

The Little Green Handbook

How to Care for Your Dental Handpiece



ATHENA CHAMPION®

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A Message from Athena Champion

We understand the dental practice can be a busy and demanding place. The dental handpieces you work with everyday, whether high or low speed, are precision instruments designed to bring years of service to the practice when cared for properly. Proper care includes following the manufacturers instructions for cleaning, lubrication and autoclaving procedures.

The Little Green handbook is based on Athena Champion's experience as a handpiece manufacturer and as a repair service. This handbook brings together information you need to know and practice everyday, to get the best performance from your handpieces. You will also find several other useful sections: handpiece inventory page; dictionary of handpiece terms; and information on Athena Champion's repair service.

Athena Champion products are available through your dental dealer. For dealer information, call Athena Champion Customer Service at (800) 253-1771.



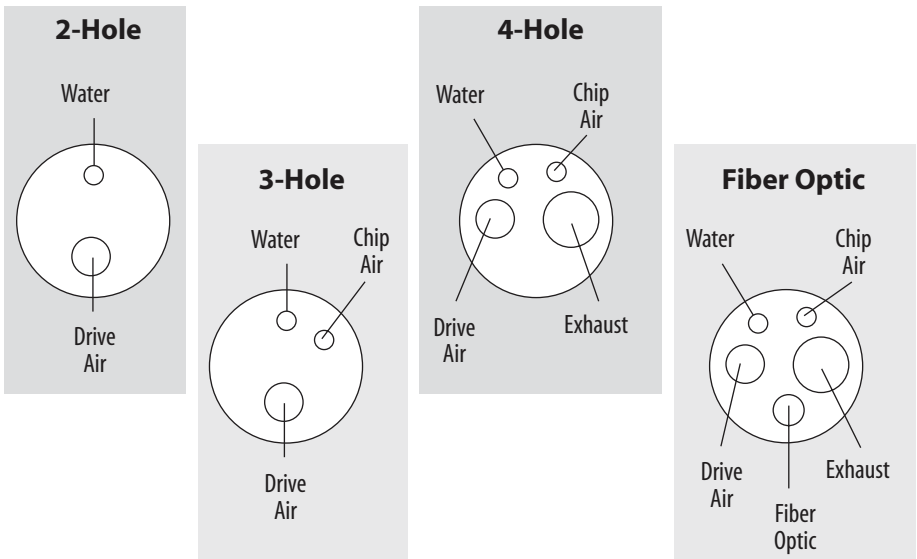
Standard Practices to Follow

- The air pressure should not exceed 35 PSI for high speed handpieces and 45 PSI for low speed handpieces. Increasing the air pressure will not increase handpiece performance and will cause damage to your handpiece turbine or motor.
- Do not tighten the chuck without a bur or bur blank in place, this will cause damage to the chuck.
- The handpiece should be operated only with a bur securely in place.
- Do not depress the push button of a push button handpiece during operation. This will damage the chucking mechanism and the bur may be expelled from the rotating handpiece.
- Do not use the push button handpiece to retract the patient's cheek or other soft tissue. Excessive heat will be generated if the cap is depressed when turbine is running.
- Use the handpiece manufacturer's tools supplied with the handpiece. For example, to avoid unnecessary damage, never use pliers on a handpiece. This may void your manufacturer's warranty.
- Before operating a handpiece and/or component, always carefully read and follow the manufacturer's instructions for use. These are the procedures the manufacturer recommends for the best performance of the instrument.

