

EXCELSIOR ENGLER HIGH SPEED VETERINARY DENTAL AIR UNIT INSTRUCTION MANUAL

REV C 10022014

COMPANY PROFILE

Engler Engineering Corporation has been in business since 1964 and occupies an 8000 square foot facility in Hialeah, Florida (USA). We manufacture ultrasonic dental scalers, polishers and combination units including electro surgery equipment and ultrasonic instruments for the veterinary market as well as a microprocessor controlled anesthesia delivery system and a respiratory monitor for veterinary use only.

Engler Engineering Corp. acquired the exclusive manufacturing and marketing rights of **Dynax** products, including stretchers, animal restraint devices, comfort cots, heating pads, and other products. We also acquired the Alpha-Sonic, Ora-Sonic, and Pro-Sonic line of piezo scalers.

Engler Engineering Corporation's brand name veterinary products proudly include:

Excelsior, high speed dental air unit with vacuum / electro-surge / ultrasonic scaler / low speed / high speed / air / water syringe,

Son - Mate II, ultrasonic scaler / polisher,

Vet II – ultrasonic dental scaler / polisher,

Sonus II, ultrasonic dental scaler,

Poli - X, micromotor variable speed polisher,

Drill – Aire, high speed dental air unit, high speed, air / water syringe,

Drill – Aire Plus, high speed dental air unit, high speed, low speed, air / water syringe,

Scale - Aire Mini, high speed dental air unit with ultrasonic scaler / high speed / low speed / air / water syringe,

Scale - Aire, high speed dental air unit with ultrasonic scaler / high speed / low speed / air / water syringe and compressor,

Tri - Mate, ultrasonic scaler / micromotor polisher / electro-surge,

A.D.S. 2000, microprocessor controlled anesthesia delivery system / ventilator,

Sentinel V.R.M., respiratory monitor.

We manufacture 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 most 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 Europe, South and Central America, Canada, Asia, New Zealand, Australia, the Middle East, and most other countries.

Engler Engineering Corporation

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INTRODUCTION

Thank you for selecting the Excelsior 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 Excelsior 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 dental scaler utilizes an ultrasonic principle of operation. Our state of the art circuitry converts nominal line voltage to an operating frequency of approximately 18, 25 or 30Hz. (depending on the scaler) This frequency is then amplified and delivered to the scaling tip. As a result, the tip vibrates at this ultrasonic frequency with amplitude of 0.001 to 0.004 in. (25.4 um. to 102 um.).

In designing our unique Engler tips, water flows internally through the tip as it vibrates. As the bubbles in the lavage are bactericidal, the energy released collapses and destroys the bacterial cell walls. The water flowing internally through the tip effectively cools the area and assists in removing any debris from the operative site.

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 tooth surface after scaling.

The built in electro-surge is a perfect companion to the scaler and high speed handpieces. It allows the operator to cut and remove tissue easily and effortlessly.

The Excelsior has built in suction for removing blood, water, and debris from the operative site.

PLEASE READ VERY CAREFULLY

Engler Engineering Corporation makes every effort to verify that all parts for the device along with any optional accessories ordered were shipped from our facility in Hialeah, Florida and are included in this shipment. It is imperative that you inspect the contents and if you find any pieces missing or damaged, Engler Engineering must be notified immediately. All claims submitted after fifteen days of receipt will not be valid.

All devices manufactured and / or sold by Engler Engineering Corporation are built and tested to approved standards. Any modification to the device, cables or hoses, initiated by others nullifies all warranty statements. Engler Engineering Corporation will not be held liable for any injury, death or damage of any type, due to non-authorized service and / or improper installation and / or improper use of the device.

This manual is not intended to teach dentistry. The information contained herein is intended only as a guide. Individuals not properly trained in dentistry should not use this equipment. It is intended for professional use only.

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QUICK START GUIDE

step 1



The Excelsior is shipped partially assembled. Remove the packing materials; Locate the components that make up the Excelsior unit. Remove the box containing the control unit and cut the tie wrap fasteners holding the frame. Locate and install the casters (wheels). Adjust H frame height. Unpack control unit. Position control unit on mounting bracket and fasten wing nuts. Note: Compressor is located at the rear of the control unit.



step 2



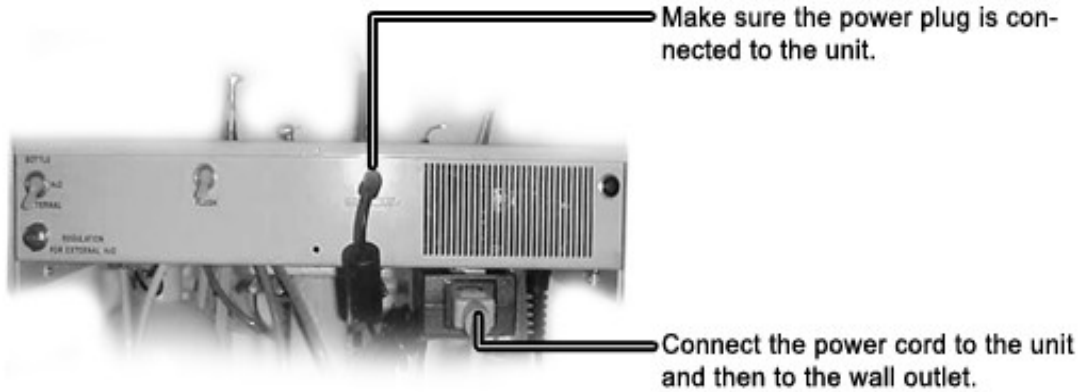
Locate the water bottle that is packaged with the unit, fill it with distilled water. Carefully insert and then twist the bottle into the connector under the control unit.

step 3

Connect air quick disconnect to compressor.



step 4

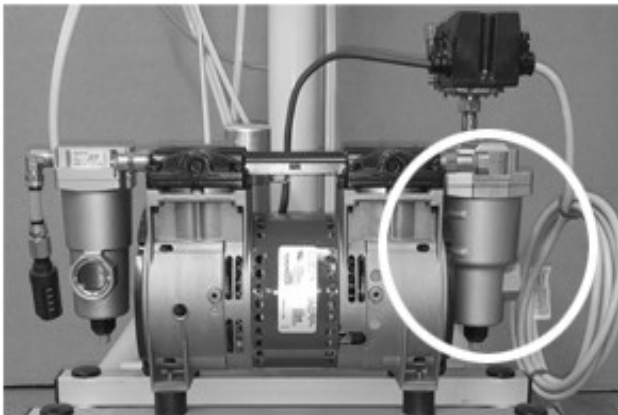


step 5

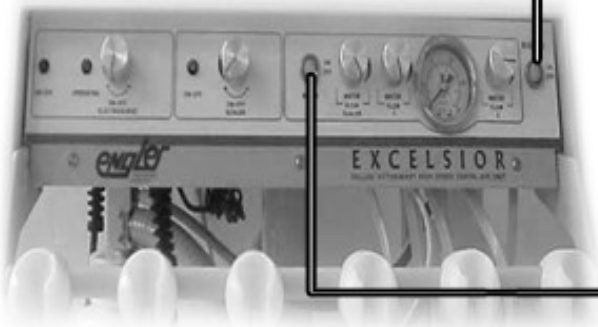
Plug the compressor into an electric outlet (110 volt – 20 amp) The compressor will begin pressurizing the tank and will shut off when maximum pressure is reached.

step 6

Our on demand compressor is a maintenance free compressor which requires no oiling. It comes equipped with two water separators. The larger one is designed to capture any moisture in order to prevent any damage to the machine. The housing of the water separator has a display window which will show any moisture accumulated. This needs to be drained when any liquid is visible, or every month, whichever comes first.



step 7



To enable the handpieces set the toggle switch on the front right of unit to the UP position, toggle DOWN To turn the air flow OFF.

To enable water flow through the high speed handpiece, set the toggle switch on the center of unit to the UP position, toggle DOWN To turn the water flow OFF.

