



DRILL – AIRE MINI INSTRUCTION MANUAL



Engler High Speed Dental Air Unit

COMPANY PROFILE

Engler Engineering Corporation has been in business since 1964 and occupies an 8000 square foot facility in Hialeah, Florida (USA). Engler manufactures high speed air units and table top ultrasonic dental scalers, polishers and combination units. Other devices include electrosurgery equipment and ultrasonic instruments for the veterinary market as well as a microprocessor controlled anesthesia delivery system and a respiratory monitor for veterinary use.

Engler Engineering Corp. acquired the exclusive manufacturing and marketing rights of Dynax products, including stretchers, gurneys, The Cat Grabber, comfort cots, warm water heater / circulator with pads, and other products. We also acquired the Alpha-Sonic, Ora-Sonic, and Pro-Sonic line of piezo scalers.

Engler manufactures all of the inserts and tips used in the Engler products as well as many others on the market today in the 18K and 25K frequency range.

Our repair department has the technical knowledge to repair and maintain a number of dental devices manufactured by other companies including Shorline.

Engler Engineering Corporation's foreign sales are handled through a large and growing network of veterinary distributors. At the present time we are represented throughout the Middle East, Europe, Central and South America, Canada, Asia, New Zealand, Australia, and most other countries.

If you have any questions or comments, or suggestions, please contact:

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**ENGLER ENGINEERING CORPORATION'S
BRAND NAME VETERINARY PRODUCTS**

- **ADS 2000**, microprocessor controlled anesthesia delivery system / ventilator,
- **Excelsior**, high speed dental air unit with vacuum / electrosurgery / ultrasonic scaler / high speed drill / low speed polisher / air - water syringe, and on demand compressor,
- **Scale - Aire**, high speed dental air unit with ultrasonic scaler / high speed drill / low speed polisher / air - water syringe and on demand compressor,
- **Scale - Aire Mini**, high speed dental air unit with ultrasonic scaler / high speed drill / low speed polisher / air - water syringe,
- **Drill - Aire Plus**, high speed dental air unit, high speed drill / low speed polisher / air - water syringe,
- **Drill - Aire**, high speed dental air unit, high speed drill / air - water syringe,
- **Son - Mate II**, ultrasonic scaler / 35,000 RPM handpiece / low speed polisher,
- **Piezo - Mate**, ultrasonic scaler / 35,000 RPM handpiece / low speed polisher
- **Tri - Mate**, ultrasonic scaler / 35,000 RPM handpiece / low speed polisher / electrosurge,
- **Vet II**, 25K ultrasonic scaler / 35,000 RPM handpiece / low speed polisher,
- **Sonus II**, ultrasonic dental scaler,
- **Engler Piezo Ultrasonic Scaler**,
- **Electro - Son**, touch screen, mono / bi-polar electrosurgical unit,
- **Poli - X**, 35,000 RPM handpiece / low speed polisher,
- **Sentinel V.R.M.**, respiratory monitor,
- **Engler Veterinary Respiratory Monitor (EVRM)**
- More coming soon!

INTRODUCTION

Thank you for selecting the Drill - Aire Mini High Speed Dental Air Unit. We believe you have selected the best product available for performing basic and advanced dentistry for your veterinary patients.

The design of the Drill - Aire Mini uses state-of-the-art integrated computer technology together with time tested technology. This combination produces a powerful and potent tool against periodontal disease.

The high speed drilling handpiece allows the operator to quickly and efficiently perform the same advanced dental techniques, drilling shaping and cutting to name a few, being taught in the largest teaching hospitals and clinics around the world. The low speed handpiece is used for smoothing and polishing the teeth after scaling.

PLEASE READ VERY CAREFULLY

Engler Engineering Corporation (EEC) makes every effort to verify that all parts for the device along with any optional accessories ordered with it are included in this shipment. It is imperative that the shipment be inspected immediately upon arrival. Should any parts be missing or damaged, Engler Engineering must be notified immediately. All claims submitted after fifteen days of receipt will not be valid.

