

Main Causes of Handpiece Failure & Prevention

We believe Good Maintenance will help the Life of a Handpiece. To maintain Good Maintenance, Prevention is key. Through our experience with handpiece repair, we compiled a list of Handpiece's Main Cause of Failure. The following Guidelines represent a General Approach to Handpiece Maintenance. Always follow the Suggested Maintenance Procedures supplied with the Handpiece, especially during the warranty period. It is important to follow these instructions avoid Premature Failure to newly repaired handpieces.

It is also important to understand that these causes can void manufacturer/repair warranties.

- Temperature & Time on the Sterilizer is Too High.
 - Physical evidence of a handpiece that has been subject to high temperatures is when we find the handpiece very dry, orings melted/deformed and finding oring residue on the outside of the bearing retainer.
 - Excessive high temperature can cause lubrication to evaporate, the bearing retainer to deform/break, auto-chuck to deform, stick & lose grip on burs. Symptoms include water line orings/gaskets to leak, handpieces will run slower, decreased torque & burs difficult to remove. High temperatures can also cause strange sounds and decrease the life of the turbine. Damage can happen with only one cycle at too high temperature, even if the handpiece has not been used. This can void your Purchase/Repair Warranties. Please refer to your manufacturer's instructions for further information.
 - *We always suggest checking the temperature & time on the sterilizer; making sure the temperature is no higher than 130 degrees, for 3-minute holding time.*

- Excessive Pressure Applied to the Handpiece.
 - When excessive pressure applied to the bur on highspeed handpieces, the bur can be pushed into the chuck, locking the bur inside. Removing the bur can be exceedingly difficult. The chuck can "burn out" and loose grip. Once the chuck loses grip, it spins around the bur, grinding & engraving lines in the bur. Heat is created due to the friction of the "stopped" bur and the "still spinning" chuck. The heat that is generated, causes the chuck to warp. Burs will never grip as well as before. Not only does this damage the bur, but it causes severe damage to the chuck. Damage can occur very quickly. Even after 1 patient, the symptoms can start to manifest.
 - When excessive pressure is applied to the bur on highspeed Electric handpieces, not only does the chuck fail (as described above) but the Teeth on the Cartridge & Middle Drive Gear (also referred to as a Drive Shaft) will ware until the teeth slip and grinding away. This is a very costly repair.
 - *We suggest applying Less Pressure to the Bur when it is in use.*

- Air Pressure is Too High.
 - Excessively High Air Pressure will cause the bearings to overheat, thus causing premature bearing failure.
 - Optimal Air Pressure is below 40 PSI. This keeps the speed of the bearings at a pace where the air can cool the bearing when operating. If needed to run the handpiece at a higher air pressure; we suggest to soak bearings in lubricant while running to keep the bearings running at a cool temperature.
 - *We suggest checking the manufacturer's instructions for the specific PSI for your handpiece.*

- Handpiece is Not Adequately Lubricated.
 - When a handpiece is not well lubricated enough, several issues can occur. The bearings stick in one spot, rust & corrosion can form inside the handpiece, chucks can fail due to a lack of lubricant, lack of cleaning out the debris inside the chuck. The bearings can quickly deteriorate from debris.
 - When rust forms in the handpiece, flakes of rust are carried with the high air pressure, passing through the turbine. These flakes get caught in the bearings during this process. These flakes wear out the bearings prematurely.
 - When the handpiece is well lubricated, the debris that accumulated in the chuck and bearings will be purged from the handpiece. Rust and corrosion reduced by replacing the moisture in the handpiece.
 - When using an auto-lubricant machine for lubricating your handpieces, we suggest keeping a bur/shipping post inserted inside the chuck only for auto-lubricant machines. Auto-lubricant machines will cause fluid to rotate the turbine. If there is nothing inside the chuck, the button is not engaged and will cause friction against the back cap, causing a hole.
 - *We suggest lubricating your handpieces daily.*

- Not Properly Cleaning or Maintaining the Chuck Mechanism.
 - When a chuck collects debris, a few problems can occur. The bur can be hard to remove or can slip out while the handpiece is in use.
 - Using a chuck brush is a great way of cleaning all the debris that can get clogged in the chuck. Adding lubrication to the chuck brush while cleaning the chuck is optimal.
 - *We suggest using a chuck brush with lubricant, after each use.*