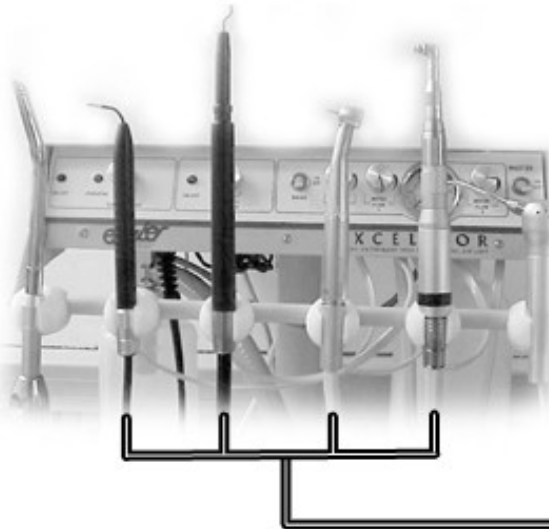
Disable the water when using the low speed polishing handpiece.

step 8



To enable the ultrasonic scaler and the electrosurgery, locate the power knobs on the front of the control unit. Turn the knob CCW. The LED will illuminate indicating that the handpiece is ready for use. This not only turns the unit on, it also allows the operator to precisely adjust the power setting from minimum to maximum.

step 9



The Excelsior has automatic handpiece activator. Each handpiece must go into its corresponding activator. The handpiece order from left to right is; vacuum, electrosurgery, scaler, high speed, low speed polishing and the syringe. for the handpieces marked by the arrow, select the desired handpiece by lifting it out of its holder, the excelsior will automatically select THAT handpiece for operation.

-For electrosurgery and scaler: Press the foot control for on/off operation.

- For high speed or low speed polisher handpieces, the speed or RPM can be varied by depressing the foot control. More pressure placed on the foot control will result in higher handpiece RPM.

step 10



The air/water syringe and vacuum works independently of the other handpieces and can be used alone or in conjunction with the other handpieces.

To use the air/water syringe, press either the air button for air only, the water button for water only or both for a spray mist.

To use vacuum slide up to activate or slide down to close as shown.



INSERTING A BUR INTO THE HANDPIECE / CHANGING BURS

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.
2. To insert a bur, first be sure bur and handpiece are clean and free of debris or corrosion. Without depressing push button, gently insert bur into handpiece 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 described above 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 bent, rusted burs into chuck or damage may occur voiding warranty. Never depress push button during handpiece operation or while turbine is still rotating. Be sure to remove bur at end of day.

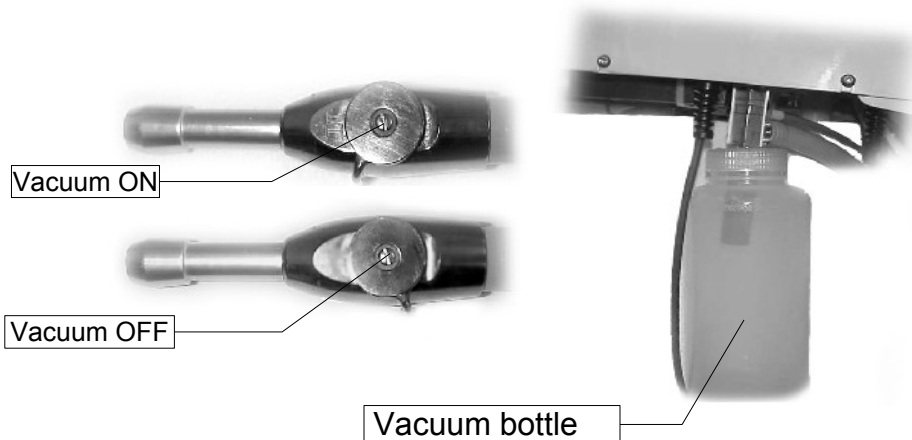
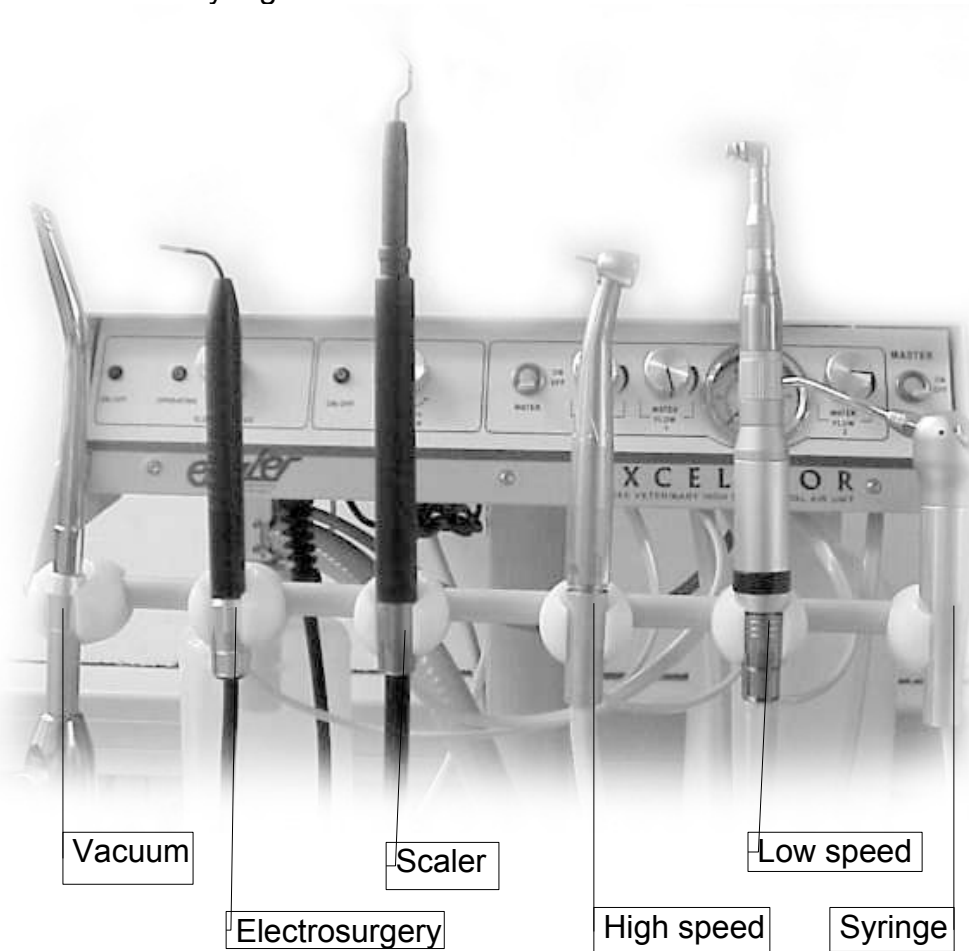


Removing attachment from Doriot Handpiece: Hold the handpiece in the left hand, depress housing ring toward the body of the handpiece while twisting $\frac{1}{4}$ turn to the right to open the chuck. Push then pull the bur or attachment and remove from the chuck.

GETTING TO KNOW THE HANDPIECES

Locate the handpieces on the front of your Excelsior. From left to right they are:

- High volume vacuum system
- Electro-surge handpiece
- Ultrasonic scaler handpiece
- High speed handpiece
- Low speed handpiece
- Air / Water syringe





WATER BOTTLE

The two liter Heavy-Duty Bottle is specifically engineered to allow the unit to be isolated from city water. The bottled water / fluids that are commonly used in isolated water supply systems are normally packaged in bottles that are not designed to be pressurized. Transferring the liquids into our heavy-duty bottle assures safety and minimizes the chance of leakage.

HIGH VOLUME VACUUM SYSTEM (H.V.E.)

The high volume vacuum system is an air powered, self-contained, evacuation System. It is supplied with an on-board plastic waste container and a single high-velocity hose. To operate, insert a standard oral evacuator tip into end of the head extension (vacuum handpiece). To activate vacuum, rotate the round dial at the center of the handpiece. Waste from the vacuum system will collect in the attached plastic bottle. When the waste container is 3/4 full it should be emptied. After each use, the vacuum system should be cleaned by allowing the vacuum to suck up clean water or a vacuum system cleanser through the evacuator hose. Thoroughly clean waste bottle.

ELECTRO-SURGE HANDPIECE

The Excelsior electro-surge uses solid-state technology. The unit is ready to operate as soon as the power is applied. This unit is a capacitive coupled device.

The frequency used in this device is above the range of neuromuscular stimulation and there is no danger of electrical shock to the patient or operator. However, this high frequency waveform produces heat rapidly and is capable of producing burns to tissue, thus, electrocautery.

These high frequency radio waves are transmitted through the insulated handpiece into the patient's tissue by the metallic surgical electrode tip. The current from the surgical electrode is transmitted to the target tissue and then dissipated through the indifferent plate, thus forming a complete circuit. The use of the isolated capacitive coupled circuit is an attempt to reduce the incidence of an alternate site burn inflicted to the patient by incorrect placement of a return pad.

Great care must be taken because a chance of alternate site burns related to current taking the pathway of least resistance to ground. When operating, always use plastic suction tips, mouth mirror, etc.