EEC makes every effort to verify that our devices are built and tested to approved standards. Any modification to the device, hoses, or power supply initiated by others, nullifies all warranty statements. Engler Engineering Corporation will not be held liable in any way, for any damage, injury or death due to non-authorized service, improper installation, or improper use of this device. EEC's liability will not exceed the purchase price of this machine.

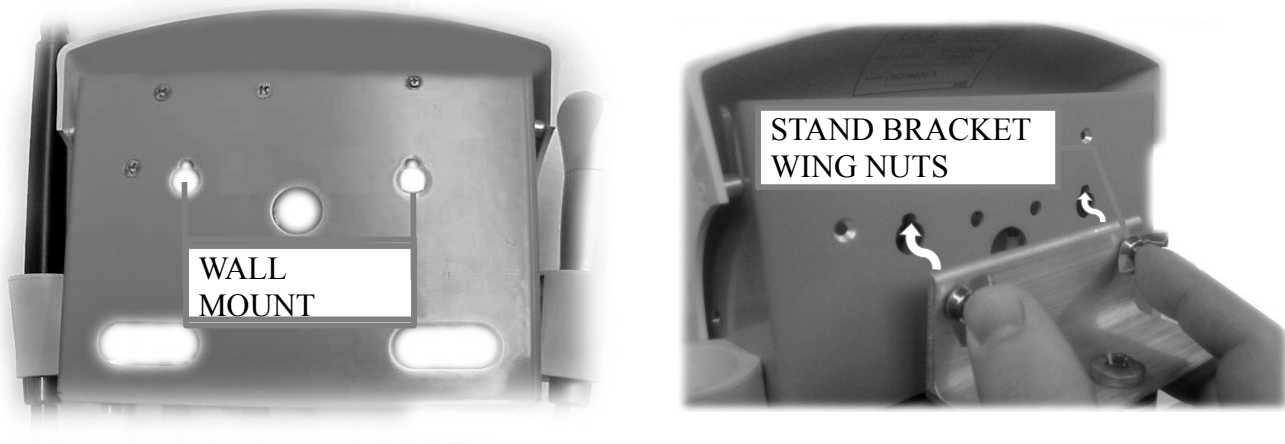
The information contained herein is intended only as a guide. Individuals not properly trained should not use this equipment. It is intended for professional use only.

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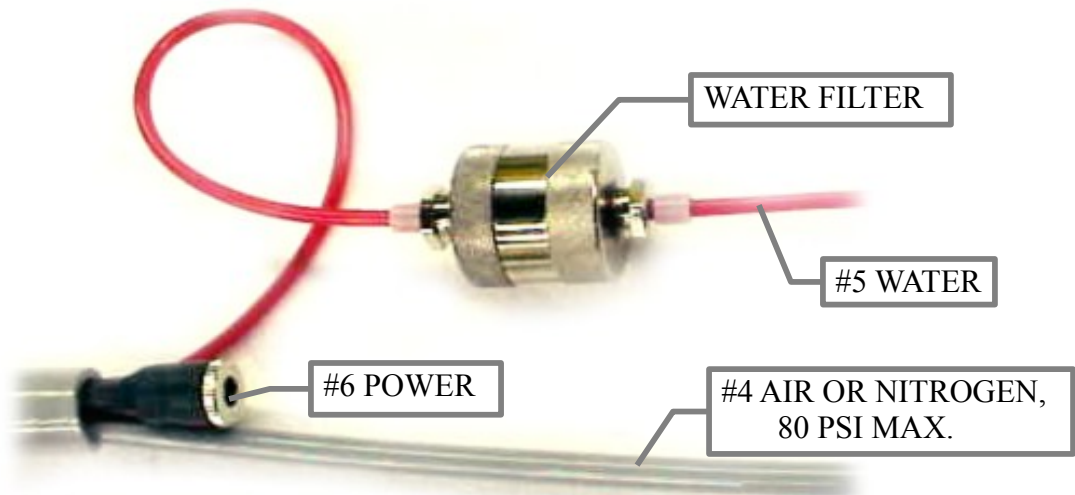
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INSTALLATION

