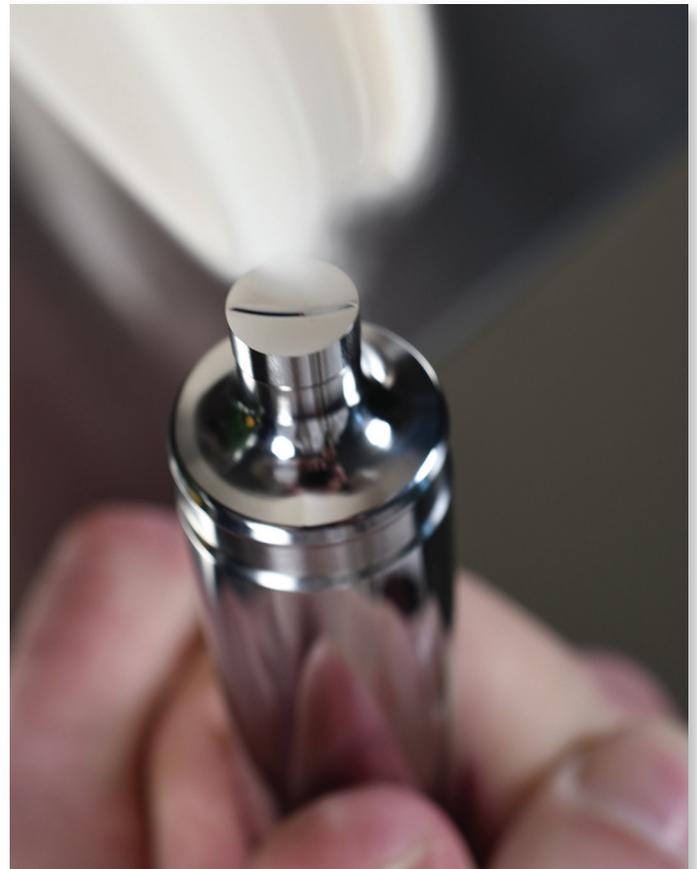


## Prolonging Tool Life

Many factors reduce tooling's life expectancy, such as abrasive or corrosive formulations, press or turret wear, improper tooling setup on the press and mishandling by technicians. Initiating and following a tooling maintenance program can extend tooling life and help you save more than 40% on tooling costs. Tooling vendors can provide tooling maintenance and rework services for your existing tooling sets, resulting in reduced tooling and tablet manufacturing costs. Manufacturers can also provide you with tooling length matching reports, which can help ensure consistent, high-quality tablets at the lowest possible costs.

Should it be necessary to get tools into production that may have been damaged due to poor handling, the best method to remove damage, such as J-hooks on a punch tip, is to use a benchtop motor or buffing station with a vacuum, equipped with a large, unsewn buffing wheel. Along with repairs, you can also use a buffing wheel to polish cups. With the proper training, you can use a scotch-brite wheel to repair inside head angle damage caused by upper raising and pull-down cams, as well as repair light to medium scratches on the punch barrel when necessary.

Restoring land (the flat area around the punch cup,) is one of the most important procedures in refurbishing tooling. You can use a 400-grit stone to restore land and remove nicks from the punch tip edge, followed by a light buffering if the wear condition is severe.





**KNOWLEDGE IS  
POWER**

## Conclusion

By creating and following proper inspection, cleaning and handling procedures, you keep tooling integrity intact and ensure consistent, efficient manufacturing of tablets.



*Stephen Natoli has been working in the tablet compression industry for over ten years. His experience began in tablet press manufacturing and rebuilds, then to technical service and department manager for tablet press parts, turrets, and the tablet compression accessories catalog. Mr. Natoli has been featured in global trade publications for authoring white papers and articles discussing: proper cleaning; tooling refurbishment and maintenance; tooling and tablet press assessment and inspection. Mr. Natoli has lead training courses throughout the US and Europe on tablet tooling design, tablet press setup, and maintenance for members of the nutraceutical, vitamin, pharmaceutical, and cannabis industries.*