ULTRASONIC SCALER HANDPIECE



Three different options are available for the ultrasonic scaler handpiece. 25K (Standard, as shown above), gray piezo handpiece (optional), and blue LED Light Ring piezo handpiece (optional).

The Excelsior was purged before shipping, the first time the scaler and high speed handpieces are activated, the water lines will be empty. Turn the water regulator several rotations counterclockwise, lift the handpiece from its cradle, holding the handpiece over a sink, turn the power ON by turning the power knob to click on, then press the footswitch until water comes out.

Note 1: The ultrasonic scaler is not designed to run without water. Activating the handpiece without water for more than ten seconds will void the warranty and damage the handpiece.

Note 2 : Do not leave insert in the handpiece for extended periods as bacteria may form.

Piezo handpieces are detachable by pulling the handpiece from the connector. **Do not twist!**



THE POWER KNOB AND THE WATER KNOB

The power knob controls the AMPLITUDE of the scaler vibration, from low (slight action) to high (vigorous action). The water control knob controls the amount of water flowing through the scaling tip.

Water should ALWAYS be used when operating the scaler.

HIGH SPEED HANDPIECE



Two different options are available for the high speed handpiece, one **without** fiber optic lighting and **with** fiber optic lighting depending on your selected option.

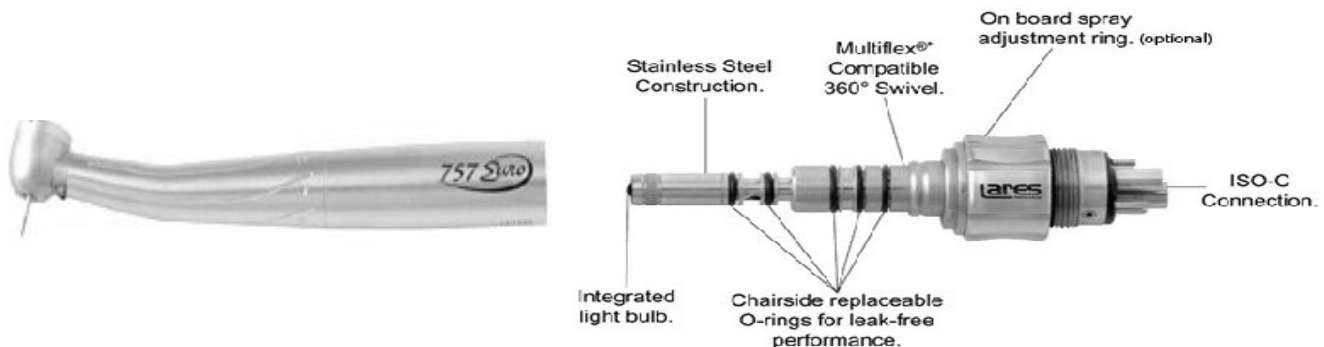
These handpiece is used for advanced dentistry, including but not limited to; cutting, sectioning, and shaping cracked or broken teeth, repairing, preparing cavities etc.



Note 1 : Must be oiled regularly.

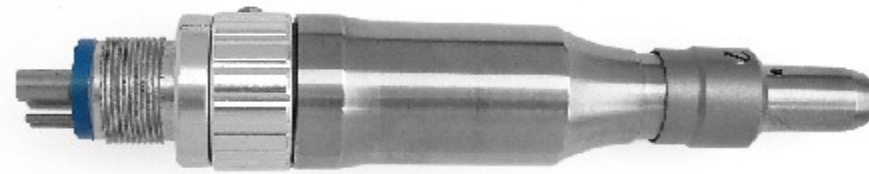
Note 2 : Do not leave with water and without use for more than three days as the water may create bacteria that will cause the handpiece to clog. Flush to remove water when not in use.

FIBER OPTIC HIGH SPEED HANDPIECE



This handpiece is equipped with fiber optics to illuminate your working area. The fiber optic light is activated automatically. The handpiece is activated when the footswitch is pressed.

LOW SPEED HANDPIECE



Doriot One-piece Handpiece

Maximum RPM: 20,000

Attachments: Accepts both handpiece burs and Doriot / U-type attachments.

It is used with a prophylaxis angle to polish the teeth after a scaling procedure.

Use only approved polishing compounds. Follow all manufacturers recommendations.

The high and low speed handpieces are not interchangeable.

The water should be turned OFF when using the low speed handpiece (polisher).

Handpiece must be oiled regularly.

THREE-WAY AIR / WATER SYRINGE

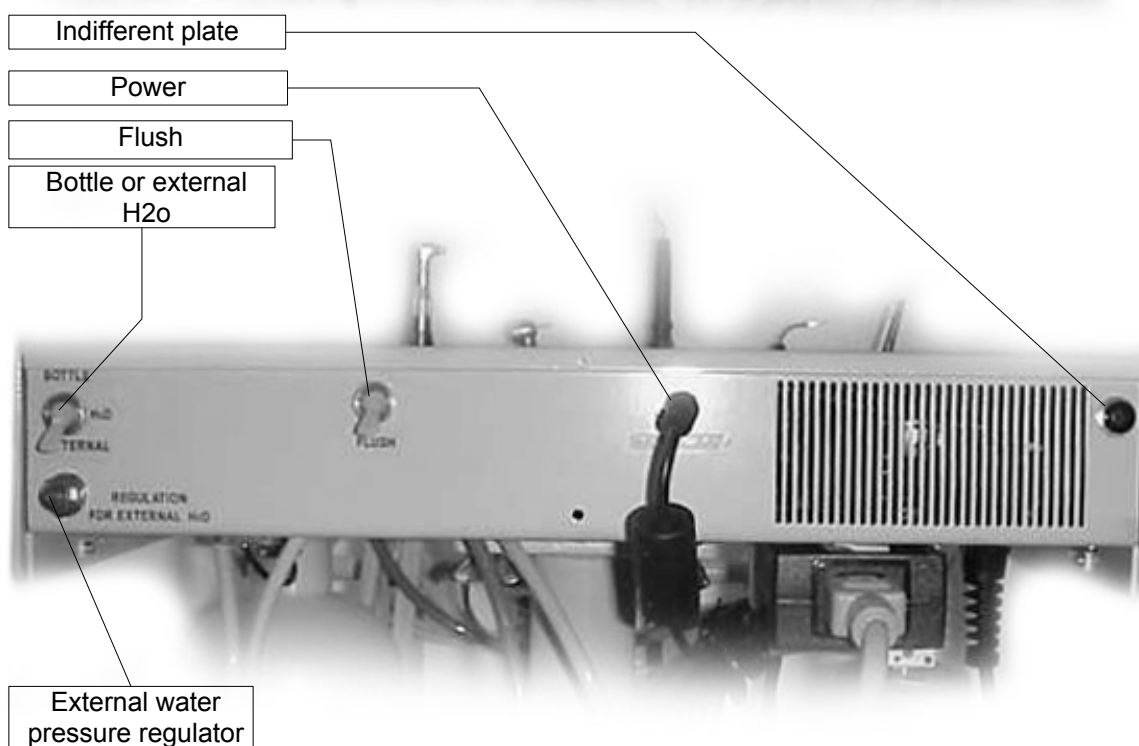
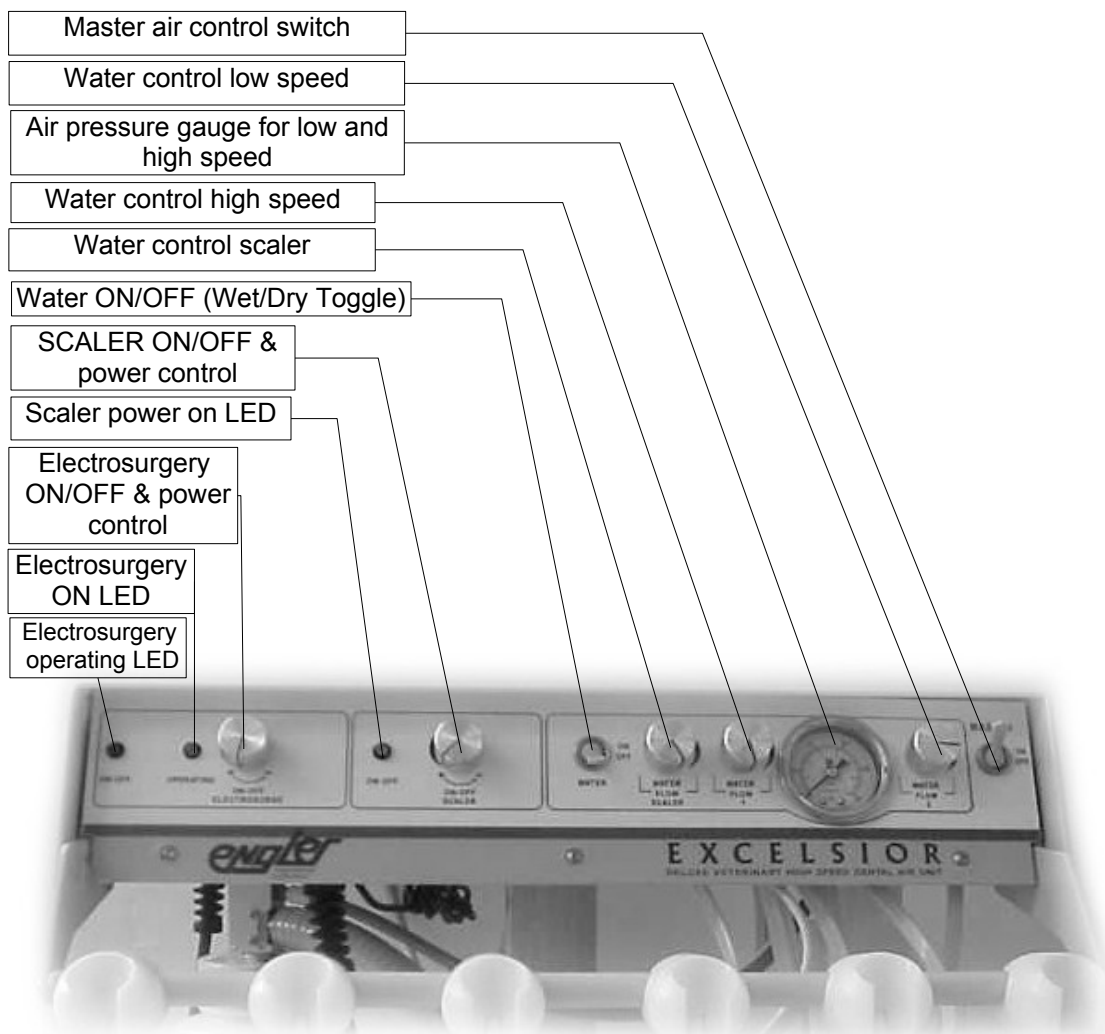