Tips on Cleaning & Lubrication

- Athena Champion recommends that all high speed handpieces, low speed handpieces, prophy handpieces, straight attachments/nosecones, and contra angle attachments and heads be cleaned prior to sterilization. These items can be cleaned by using a mild germicidal detergent/cleaner (Birex® type) or any handpiece cleaner available in today's marketplace (Athena Champion Clave-N-Spray, Midwest, house brands, etc.). A toothbrush or instrument brush can be used to clean external surfaces of handpieces especially handpiece threads and knurled grips. Handpieces should be operated 30-40 seconds to purge any cleaning solution before sterilization. Handpieces should not be sterilized with bur or bur blank in the handpiece.
- Athena Champion recommends autoclave or chemiclave sterilization of handpieces. We do not recommend dry heat sterilization.
- Athena Champion also recommends that all high speed handpieces, low speed handpieces, prophy handpieces, nosecones, and contra angle attachments and heads should be lubricated before the sterilization cycle. **It is imperative that the handpiece is connected to an air supply and operated 30-40 seconds to expel excess lubricant.** Any excess lubricant remaining on the surface of the handpiece should be cleaned with a 2 x 2 gauze sponge.
- Nosecones, contra angles and heads should all be detached and lubricated separately.
- Never wash or immerse the handpiece in cold sterilant or chemical disinfectants containing alcohol base phenols, chlorines or glutaraldehydes. They may damage and/or corrode some metals.
- The handpiece exterior can be washed with a mild germicidal detergent/cleaner (Birex® type).
- The handpiece turbine should not be removed for cleaning.
- The fiber optic surfaces can be cleaned using isopropyl alcohol.

- Do not attempt to clean the fiber optic surfaces with any sharp instruments.
- Use lubricants that are approved for dental handpieces only.
- Lubricants and cleaners should only be introduced into the drive air tube of the handpiece only. **The exhaust tube does not connect to the turbine and should not be used for lubrication purposes.**



Gear Up for Infection Control

- The dental handpiece touches the mucous membranes and is a semicritical instrument. Therefore, high- and low-speed handpieces, prophylaxis angles, ultrasonic and sonic scaling tips, air abrasion devices, and air and water syringe tips should be sterilized between patients. Heat methods can sterilize dental handpieces and other intraoral devices attached to air and/or waterlines.¹ Neither surface disinfection nor immersion in chemical germicides is an acceptable method. Ethylene oxide gas cannot adequately sterilize internal components of handpieces.¹ In clinical evaluations of high-speed handpieces, cleaning and lubrication were the most critical factors in determining performance and durability.^{1,11,12,13} Manufacturers' instructions for cleaning, lubrication, and sterilization should be followed closely to ensure both the effectiveness of the process and the longevity of handpieces. Additionally, any dental device that is connected to the dental water system and enters patients' mouths should be run to discharge water, air, or a combination for a minimum of 20 to 30 seconds after each patient.² This procedure is intended to help physically flush out patient material that may have entered the turbine and air water lines.^{1,2}
- For staff protection, always wear masks, gloves and protective eye wear during infection control/sterilization procedures.
- When autoclaving or chemiclaving, do not exceed 275°F or 135°C.
- Do not autoclave the handpiece, nosecone or latch head with the bur in place. Remove the bur before sterilizing. There may be a corrosive reaction between different metallic surfaces, resulting in damage.



- Use autoclave bags with at least one paper side. This type of bag allows moisture to escape. Never use all plastic bags.
- Low speed motors, nosecones, contra angles and contra angle heads should be detached and bagged separately for sterilization.
- When the drying cycle is finished, remove the handpieces from the autoclave. Do not leave overnight in the sterilizer or store in the sterilizer.
- After handpieces and/or components are removed from the autoclave or chemiclave, they should be allowed to return to ambient room temperature before use.

As listed in Compendium, January 2004, Vol. 25, No. 1.

1. Centers for Disease Control and Prevention. Guideline for infection control in dental health-care settings, 2003. MMWR Recomm Rep. 52(RR-17): 1-76.

2. Updated US Public Health Services guidelines for the management of occupational exposure to HPV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR Recomm Rep. 2001;50(RR-11):1-52.

11. Knehne JS, Cohen ME, Monro SB. Performance and durability of autoclavable high speed handpieces. Naval Dent Res Inst Pr. 1997; (May):92-103.