1. Unpack unit and confirm all items checked off on your packing list..



2. Attach unit to optional stand or wall mount (included):
 - A. Assemble stand.
 - B. Connect stand bracket to “key holes” on the back of the unit.
 - C. Tighten wing nuts.
3. Place handpieces on handpiece holders.



4. Connect pressurized air / nitrogen to gray hose. DO NOT EXCEED 90 PSI. Use pressure regulator and filter when needed. The recommended operating pressure is 80 PSI.
5. Connect water to red hose.
6. Connect power supply to power plug located at the end of the umbilical bundle.
7. Connect power supply to power outlet.
8. Test each handpiece.

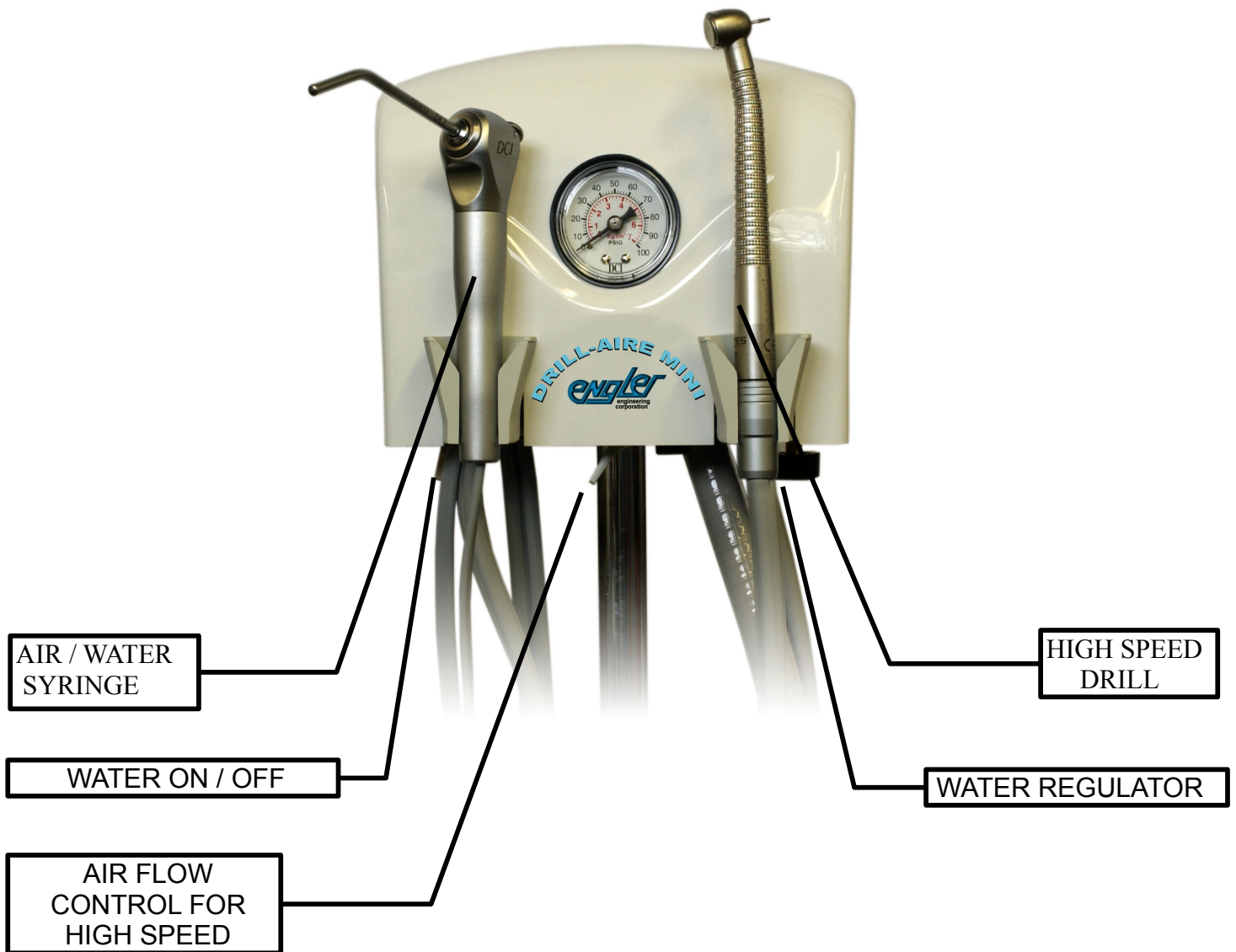
To avoid unit damage and / or injury, confirm input line pressure for the air or nitrogen is set to a maximum of 90 PSI. If using a compressor, verify your compressor pressure ratings, if it provides more than 80 psi, a pressure regulator is required.