The three-way air / water syringe features

- ³⁵₁₇ Well balanced design, and smooth styling for comfortable use.
- ³⁵₁₇ Easy release for a speedy exchange of tips.
- ³⁵₁₇ Fully autoclavable tips.

This handpiece allows the operator the ability to rinse the operative site with a stream of water or mist or dry / blow debris with a stream of air.

Front / Rear Control Panel



GETTING TO KNOW THE CONTROLS

MASTER ON - OFF TOGGLE

Turns on air / water pressure to the systems. This toggle should be turned off whenever the unit is not in use.

WATER FLOW CONTROLS

Adjusts the water flow to the handpieces. A water control knob is provided for each handpiece. Turn clockwise to decrease flow, and counter-clockwise to increase flow.

Warning: Water should ALWAYS be used when operating the ultrasonic scaler.

PRESSURE GAUGE (AIR HANDPIECES)

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

Warning: To avoid damaged to the handpieces and to the unit, the pressure delivered to the handpieces must not exceed 60 psi.

WATER ON / OFF

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

SCALER ON / OFF & POWER CONTROL

The scaler power and water knobs are located behind the scaler handpiece on the control box. The POWER knob controls the AMPLITUDE of the scaler vibration, from low (slight action) to high (vigorous action). The WATER control knob controls the AMOUNT of water flowing through the scaling tip.

Note 1 : Water should ALWAYS be used when operating the scaler.

Note 2 : Do not turn the scaler on until water is flowing throughout the handpiece.

ELECTRO-SURGE ON / OFF & POWER CONTROL

This power knob controls on / off, amplitude (power) and waveform of the power delivered to the electro-surge tip, from low (coag) to high (cut + coag).

EXTERNAL WATER PRESSURE REGULATOR

The water pressure regulator is located on the rear of the console. The valve controls the water pressure delivered to the handpieces and is preset at the factory to the proper operating pressure.

WARNING:

The water pressure regulator **should not be changed**. Any unauthorized adjustments to the water pressure valve could increase the risk of unit failure and / or serious injury.

FLUSH TOGGLE

Allows the operator to flush the water line while stepping on the foot control. Hold the handpieces over a basin. Flip flush toggle up while stepping on the foot control and hold about 5 seconds. Water flows only as long as you hold the flush toggle up and step on the foot control.

FOOTSWITCH CONTROL



The foot control applies air pressure to the selected handpiece. The footswitch is 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 air pressure will be delivered to the air handpieces.

REGULAR OPERATIONAL CONSIDERATIONS

The compressor power switch must be set to OFF before plugging in, upon power failure and at the end of the work day.

The low speed polisher and the high speed drill must be lubricated daily when in use. Remove hose quick disconnect and Insert lubricant in the smaller of the two bigger ports.

The straight handpiece (if available) must be lubricated daily.

Note: Short grip Dariot low speed handpiece does not use a straight handpiece.

The prophy angle head must be removed, cleaned with soap and water, dried, and lubricated at the end of the day depending on use, then reassembled.

All auto holders and three way syringe must be kept cleaned.

Flush the high speed drill and the ultrasonic scaler daily.

For 25k handpiece: Remove the insert from the handpiece when not in use or when sterilization is performed. O-ring may be lubricated with petroleum jelly or equivalent.

For Piezo: Tip must be tightened with tip tool. Remove tip at the end of the day and when sterilization is performed.

For better care and maintenance order the Excelsior deluxe maintenance kit which included Lares Handpiece Conditioner from Engler Engineering Corporation.

MAINTENANCE KITS

There are two maintenance kits available for the Excelsior which are not included. These kits are essential to keep your unit working properly. If you have optional items such as fiber optics. Each kit varies. Please check to make sure you specify your systems configuration and part number when ordering the kit.

Excelsior maintenance kits

KIT BASIC S - A , The standard kit, includes One Step conditioner for the low and high speed handpieces, water filter, and port cleaning tool necessary to perform basic maintenance.

KIT DELUXE S - A , includes replacement parts that are normal wear and tear items such as F.G. Bur kit, S - 1 and S - 4 inserts, prophy angle, replacement O-rings for high and low speed handpieces in addition to items in the standard kit.

Kit S – A FO BAS, Basic kit for units equipped with fiber optic HP
Nozzle for Lares fiber optic HP in addition to items from Basic S – A .

Kit S – A FO DEL, Deluxe kit for units equipped with fiber optic HP
Nozzle for Lares fiber optic HP in addition to items from Deluxe S – A

ELECTROSURGERY HANDPIECE

Principles of Electrosurgery:

The Excelsior electro-surge uses a constant waveform, which produces heat very rapidly to enable the operator to vaporize or cut tissue. As tissue conducts heat, always allow 10 to 15 seconds for the tissue to cool before operating on the same area. The only variable that determines whether the Excelsior vaporizes tissue or produces a coagulum, is the rate at which heat is produced. High heat that is produced rapidly will cause vaporization while low heat produced more slowly creates a coagulum. In order to limit migration current into adjacent tissue the surgical intervention must be performed in a dry field. Do not use adjacent to metallic restorations due to uncontrollable and unpredictable migration along this alternate path or near bone due to current spread and the danger of osseous necrosis.

Tissue types:

Different tissue types have different electrical characteristics. The electrode drags when moving through high impedance (fibrous) tissue, requiring more power. When low impedance (muscle) tissue is encountered a lower power setting should be used.

PLEASE NOTE: Excessive tissue damage can occur if the power setting is in excess of what is required to accomplish the task.