- Removing the Handpiece from the Sterilizer before the Cycle has Fully Completed.
 - Removing the Handpiece before the Drying Cycle is complete or before the Handpiece has Cooled Down will cause condensation build up inside the handpiece. Rust will form which will lead to internal rust damage.
 - When rust forms in the handpiece, flakes of rust are carried with the high air pressure, passing through the turbine. These flakes get caught in the bearings during this process. These flakes wear out the bearings prematurely.
 - *We suggest leaving the handpiece in the sterilizer until the cycle has fully completed.*

- Leaving Burs in the Chuck, while Sterilizing.
 - When burs are seated in the Chuck, the springs in the chuck are under tension. Applying extreme heat while under tension will weaken the springs and reduce the lifespan of the chuck.
 - When burs are left in a manual chuck it can cause a buildup of debris inside the chuck causing problems during operation.
 - The only time we suggest to leave a bur inside the chuck is for the auto-lubricating machines only.
 - *We suggest not to leave burs in the chuck while sterilizing. Just remove and sterilize.*

- Air/Water Line Debris.
 - Having contaminated air or water lines can also contaminate all handpieces that use those lines.
 - Debris can damage the internal orings and will need to be replaced.
 - *You can check if you have dirty lines by purging the lines onto a clean white paper towel. If you see any dirt or discoloration, your line may be contaminated.*

- When to Use an Ultrasonic Cleaner.
 - Using an Ultrasonic Cleaner comes with positive and negative attributes.
 - Highspeed handpieces should never be cleaned with an Ultrasonic Cleaner. Highspeed handpieces have a plastic retainer in the bearings holding the ball bearings in place. This plastic bearing retainer can easily crack due to the vibrations of the Ultrasonic Cleaner. A single cycle through the Ultrasonic Cleaner can crack the bearing retainer causing the burs to chatter and jump.
 - Highspeed handpieces also has multiple orings throughout the handpiece. Orings to keep the turbine running optimally & orings in the handle around the air/water lines to keep the handpiece from dripping water. The vibration can crack these orings causing damage to the handpiece.
 - Low Speed Handpieces do not have any plastic bearing retainers or orings. They are safe to use in the Ultrasonic Cleaner.
 - *We simply suggest not to clean your Highspeed Handpieces with an Ultrasonic cleaner.*

- Using Sterilizing Wipes.
 - Sterilizing wipes contain sterilizing compounding agents. These come in many forms, compounds, wipes, agents & sprays. These compound agents leaves a residue the surface, seeping into the cracks of the handpiece, or motor. This acts like cement. It only takes one wipe down with these sterilizing wipes to cause damage, where the handpiece will fail. Repair costs could range from \$39 into the \$100's depending on how much damage the wipes have caused.
 - *We simply suggest not to use sterilizing wipes. Alternatively, Try using rubbing alcohol.*

- Using Bent/Used Burs.
 - Slightly bent burs can do major damage. Reused burs are dull and damaged, thus causing the operator to apply extra pressure to cut faster. When doing so, this causes extra pressure to the bearing retainer causing the bearings to fail prematurely.
 - Reused burs are, 90% of the time, bent to a small degree that the human eye cannot detect, thus causing small vibrations, also causing damage to the bearing retainer.
 - When the handpiece is taken apart, more often we will see parts of the bearing fall out of the handpiece.
 - *We suggest not to use reused burs. However, if using reused burs is necessary, we recommend not using sterilize compound agents as they leave a residue on the bur, "gumming up" the handpiece.*

We Recommend:

Soaking your Handpieces in Lubricant Overnight; at Least Once a Month.

This will help Remove Stuck on Debris & Saturate Bearings with Lubricant, for longer life.

Helpful Links:

We have lots of extremely useful information on our website:

www.mcshandpiece.com

For an In-depth Look at Handpiece Maintenance:

mcshandpiece.com/maintenance

Understanding High Speed Bearings:

mcshandpiece.com/understanding-high-speed-bearings

Chuck Mechanism Cleaning Procedure:

mcshandpiece.com/chuck-brush-procedure

Handpiece Lubricating Procedure:

mcshandpiece.com/lubricating-procedure

Specialized Maintenance Procedures:

Highspeed's: mcshandpiece.com/highspeed-maintenance

Low Speed's: mcshandpiece.com/low-speed-maintenance

Electric Air Powered Highspeed's: mcshandpiece.com/electric-airpowered-maintenance

Air Motors: www.mcshandpiece.com/air-motor-maintenance