Note: All Images in this document are for reference only. Styles, accessories and colors may change without notice.

DRILL - AIRE MINI DIAGRAM

Locate the handpieces on the front of your Drill - Aire Mini. From right to left they are:

- High Speed Handpiece
- Air / Water Syringe



HIGH SPEED HANDPIECE



This handpiece is used for advanced dentistry, including but not limited to; cutting, sectioning, and shaping cracked or broken teeth, repairing, preparing cavities etc.



Flush to remove water. Keep well oiled.

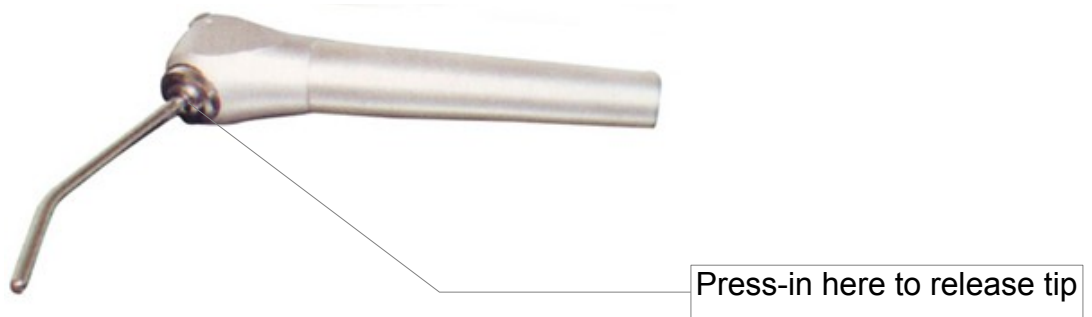
AIR / WATER SYRINGE

The three-way air / water syringe features

- Well balanced design, and smooth styling for comfortable use.
- Easy release for a speedy exchange of tips.
- Fully autoclavable tips.

This handpiece allows the operator the ability to rinse the operative site with:

A stream of water, a stream of air, or both to produce a mist.



GETTING TO KNOW YOUR CONTROLS

WATER ON / OFF

The control is equipped with a wet / dry toggle to activate the water flow. Move the toggle forward to turn water on.

HANDPIECE AIR FLOW CONTROLS

Locate the flow control screws on the underside of the unit. These screws control the maximum amount of air that is delivered to the handpiece once the footswitch is pressed.

Caution: Allowing more pressure than the maximum allowed pressure to your handpiece will cause your handpiece to fail prematurely. Verify your handpiece manufacture's specifications before modifying these settings.

WATER FLOW CONTROL

The water control knob adjusts the water flow to the handpieces. Turn clockwise to decrease flow, and counter-clockwise to increase flow.

AIR HANDPIECE PRESSURE GAUGE

Gives a visual indication of the air pressure delivered to the handpieces.