IMPORTANT TO REMEMBER

1. If you are fitted with any electrical implant device and are concerned about possible hazards of using electrocautery, contact your doctor or device manufacturer. All persons in the immediate area of the surgery should be advised of the potential hazards if they have any implant.
2. Never use the electro-surge unit on or in close proximity of any metallic implant.
3. When operating the Excelsior, always use non-conductive implements on the patient. This includes but not excluded to suction, mirrors, probes, etc.
4. For the electrode to work efficiently, it must be kept clean. The best and easiest way to accomplish cleaning is with a damp cloth thick enough so it will not burn your fingers. Tissue comes off easier when the electrode is activated.
5. Suggested power setting for a cut is half to max on the dial. The cutting tip should not drag on the tissue. Electrodes held in place for over 2 seconds will cause tissue to burn. If you need to work on one area of tissue, **always remember to allow sufficient time for the heated tissue to cool, usually around 10 seconds.**
6. Suggested setting for coagulating should be up to half on the dial. The electrode should be about 1 mm from the tissue surface and very slowly lifted off. The tissue should turn white. If the tissue turns brown, the tissue is burning. If the setting is too high, you are moving too slowly or If you bury the electrode into the tissue, nothing will happen. As coagulating tissue correctly is a skill that requires some time to perfect, practicing on a piece of steak is suggested.
7. Because the electrodes are of a delicate nature, they are not covered under warranty except for manufacturer's defect. If used correctly, with care, they will last a considerable amount of time.
8. Sparking can occur at the point of the electrode. DO NOT use electro-surge in the presence of flammable gasses or metallic items.

INDIFFERENT GROUND

The indifferent ground plug is located in the back of the unit. The indifferent ground pad must always be connected to the indifferent ground plug and the pad must make good contact with the patient for the electro-surge to work properly.

In a monopolar circuit, current flows between two electrodes held widely apart. These two electrodes are the active electrode, which is small, provides a high power and current density., The return or indifferent electrode, is large, thereby providing a low current density.

It is important to remember that the indifferent electrode is just as capable of producing injury as the active electrode.

The key element to avoiding injury at the indifferent electrode is to have **a large surface area of contact**. In this manner, the current is dispersed over a large area, thereby reducing the current density. Consequently, the indifferent electrode must be placed over an area that will allow uniform contact with the body. If contact is only partial, current density at the indifferent electrode will be greater and injury can result. The return or indifferent electrode is often referred to as the grounding pad. This however is incorrect. The indifferent electrode carries current back to the generator, not to ground.

The path of least resistance is always taken by the indifferent electrode in a monopolar circuit. As a result, consideration should be given to what the operative procedure will be when the indifferent electrode is applied to the patient.

The indifferent electrode **should always be as close to the operative site as possible** to minimize the volume the current will need to travel. For example, the indifferent electrode is better applied to the right flank during gallbladder surgery than to a thigh. The reason is that the distance between the operative site and the indifferent electrode is diminished when applied in the right flank, thereby providing a closer and more direct pathway for the circuit to be completed. This should reduce the likelihood of injury at a site because current flow through the body is less.

REFERENCE:

Thermal Energy in Minimally Invasive Surgery - Science and Safety
Joseph F. Amaral, MD

START UP AND SHUT DOWN SEQUENCE FOR THE EXCELSIOR.

Start up:

1. Add water to the water bottle and re-install it in the unit.
2. Close the drain valve on the air compressor tank (if open) closed=perpendicular.
3. After plugging in the compressor power cord, set the compressor pressure switch to auto and let the compressor fully pressurize the lines. Compressor will stop automatically.
4. Place a 25K insert into the handpiece or install tip for piezo. For piezo use tip tool to tighten.
5. Turn the scaler ON. Green light will turn on.
6. Install and test all handpieces to verify functionality.

Shut down:

1. Flush scaler and high speed handpieces until handpieces run dry.
To flush: Hold handpiece over sink, activate flush switch and press on footswitch until the handpiece runs dry, then release the footswitch and then release the flush switch.
2. Clean all air handpieces according to the original manufacturer instructions. Thoroughly wipe all surfaces and power cord with a mild cleaning solution or disinfectant and a damp cloth. Follow the procedures approved by your facility or use a validated infection control procedure. Do not allow fluids to enter the chassis. Do not autoclave the main unit.
3. Remove, clean and autoclave the scaler insert (or piezo tips), three way syringe tip (tip only), prophylaxis angle, burs, low and high speed handpieces. **Prophylaxis angle, low and high speed handpieces must be lubricated regularly and after autoclave.** If using high speed fiber optic handpiece or piezo handpiece, Do not autoclave fiber optic swivel or piezo handpiece.
4. Switch compressor OFF.
5. Turn the scaler power OFF.
6. Remove, empty and clean the water bottle.

SCALER HANDPIECE

Note 1 : The Excelsior handpiece provided might be different than shown as several options are available. If you ordered a different scaler handpiece your instructions might be different.

Note 2 : Water lines were purged prior to shipping. When activating the Excelsior for the first time, please follow these instructions.

With the scaler power turned OFF, turn the water regulator at least two rotations counterclockwise, lift the handpiece from the handpiece activator and press the footswitch until water begins to flow from the handpiece. Then turn the power ON by turning the power knob to start operation.

Note 3 : The ultrasonic scaler is not designed to run without water. Running the handpiece without water will damage the handpiece and void the warranty.

The 25K scaler insert is a one-piece design. This means the tip is not removable from the insert. There is no nosecone to replace.

To place an insert into the handpiece, there is no alignment necessary; the operator need only drop the insert straight into the handpiece. When the plastic from the insert meets the handpiece, push the two together to create a good seal. To change inserts, the operator need only pull the insert straight out of the handpiece and exchange it for a different one. Lubricate O-ring on the insert with petroleum jelly or equivalent.

With the insert in the handpiece rotate the power control knob to the right, the knob will click “on” and the green LED will illuminate. This indicates that the scaler has power and is ready to be used. Adjust the **POWER CONTROL** knob to the **minimum** power setting, (counter-clockwise rotation), set the **WATER CONTROL** to its **maximum** setting by rotating it counterclockwise, (knob will rotate up to 3 and a half turns for maximum water flow) hold the handpiece over a cuspidor or sink and depress the footswitch until water comes out in a stream. This could take a few seconds. This step is done to insure proper operation of the delayed cavitation feature by removing air that may be trapped in the water lines.

Set the power control and the water control to a level where you develop a fine mist at the tip.

NOTE: Inserts sent from our facility are not sterilized.

For Piezo: Tip must be tightened with tip tool, remove tip at the end of the day or when sterilization is performed.

For 18K Sonus: Remove the, tip, stack and nosecone from the handpiece when not in use or when sterilization is performed. O-ring may be lubricated with petroleum jelly or equivalent.

IMPORTANT: Keep in mind that higher power levels tend to heat the out-flowing water. Temperature control can be achieved by balancing the power with water flow. Thus, high power settings require higher water flow rates and conversely low power requires lower water flow rates. The scaler is now ready for use.

IMPORTANT: Operating this device with insufficient water flow will cause the water to get hot and may cause burns to gums, lips and tongue. If the handpiece begins to get warm, stop and check water temperature. If it is hot, set the power to the lowest setting and the water at a high enough setting to provide a lukewarm mist.

BASIC SCALING PROCEDURES

Before placing tip into patient's mouth, activate the scaler over a sink by depressing the footswitch. A fine mist, with the temperature between cool to lukewarm to the touch is recommended. This should be accomplished with minimal power and proper water flow.

It is recommended that when a tip is placed into a patient's mouth, the lips, cheek and tongue be retracted to prevent contact.

Place the tip into the patient's mouth and depress the footswitch to activate the scaler. Bring the tip to the tooth and gently move it over the surface of the tooth with an erasing motion. **DO NOT allow the tip to stay in one spot for an extended period of time.**

A saliva ejector or H.V.E. is recommended.

Note: This device features delayed cavitation. To avoid internal contamination by back flow this device forces clean water through the lines causing droplets to form and fall from the tip when the footswitch is released.

IMPORTANT: Excessive pressure on the tip is not necessary to remove calculus or tartar. Enamel on the teeth may be damaged or removed when excessive pressure is used. The enamel may be damaged if the scaling tip is left to rest in one spot for even a few seconds. Using the tip, as a pry to remove calculus or tartar is strongly discouraged as it may damage the teeth and incidentally change the shape of the tip, which in-turn, changes the frequency. The normal power setting for most procedures should be near mid-range. Since every operator has a different technique, the power may be adjusted to satisfy specific requirements. Ultrasonic scaling procedures are not intended for soft tissue.

**DENTAL PROCEDURES SHOULD BE PERFORMED ONLY BY QUALIFIED PERSONNEL.
THIS EQUIPMENT IS FOR PROFESSIONAL USE ONLY.**

As with any precision instrument, inserts should be handled carefully. To avoid damage to the insert, please familiarize yourself with the installation. Bent or damaged inserts should be replaced.

The use of a face mask is recommended when operating the scaler, to avoid inhalation of contaminated aerosol (water mist) generated during the scaling procedure.

SCALER MAINTENANCE

FINAL PROCEDURES AT THE END OF EACH DAY

Switch the unit off.

Remove scaler insert / piezo tip, clean and sterilize.