12. Andersen HK, Fiehn NE, Larsen T. Effect of steam sterilization inside the turbine chambers of dental turbines. Oral Surg Oral Med Oral Path Oral Radiol Endod. 1999;87:184-188.

13. Leonard DL, Charlton DG. Performance of high-speed dental handpieces subjected to simulated clinical use and sterilization. J Am Dent Assoc. 1999;130:1301-1311.

Athena Champion Cleaner/Lubricants

To assist you in keeping your handpieces in good working condition, Athena Champion offers high quality cleaners and lubricants. There are several different options to choose from.

Clave-N-Spray is specifically designed for use in air turbine handpieces, prophy angles, contra angles and other jointed instruments. Clave-N-Spray can be used before sterilization to clean and lubricate handpieces.

Euro Spray is a lubricant refill for European handpiece turbines and motors.

Euro Spray is used prior to sterilization and is not necessary after sterilization.

The pen oiler is a handy lubricant for use prior to the sterilization cycle. It is equipped with a micro dispensing tip for easy use on high or low speed handpieces.

A handpiece cleaner is necessary prior to use of the pen oiler.

All handpieces should be operated 30 – 40 seconds prior to the sterilization cycle after the use of any of the above lubricants.



Handpiece Dictionary

- **Air Motor** – The main component drive of a low speed handpiece. A low speed handpiece is made without integral reduction gears or attachments.
- **Auto Chuck/Push Button/Lever** – A mechanism used to change a bur by pressing a button or by raising a lever.
- **Autoclave** – A steam sterilizer which kills living organisms. Temperature is raised to 270- 275°F (135°C) while the pressure is raised to 30 PSI.
- **Bearing** – A high precision part used to support rotating parts in high speed and low speed handpieces.
- **Bur/Diamond** – A rotary dental instrument, held and revolved in a handpiece. Used to remove carious material within decayed teeth, to reduce decayed or fractured hard tissues, to form the design of the cavity preparation, and to finish and polish teeth and restorations. Can be made of high speed steel, carbide or diamond coated material.
- **Cannister** – A closed cylinder which houses a rotating high speed turbine/cartridge and allows for easier office replacement.
- **Chemiclave** – A sterilizer which uses chemicals for instrument sterilization. The temperature reached by chemiclave is 270-275°F.
- **Chip Air** – Air supplied to the cutting surface to cool the tooth and flush chips and residual material resulting from the removal of a decayed tooth surface.
- **Chucks** – The part used to hold the bur for cutting or polishing.
- **Connector** – There are four types of U.S. standard handpiece connectors. They include the 2-hole (also called a Borden Connector); 3-hole and 4-hole. The 4-hole (also called a Midwest Connector) is the most popular connector. In a 4-hole connector, the holes are (1) drive air, (2) chip air, (3) water and (4) exhaust. Sometimes a 5-hole connector is referenced. The fifth hole represents the fiber optic bundle. Hole locations are determined by an ISO specification. See connector configurations on page 7.
- **Contra Angle** – An attachment used with a straight or slow speed motor which changes the desired angle to better reach areas in the oral cavity which are difficult to access.
- **Drive Air** – The air supply used to power an air-driven dental instrument.
- **“E” Type Motor** – Motor which has a standardized male connector to accept nosecones or contra angles having the matching female connector.
- **Exhaust** – The air discharged from a dental handpiece.
- **Fiber Optic Handpiece** – A handpiece which incorporates a fiber optic bundle or rod and light source at the head of the handpiece to facilitate illumination of the oral cavity.
- **FG or Friction Grip Handpiece (or Chuck)** – Often incorrectly used to describe a Jacob Chuck Handpiece. The bur is held strictly by friction and is pushed into the chuck using force to overcome the friction caused by the chuck, usually a spring material lining the chuck.