FOOTSWITCH CONTROL

The foot control applies air pressure to the selected handpiece. The footswitch is a responsive, high volume, and variable flow that can be actuated by pressing any point on the durable, chrome-plated cover. By pressing harder on the footswitch, more power will be delivered to the air handpieces.

FOOTSWITCH



INSTRUCTIONS FOR OPERATION AND MAINTENANCE

REGULAR OPERATIONAL CONSIDERATIONS

The high speed handpiece must be lubricated daily when in use. Remove the quick disconnect hose and spray lubricant in the smaller of the two larger ports of the handpiece.

One can of Lares Handpiece Conditioner spray lubricant is included with every Drill – Aire Mini.

For the best care and maintenance order the Drill - Aire Mini deluxe maintenance kit which includes Lares Handpiece Conditioner from Engler Engineering Corporation (optional, not included with unit).

MAINTENANCE KITS

There are maintenance kits available for the Drill - Aire Mini (optional, not included with unit). These kits are essential to keep your unit working properly. Each kit varies. Please make sure you specify your systems configuration and part number when ordering the kit.

KIT MINI BASIC , The standard kit, includes One Step conditioner for the high speed handpiece, and port cleaning tool necessary to perform basic maintenance.

KIT MINI DELUXE , includes replacement parts that are normal wear and tear items such as replacement O-rings for the high speed handpiece in addition to items in the standard kit.

START UP AND SHUT DOWN SEQUENCE

Start up:

1. Connect unit to a clean, filtered water source.
2. Connect air / nitrogen source.
3. Set the air / compressor / nitrogen regulator to 80 PSI operating pressure.

Note: When using a nitrogen tank / cylinder, handpiece performance will diminish when the tank pressure drops below 500 PSI. It will be necessary to switch out the tank / cylinder.

Shut down:

1. Clean all air handpieces according to the original manufacturer instructions. Thoroughly wipe the unit, all handpieces and cables with a mild cleaning solution or disinfectant and a damp cloth. Follow the procedures approved by your institution or use a validated infection control procedure. Do not allow fluids to enter the chassis. Do not autoclave the main unit.
2. Remove, clean and autoclave the high speed handpiece and three way syringe tip (tip only) and burs. **High speed handpiece must be lubricated regularly and after autoclave.**
3. Disconnect the air / nitrogen source.
4. Disconnect unit from the water source.

HIGH SPEED HANDPIECE



INSERTING A BUR INTO THE HANDPIECE: CHANGING BURS

Lares high speed handpieces should be used with friction grip burs with shank diameters that conform to ISO and ADA size standards.

Model	Recommended	Optional
757 Ultralite / Euro	Standard (19.0 mm)	Surgical Length (26 mm) 757 Ultralite / Euro

1. Hold handpiece handle as shown and position end of thumb on push button with index finger wrapped around underside of handpiece neck for support.



Figure 2

2. To insert a bur, first be sure bur is clean and free of external debris or corrosion. Without depressing push button, insert bur into chuck as far as possible. Then fully depress push button hard and fast while simultaneously inserting bur into chuck the rest of the way until fully seated. Release push button and insertion is completed.
Caution: Be sure to tug firmly on the bur immediately after completing the insertion procedure to verify full seating and secure retention of the bur before operation.
3. To remove a bur, fully depress push button hard and fast while simultaneously pulling bur until removed from chuck. **Figure 2.** Push button may then be released until next bur is inserted.

Caution: Never force a scored, bent or rusty bur into chuck as it may damage the chuck voiding the warranty. Never depress push button during handpiece operation or while turbine is still rotating. Be sure to remove bur at end of day.