Disconnect the unit from its water source or turn off the water supply.

Clean and disinfect all surfaces.

Always follow the manufacturer's instructions and recommendations for proper sterilization and autoclave techniques and procedures.

The insert / piezo tip should be thoroughly cleaned and free of blood or tissue before sterilization by rinsing with running water.

The insert may be sterilized by Autoclave or Chemiclave, do not autoclave over 270 degrees for more than twenty (20) minutes.

It is recommended that you do not leave insert / piezo tip in the handpiece for extended periods, as water and sediment may make it difficult to remove, and cause possible damage to the insert / piezo tip and handpiece.

25K ULTRASONIC INSERT

To achieve optimum performance of your equipment, we recommend that the insert be replaced every 6-12 months or as needed, the original ultrasonic insert has a 90 day warranty.

CHASSIS

The chassis of your unit should be cleaned at the end of every operating day with a chemical sterilization solution. This procedure could be done by spraying a fine mist of sterilization solution onto the unit, allowing it to remain on the chassis for the length of time recommended by the manufacturer. The surface should be wiped with a clean damp cloth or as suggested by the manufacturer. Dry completely.

IMPORTANT: When using any chemical sterilization solution please follow the manufacturer's suggested procedures.

CLEANING HANDPIECES, FOOTSWITCH AND POWER CABLES

After each procedure, or at least once a day, it is suggested that the handpieces and cables be thoroughly cleaned and sterilized. The recommended procedure is as follows:

Remove the 25K insert / piezo tip - Sterilize these items as listed above. Clean the outer surface of the control unit, handpieces and cables with an antiseptic / chemical sterilization solution. Wipe dry.

Caution: No chemicals or cleaners should ever be used inside or allowed to get into the scaler handpiece. Flush the handpiece thoroughly and completely with clean water.

Place the sterilized 25K insert /piezo tip into handpiece for next patient.

The footswitch and power cables should be cleaned regularly by spraying a fine mist of sterilization / cleaning solution on the cables. It should remain on the cables for the length of time recommended by the manufacturer. Wipe the surface with a damp cloth and dry the cables completely.

Piezo handpiece cleaning and sterilization

Before cleaning, remove the tip from the handpiece. Let the handpiece run for a few seconds to drain it and to flush possible contamination. The outer surface of the handpiece should be cleaned with an antiseptic soap or solution. Rinsed off with water and wiped or sprayed with a chemical disinfectant, such as a 1:6 dilute solution of Sporidicin brand disinfectant. Install a sterile tip into the handpiece in preparation for the next patient.

Warning: Do not put the handpiece or handpiece cable directly into disinfectants or any other fluid.

Follow your facilities established procedures for normal care and maintenance of equipment, handpieces, and cables.

Warning: The chemical disinfectant should not be allowed to remain on the surface longer the recommended time or damage may result.

NOTE: The piezo handpieces is fragile and sensitive. Do not attempt to open.
Do not hammer with it or bang on it.

NOTE: Do not autoclave.

NOTE: It should be cleaned after each use. Tips should be sterilized between patients.

CHASSIS

The chassis of your unit should be cleaned at the end of each day with a chemical sterilization solution. Spray a fine mist of sterilization solution onto the unit, allowing it to remain on the chassis for the length of time recommended by the manufacturer. The surface should be wiped with a clean damp cloth or as suggested by the manufacturer. Dry completely.

IMPORTANT: When using any chemical sterilization solution please follow the manufacturer's suggested procedures.

CLEANING HANDPIECES, FOOTSWITCH AND POWER CABLES

After each procedure, or at least once a day, it is suggested that the handpieces and cables be thoroughly cleaned and sterilized. The recommended procedure is as follows:

Remove 25K insert or piezo handpiece and tip, sterilize these items as listed above.

Clean the outer surface of the handpiece / cable with an antiseptic soap, rinse with water and sterilize with a chemical sterilization solution.

Do not allow sterilizer solutions to enter the handpieces.

If sterilizer solution does enter handpieces, shake out, then rinse or flush thoroughly with clean water.

SCALER TROUBLESHOOTING

I. “ON” L.E.D. INDICATOR DOES NOT ILLUMINATE:

1. The unit is not plugged into a power outlet: verify that the unit is plugged in.
2. Power outlet not active: try another outlet.
3. The power supply (cable) is not plugged into the unit.

II “ON” L.E.D. INDICATOR LIGHTS UP, NO WATER FLOW:

1. Verify that water source is connected. If using a pump bottle, fill it at least half way.
2. Check that handpiece hose / cable not is kinked or twisted.
3. Water regulator not open, turn water regulator counter clockwise to open. Water regulator has multiple rotations.

III “ON” L.E.D. INDICATOR LIGHTS UP, LITTLE OR NO VIBRATION AT THE TIP:

- A. Old or damaged insert: replace the insert.

IV WATER FROM SCALER TOO HOT:

The insert requires a constant flow of cool water to maintain water temperature below 100F. at the tip. You may correct a hot water problem by:

1. Adjusting water flow knob higher (counter clockwise). Water regulator has multiple rotations.
2. Lower the power by adjusting the power knob counterclockwise.
3. Tip clogged. Replace or unclog insert / tip.
4. Water restriction in unit.
5. Clogged water filter. Clean filter or replace filter media.

INTERMITTENT OPERATION:

I. Tip vibrates, then stops:

1. Foot switch damaged: Contact Engler Engineering Corporation.
2. Scaler handpiece / cable damaged
3. Damaged or worn out insert / tip.

II Tip action ceases abruptly during operating procedure.

1. Insert broken / damaged: replace.
2. Scaler handpiece / cable damaged

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 handpiece as far as possible. **Figure 2**; 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 described above 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 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. Daily handpiece lubrication is absolutely essential.
9. Operate the handpiece at 25 - 32 PSI. The handpiece is engineered to attain speeds of 360,000 RPM at 32 PSI.
10. Use the brush to remove foreign particles. A fine wire is provided for cleaning the water spray hole and to prevent clogging. Use the air / water syringe, blow air backward from the drill head to dislodge particles. NOTE: DO NOT attempt to blow particles from the rear end of the handpiece, as larger particles could block the water tube.

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 Internal Surface: Using a combination cleaner/lubricant or 10083, spray handpiece in drive air hole and in chuck.

Expel Cleaner/Lubricant: Reinsert bur into handpiece head, connect handpiece to tubing and run for 5 seconds to thoroughly expel debris and excess lubricant.

THE HANDPIECE MUST BE OPERATED ONLY WITH A BUR OR BUR BLANK. DO NOT OPERATE EMPTY.

Clean Fiber optic Bundle: Using a cotton swab with isopropyl alcohol, wipe the surface on both ends of handpiece.

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.

DO

- _ Use warm tap water to scrub the exterior of handpiece.
- _ Expel excess lubricant from handpiece by running it for 5 seconds after cleaning and lubricating.
- _ Use separate cans of lubricant before and after sterilization to prevent contamination.
- _ Clean both ends of fiber optic bundle with a cotton swab dipped in isopropyl alcohol.
- _ Use autoclave bags and pouches with indicators to protect handpiece.

DON'T

- _ DON'T immerse handpiece in water or chemical disinfectants/sterilants.
- _ 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 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 a minute.

B. Burs are sticking inside of turbine or falling out

1. Flush the spindle with a handpiece cleaner where the bur would normally be inserted.
2. Ensure that burs are not worn or scored, less than .0625" or larger than .0630" in diameter 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.

FOR FIBER OPTIC HIGH SPEED

1 Clean & Dry

- **KEEP HEAD OF THE HANDPIECE UP IN VERTICAL POSITION.**

Scrub handpiece with soft brush and warm water to remove debris.

- **OBSERVE ALL CAUTIONS LISTED!**

Towel dry handpiece thoroughly.



2 Lubricate and Operate

Using a well-shaken can of Lares Handpiece Conditioner with lube nozzle, attach handpiece and apply conditioner for **TWO SECONDS** over a towel or sink. With bur in place, run handpiece at full speed without water for **45 SECONDS** to expel excess conditioner.

Dry exterior of handpiece with a towel.



3 Insert into Bag and Cycle

Remove bur, bag handpieces individually and autoclave or chemiclave per manufacturer's instructions.

- **DO NOT** exceed 275 °F (135 °C).

Remove from autoclave immediately after cycle and allow to cool.

CAUTION: HANDPIECE MAY BE TOO HOT TO HANDLE!



4 Clean Fiber Optics

When handpiece is cool to the touch, gently clean fiber optic light transmitting surfaces on both ends of handpiece with cotton swab dampened with isopropyl alcohol.