- **Handpiece** – A hand held device which engages rotary instruments for cutting, cleaning or polishing the teeth. A handpiece can be belt-driven, pneumatic or electric.
- **High Speed Handpiece** – A handpiece which operates at a speed greater than 100,000 RPM.
- **Jacob Chuck** – A chucking mechanism which utilizes a chuck key (bur wrench) to tighten the chuck. The chuck has slots which are closed on the bur with the bur wrench. Often referred to as friction grip chuck.
- **Low Speed Handpiece** – In general, any handpiece used by a dentist or hygienist at speeds less than 100,000 RPM.
- **Lubricant/Cleaner** – A liquid applied to moving parts of a handpiece or attachment in order to reduce friction, heat, or wear, or applied to surfaces in close contact to prevent them adhering to one another. Also includes a solvent for cleaning. May be administered with an aerosol or non-aerosol applicator.
- **Nosecone** – A straight attachment used with a slow speed motor which holds a bur (generally 2.35m shank size), standard “U” attachment or prophyl angle.
- **“O” Rings/Quad Rings** – Rubber or synthetic material used as a suspension system between the turbine, motor bearings and outer housing to reduce noise and vibration. High speed turbines require 2“O” rings/quad rings.
- **Prophy Angle** – An angle which attaches to a hygiene type slow speed handpiece or to a contra angle. A prophyl angle accepts screw-in brushes, cups or snap-on cups.
- **Reduction Contra Angle** – Available in 4:1, 16:1, 64:1, etc. This numeric designation indicates the amount of reduction speed of the motor to the bur. For example, 4:1 attached to a 20,000 RPM motor will rotate the bur at 5,000 RPM.
- **Replacement Turbine** – A turbine/cartridge for a high speed handpiece which may be inserted into a handpiece to replace worn turbine/cartridge.
- **RPM** – Revolutions per minute (RPM) is often used to delineate the types of handpieces. For hygiene 6,000 RPM or less is used; for general lab work 25,000 RPM or less; and for operative and crown & bridge 300,000 RPM and greater.
- **Straight Handpiece** – Same as a slow speed handpiece. Often refers to a handpiece with a nosecone permanently “fixed” to the motor.
- **Turbine/Cartridge** – Located in the head of the high speed handpiece, it rotates by the use of compressed air. Turbines/cartridges are usually replaceable in most offices. Low speed handpieces usually have motors instead of turbines, and are not field replaceable.
- **Quick-Disconnect** – A handpiece attachment or fitting designed to allow easy separation or engagement of the handpiece from/to the air supply tubing.

Athena Champion's Repair Service

Athena Champion's in-house repair service features experienced technicians who provide "handpeace of mind." In addition, our service is convenient and easy to use with reliable 48-hour turnaround. A toll free number – (800) 253-1771 – gives you direct contact to Athena technicians. Athena Champion provides a 6-month warranty on high speed handpieces, nosecones, contra angles and low speeds for parts and labor from date of repair.

Services include:

- High Speed Overhaul
- Autochuck Handpiece Overhaul
- Low Speed Overhaul
- Resleeve Handpiece Threads
- Low Speed Nosecone Overhaul
- Clean/Oil/Test High Speed or Nosecone
- Clean/Oil/Test Low Speed
- Air Scaler Repair

And More

Just call (800) 253-1771!



PLEASE COMPLETE ALL FIELDS (TYPE OR PRINT)

Practice/School Name		Contact Name		Date
Address				
E-mail				
City		State	Zip	Dental Supplier (Required Information)
Phone Number		Dental Supplier Purchase Order Number		

Estimate before repair **Repair item(s) as necessary** **Repair item(s) under warranty**
(Please include copies of previous invoices to expedite warranty claims.)

ITEM IDENTIFICATION & PROBLEM DESCRIPTION

1	Manufacturer	Model	Serial Number
	Better Price.Better Service		
2	Manufacturer	Model	Serial Number
	Better Price.Better Service		
3	Manufacturer	Model	Serial Number
	Better Price.Better Service		
4	Manufacturer	Model	Serial Number
	Better Price.Better Service		

Athena Champion suggests that you use a traceable method of shipment and insure against loss/damage.