CLEANING THE HIGH SPEED HANDPIECE



1. Remove the bur.
2. Unscrew the high-speed handpiece from the air-hose coupler
3. Use the water port cleaning tool (item # 10541) to clean the small water spray holes.
4. Use the spray lube (with red tube) to spray lubricant into the chuck and into the air drive hole (the smaller of the two large holes).
5. Re-connect the air-hose coupler.
6. Re-insert a bur or bur blank – NEVER run the handpiece without a bur or bur blank in place.
7. With water toggle switch OFF, depress the foot-switch pedal for 5 seconds to expel excess lube from the handpiece.
8. Wipe the handpiece of excess lubricant.

DAILY HANDPIECE LUBRICATION IS ABSOLUTELY ESSENTIAL.

Operate the high speed handpiece between 25 - 32 PSI. The handpiece is engineered to attain speeds of 360,000 RPM at 32 PSI.

Use the brush to remove foreign particles. A fine wire is provided for cleaning the water spray hole and to prevent clogging. Blowing air backward into the drill head can dislodge particles. NOTE: DO NOT attempt to blow particles from the rear end of the handpiece, as larger particles could block the water tube.

HIGH SPEED HANDPIECE STERILIZATION PROCEDURES: (AUTOCLAVE AND CHEMICLAVE ONLY)

Clean external surface: Remove bur from handpiece and scrub with a toothbrush or 2" x 2" gauze using warm tap water. DO NOT IMMERSE HANDPIECE.

Dry: Thoroughly dry handpiece using gauze, paper towel or air syringe.

Clean / lubricate: Using a combination cleaner / lubricant, spray into handpiece drive air hole and in chuck.

Expel cleaner / lubricant: Re-insert bur into handpiece head, connect handpiece to tubing and run for a few seconds to thoroughly expel debris and excess lubricant.

Bag and cycle in autoclave: Place handpiece into autoclave bag or pouch. Cycle as per autoclave / chemiclave manufacturer's instructions. DO NOT EXCEED 275° F (135° C).

Cool down and lubricate: Allow handpiece to return to room temperature. Lubricate handpiece as per instructions listed above. Expel excess lubricant as per previous instructions. Wipe down handpiece.

DO

- _ Use warm tap water to scrub the exterior of handpiece.
- _ Expel excess lubricant from by running it for a few seconds after cleaning and lubricating.
- _ Use separate cans of lubricant before and after sterilization to prevent cross contamination.
- _ Use autoclave bags and pouches with indicators to protect handpiece.

DON'T

- _ DON'T immerse handpiece in water or chemical disinfectant / sterilizer
- _ DON'T use any type of disinfectant on handpiece.
- _ DON'T sterilize handpiece with bur inserted.
- _ DON'T exceed 275° F (135° C) in autoclave or chemiclave.
- _ DON'T dry heat or heat transfer sterilize.
- _ DON'T operate handpiece without bur or bur blank inserted in chuck.

TROUBLESHOOTING COMMON HIGH SPEED HANDPIECE ISSUES

- A. Handpiece sluggish (could be lack of lubrication or too much debris)
 - 1. Try heavily spraying "correct" drive air tube with a combination cleaner / lubricant #10083 available from Engler Engineering Corporation and run handpiece for at least 30 seconds.
- B. Burs are sticking inside of turbine or falling out
 - 1. Flush the chuck / spindle with a handpiece cleaner.
 - 2. Ensure that burs are not worn or scored, less than .0625" or larger than .0630" which can damage spindle.
- C. Water spray is weak or completely stopped
 - 1. Insert water port cleaning tool item # 10541 into water tube from head of handpiece to remove debris.
 - 2. Use our Smart Cleaner to clear clogged tube.

If these simple solutions fail, more serious problems are likely affecting the handpiece, which should be sent to the manufacturer if under warranty or Engler Engineering Corporation if warranty has expired.

IMPORTANT SAFETY PRECAUTIONS

All high speed handpieces are potentially dangerous if safety precautions are not followed. Be sure to read and observe the following precautions.

Never use the back of the handpiece for tissue retraction, or otherwise cause the push button to be depressed during operation. Doing so may result in button getting hot and burning the patient.