CONNECTING HANDPIECE TO SWIVEL COUPLER

1. Lubricate the handpiece.
2. Attach the coupler to the dental unit hose securely.
 - A. Align pins on the coupler with the tubing.
 - B. Thread the hose nut onto the coupler
 - C. Fit the coupler wrench to the flats and tighten the hose nut.



3. Holding the swivel coupler in straight alignment with the back of the handpiece, gently insert the swivel coupler into the back of the handpiece, pushing more firmly when fully inserted until the coupler snaps with a “click” sound on the back end of the handpiece indicating complete engagement. Never force engagement or swivel coupler will be damaged.



4. With bur engaged, operate handpiece to expel excess lubricant. Wipe off any excess lubricant expelled with a towel or cloth.

TO EXTEND OPERATING LIFE

1. Detach swivel handpiece from swivel coupler at the end of each day and prior to other extended periods of non use to avoid water mineral deposit freeze up.
Cover swivel coupler with dust cap when handpiece is detached.
2. Remember to follow all recommended maintenance and operation procedures regularly.
3. Like most ultra high performance machinery, high speed handpieces are intolerant of maintenance neglect and improper operation.

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.

Caution: Never use the back of the handpiece for tissue retraction, or otherwise cause 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 engaged in chuck.

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

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

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

Do not use this handpiece without heat sterilizing between patients to prevent cross-contamination.

MAINTENANCE AND 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 Item # 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 required nozzle hardware attached.

PROCEDURE

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

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

NEVER submerge components in any cleaning or disinfecting solution.

DO NOT submerge in ultrasonic cleaners

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

Remove bur from chuck.

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

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

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 periods of time (such as overnight).

DO NOT leave handpiece components in sterilizer after cycle is completed.

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

When handpiece is cool enough to handle, wipe fiber optic light transmitting surfaces clean at front and back ends of handpiece with isopropyl alcohol and cotton swab, critical for maintaining light output.

WEEKLY CLEANING OF SWIVEL COUPLER

Once each week prior to application of Lares Handpiece Conditioner, remove swivel handpiece from swivel coupling. Clean external surface of male swivel connection with isopropyl alcohol and gauze pad. This will keep swivel rotating freely.

CHANGING FIBER OPTIC BULB

Caution: Electrical shock and burn hazard. Before removing bulb, be sure swivel coupler is detached from hose until cool to the touch.

1. Grasp metal sheath covering bulb and rotate counterclockwise (when viewed from end of bulb) to loosen and remove.
2. Pull bulb straight out to remove from coupler.
3. Re-install bulb by carefully aligning bulb pins with holes in coupler bulb socket and fully insert bulb into socket. Then slide metal bulb sheath over bulb, threaded end first. Rotate clockwise (when viewed from end of bulb) tighten sheath into coupler.

DIFFUSER MAINTENANCE; 757 MODELS

1. Unscrew the diffuser using the wrench (Item # 10109) by aligning the posts on the wrench with the holes on the diffuser.
2. Clean the surfaces of the head and diffuser. Do not leave the O-ring inside the head. When refitting, position the O-ring on the diffuser, then fit the threads into the head and tighten gently.

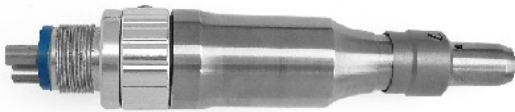


LOW SPEED HANDPIECE

The speed of the polishing head is proportional to the amount of pressure applied to the foot-switch pedal. Use low pressure to maintain a low speed.

SGII – Doriot One-piece Handpiece

Technical Facts



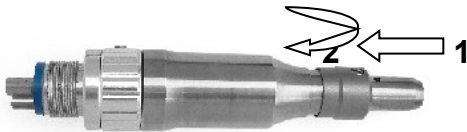
SGII: Doriot One-piece Handpiece

Maximum rpm: 0-20,000 min⁻¹ or 0-5,000 min⁻¹

Attachment: Accepts both Handpiece burs and Doriot / U-type attachments

Air Requirements: Clean filtered moisture free air with recommended pressure of at least 45 psi. **Do not exceed 60 psi.**

Operation

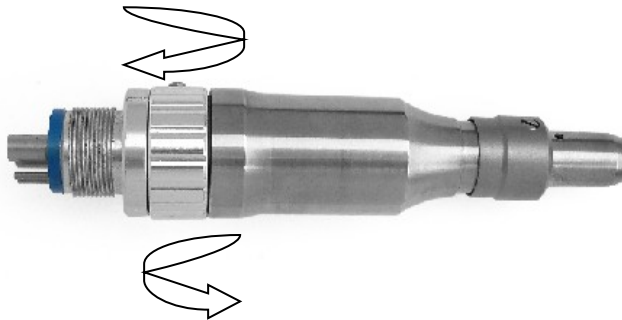


Removing handpiece bur or Doriot attachment from Doriot Handpiece:

Hold the handpiece in the left hand, depress housing ring toward the body of the handpiece while twisting 1/4 turn to the right to open the chuck.

****Push then pull the handpiece bur or attachment and remove from the chuck.**

Forward / Reverse Speed:



Forward:

Twist change ring fully clockwise

Reverse:

Twist change ring fully counter-clockwise

–In mid position, handpiece will not operate

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 the 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.
- 3) Autoclave tip at 132° C (270° F) for ten minutes.
- 4) Sterilize between each patient.

NOTE: Since only the tips can be autoclaved, it is recommended that the air / water syringe be used with a disposable, single-use plastic sleeve between each patient use.

WATER OPTIONS

The Excelsior offers several options for supplying water.

The Excelsior is equipped with 2 liter on-board water supply. Simply the bottle approx. $\frac{3}{4}$ with distilled water.

The Excelsior is also equipped with a built-in water line that connects to either a 1 gallon pump bottle or filtered city water. Chlorhexidine may be added to either bottle.

To switch from the on-board 2 liter bottle to an external water supply, simply flip the toggle (H₂O) on the rear panel of the Excelsior from “Bottle” to “External”.

Filtered or distilled water is highly recommended.

Engler Engineering Corp. offers an optional 1 gallon water bottle fitted with a female quick disconnect for the Excelsior. Fill the bottle to the fill line (add Chlorhexidine if desired), screw the pump cap onto the bottle, pump.

Caution: The Excelsior uses air pressure (from the compressor) to deliver water from the on-board, 2 liter bottle.

BEFORE REMOVING THE 2 LITER BOTTLE, THE BOTTLE MUST BE DE-PRESSURIZED.

Shut the Excelsior **OFF** by flipping the **Master ON / OFF** switch (located on the extreme right side of the front panel) **DOWN**.

Unscrew (twist) the bottle $\frac{1}{4}$ turn to counterclockwise. Air will escape and a hissing sound will be heard. When the hissing stops, it will be safe to remove the bottle. Twist it from its quick disconnect mount, then pull down.

Fill the bottle with distilled water, then re-insert it onto the quick disconnect mount and twist clockwise. The bottle will feel loose until pressurized.

Cleaning and sanitizing the bottle is recommended every two weeks or as necessary.