Never operate handpiece with a bent or damaged bur locked in the chuck.

Never insert or remove handpiece from oral cavity before rotation of bur is completely stopped.

Never operate handpiece at air pressure in excess of recommended maximum settings.

Never operate handpiece after turbine cartridge replacement without double checking that head cap is tightened securely.

Never operate handpiece without fully inserting bur in chuck. Do not extend burs. Longer burs are available separately.

Sterilize between patients to prevent cross contamination.

INFECTION CONTROL

Be sure to use only Lares Handpiece Conditioner for this handpiece. Use of lubricants / conditioners other than Lares approved conditioner or failure to follow the maintenance schedule described above will automatically void the limited warranty for this product. Lares Handpiece Conditioner is available from Engler engineering corporation, part #10083.

All Lares high speed handpieces may be steam autoclaved or chemiclaved.

Prior to cycling, be sure to have Lares Handpiece Conditioner available with the appropriate nozzle hardware attached.

PROCEDURE

This procedure should be performed after every patient to prevent cross-contamination and to assure long, trouble-free operation.

1. Detach handpiece from swivel coupler. (Do not autoclave / chemiclave swivel coupler). Clean external surface of handpiece thoroughly to remove saliva, blood, and other organic soil. Scrub handpiece with small brush under running water. Rinse and dry thoroughly.

CAUTION:

NEVER Submerge Components In Any Cleaning Or Disinfecting Solution
DO NOT Use Ultrasonic Cleaners

2. Apply Lares Handpiece Conditioner. Follow specific instructions detailed on can.

3. Remove bur from chuck.

4. Place handpiece in autoclave bag. The use of autoclave bags prevents damage to fiber optics and reduces cosmetic damage to handpiece.

5. Load autoclave bag containing handpiece into autoclave or chemiclave. Be sure to load autoclave bags for maximum penetration of steam or chemical vapor.

6. Cycle the handpiece according to the autoclave / chemiclave manufacturer's instructions. Do not exceed 275°F (135°C).

CAUTION:

DO NOT Autoclave or Chemiclave For Extended / Unusual Periods Of Time (Such As Overnight).

DO NOT Leave Handpiece Components In Sterilizer After Cycle Is Completed.

7. Immediately remove handpiece from autoclave or chemiclave. Allow to cool sufficiently prior to handling.

THREE-WAY AIR / WATER SYRINGE



This handpiece allows the operator to rinse the operative site with a stream of water or mist or dry / blow debris with a stream of air. The button on the left controls water flow. The button on the right controls airflow. Pressing both buttons at the same time provides mist. The air / water syringe works independently of the other handpieces and can be used alone or with the other handpieces.

The syringe features quick-change autoclavable tips: To remove a tip, press on the locking collar surrounding the tip socket and pull the used tip straight out of the socket. To insert a new tip, press locking collar and push tip into the socket as far as it will go. Release collar and gently tug on tip before using to ensure that tip is securely locked into socket.

SYRINGE TIP STERILIZATION

- 1) Remove contaminated syringe tip.
- 2) Remove all visible signs of contamination before autoclaving.
- 2) Autoclave tip at 132° C (270° F) for ten minutes.
- 3) Sterilize between patients.

NOTE: Since only the tips can be autoclaved, It is recommended that the air / water syringe be bagged with a disposable, single-use plastic sleeve between patients.

WATER TANK INSTRUCTIONS



PT-1 Water Tank

PUMP-UP WATER BOTTLE DIRECTIONS:

1. Remove pump / cap assembly by turning it counter-clockwise.
2. Fill tank with distilled water or medicated solution up to the "FILL LINE". Do NOT fill beyond this line.
3. Replace pump / cap assembly and tighten securely.
4. Pressurize tank by pumping it approximately 30 - 40 times (depending on the amount of liquid used). Insert the male quick disconnect at the end of the water hose into female quick disconnect provided on tank.
5. Release air pressure by PULLING and TURNING the red pressure relief valve located near the top of the bottle.

If bottle is not equipped with a pressure relief valve, relieve pressure by unscrewing cap / pump assy. until a hissing sound can be heard. Wait till hissing stops to safely remove cap / pump assy.

Notice

Tanks **may or may not** be supplied with a pressure relief valve. Those that do not are designed to "bleed off" pressure from the pump and cap assembly when removed (unscrewed).

The presence or absence of a pressure relief valve does not otherwise affect the function of the pump.

Notice: Tank hardware, styles, accessories, etc. are subject to availability and may change without notice. Pressure relief valves, oil holes, etc. may or may not be available on all tanks.

WATER TANK CARE & MAINTENANCE

- Release air pressure by pulling and turning knob of pressure relief valve (if equipped). Pull out fully and allow air to escape. Otherwise, unscrew the cap slowly then wait until the hissing stops.
- Remove pump & cap assembly. Pour out any remaining liquid & rinse all parts thoroughly with clean water.
- Always store tank empty and with tank cap loose.
- For issues with mold, see page 35

TROUBLESHOOTING:

PROBLEM: TANK FAILS TO PRESSURIZE

- Confirm the cap is tight.
- Check to see if pressure relief valve (if equipped) is in safety position. Release the relief valve by twisting 1/4" turn in either direction.
- Remove the pump from the tank. Turn pump handle counter-clockwise to unlock. Pull the pump handle up and locate the "oil here" hole on the top of the pump cap. Place 3-5 drops of mineral oil into the oil hole. Pump several times to work the oil into the walls of the pump until it moves freely. Repeat if necessary. Screw the pump assy. back into the tank and resume normal operations. This process should be repeated as often as necessary or when pumping becomes difficult.
- Black particles found in water bottle indicates that the pump assembly is deteriorating. Order new pump assembly from Engler Engineering.

Pump assembly has been pre-lubricated.

WARNING:

READ AND FOLLOW ALL INSTRUCTIONS

Inspect the pump periodically.

DO NOT use mechanical devices to pressurize the tank .

DO NOT alter the functions of the pressure relief valve (if equipped) or plug the pressure relief valve hole, as this could cause an unsafe condition.

It is not necessary to pressurize the tank until ready for use.

DO NOT lift or carry the tank by waterline, extension rod or pump handle unless it is securely locked in place.

TO PREVENT SLIME FROM FORMING INSIDE THE TANK

Allowing slime mold to form inside the tank is a generally hazardous and unhealthy condition.

Slime in the water tank will make it's way into the dental unit possibly causing permanent damage by clogging the small tubing inside. This will cause the unit's electronics, hoses, handpiece to overheat.

It can easily be prevented by using a few simple steps.

1. Every few weeks dispose of water in tank. Pour ½ gallon of warm water and 1 to 2 cups of vinegar into the tank and swirl the liquid thoroughly inside the tank. The vinegar solution can be left in the tank overnight.
2. The vinegar solution can be sent through the unit as well.
3. Dispose of the vinegar solution and rinse tank (and the unit) with clean water thoroughly and completely.
4. Clean the outside of the pump / tank according to your facilities normal cleaning procedures.
5. The pump assembly has been pre-lubricated. DO NOT TAKE THIS ASSEMBLY APART.

TECHNICAL SPECIFICATIONS:

Input pressure (air or nitrogen):

Operating 80 PSI
Maximum 90 PSI
Minimum 40 PSI

(62 liters / minute or 2.2 scfm for 360,000 RPM)

High speed handpiece:

360,000 RPM

Power supply:

Input: 100-240 V ~, 1.5A, 50 - 60Hz

Output: 24 VDC, 2.5 Amps

Control box dimensions:

9" X 4" X 6"

Net weight:

8 lbs.

Shipping weight:

14 lbs.

Shipping box dimensions:

14" X 14" X 14"

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