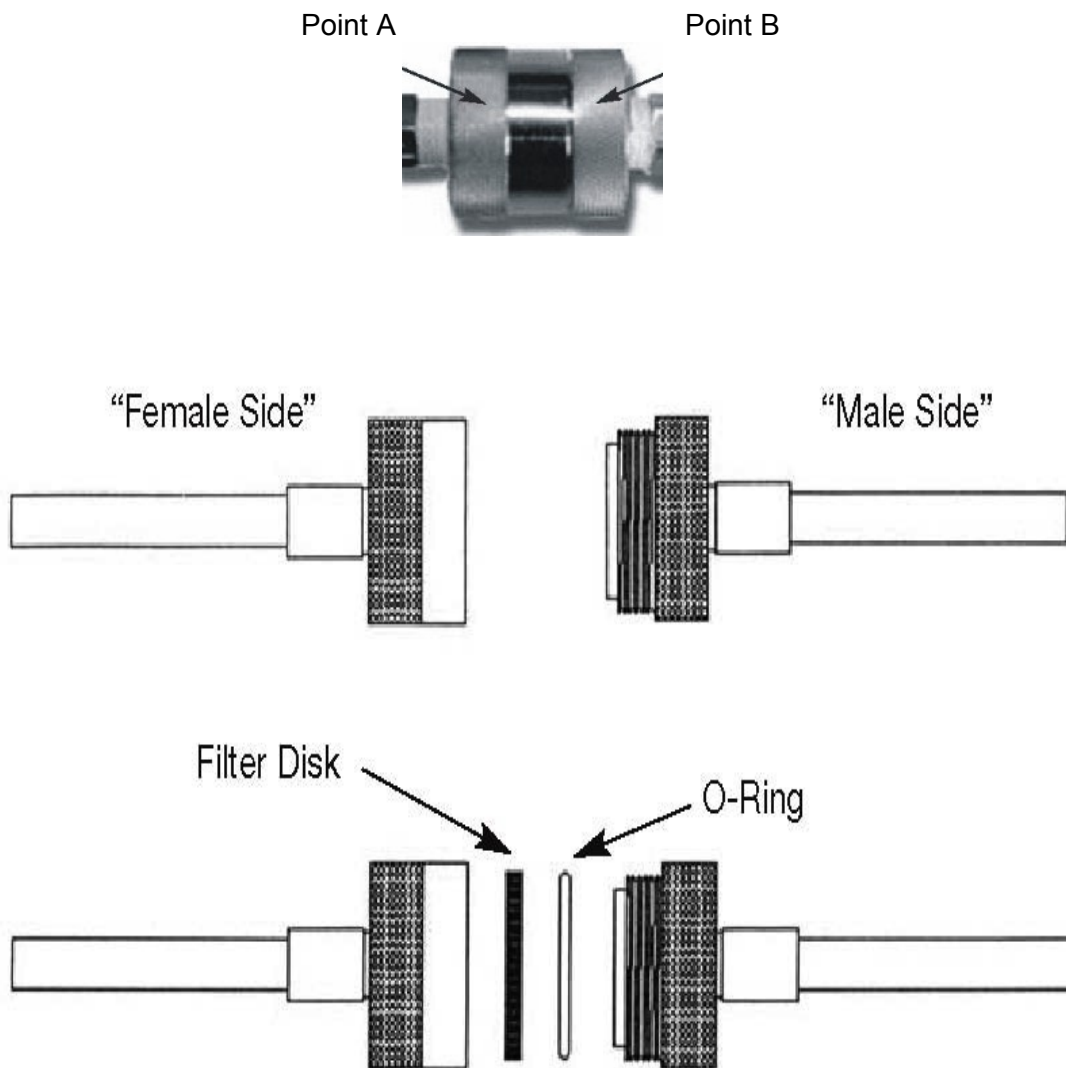
Warning: Failure to depressurize the water bottle before removal might cause injury.

Warning: Distilled water is strongly recommended. Engler Engineering Corporation is not responsible for clogged handpieces or other damage caused by unfiltered water.

WATER FILTER CLEANING INSTRUCTIONS

SHOULD BE PERFORMED AT LEAST QUARTERLY

1. Turn off water supply to unit or disconnect the male from the female water connector
2. Unscrew filter by firmly holding point "A" in your left hand and point "B" in your right hand. (Refer to Figure) Next, unscrew by simultaneously rotating your left hand away from you and rotating your right hand toward you. Continue this process until the filter unscrews into two separate parts.
3. The filter body consists of two sides, one with an outer male thread and another with an inner female thread.
4. Remove the O-ring.
5. Remove the filter disc by turning the female side over and tapping it gently into the palm of your hand.
6. Replace with new filter disc and O-ring part # A52034.
7. Reassemble the filter in the reverse order.
8. Turn on the main water supply and check for leaks.



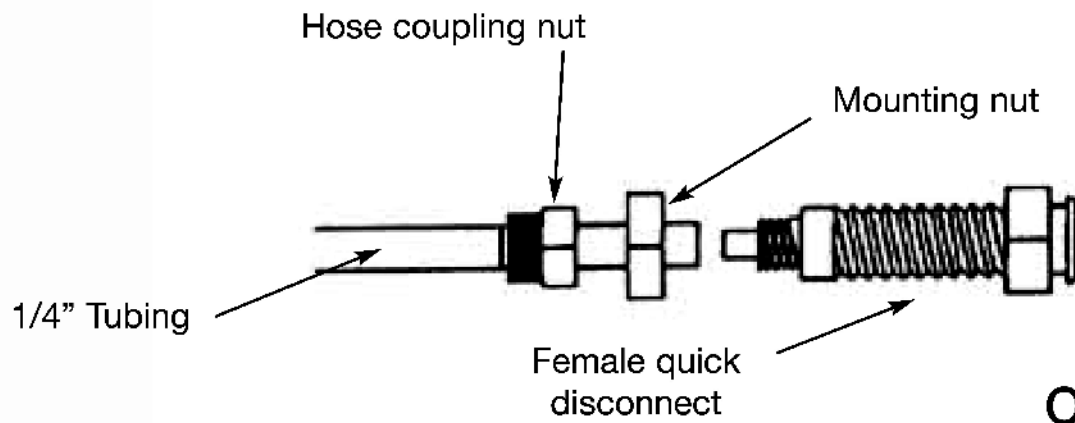
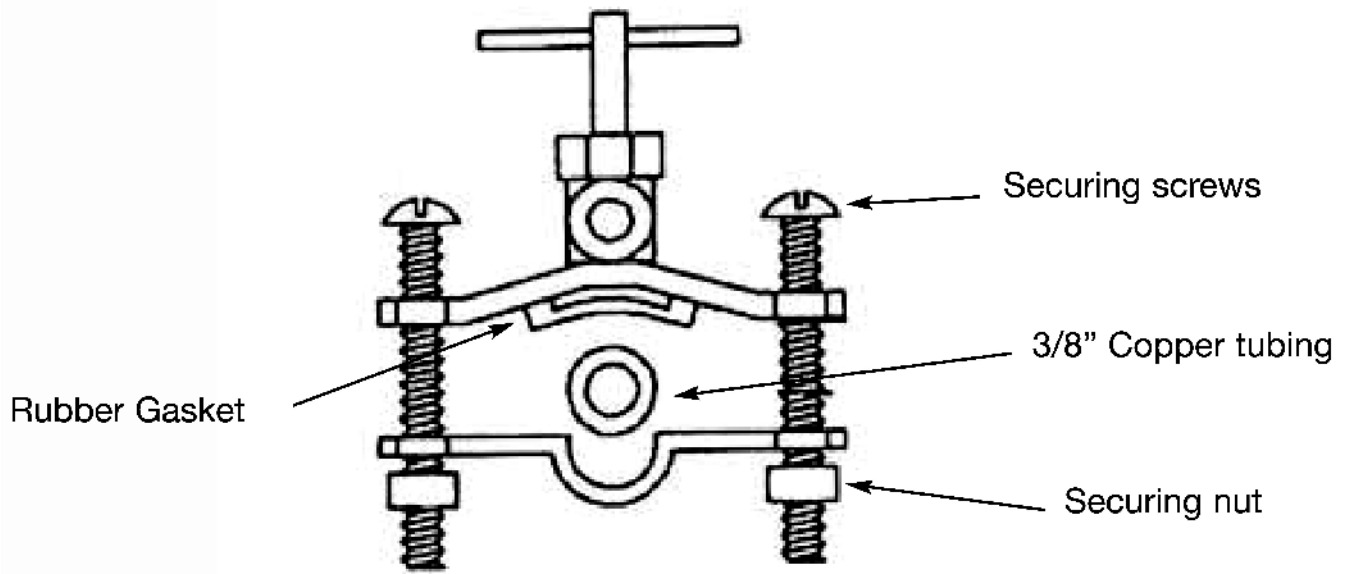
SADDLE VALVE ASSEMBLY

Installation Instructions:

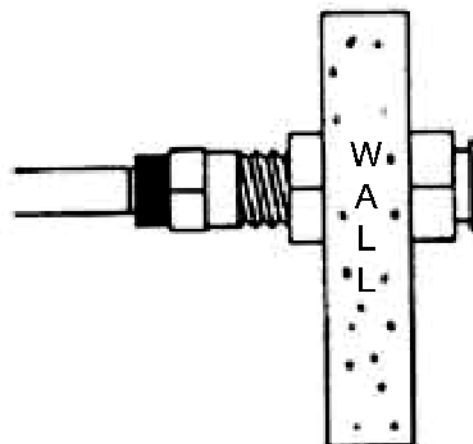


To connect the saddle valve to an existing water source, attach the saddle valve to your existing 3/8" to 1-3/8" copper tubing. Tighten the securing screws evenly.

DO NOT OVERTIGHTEN, THIS MAY CAUSE THE COPPER TUBING TO CRIMP AND REDUCE FLOW.



Option B



To mount the female quick disconnect, there are two options.

Option “A” (Unmounted Assembly.)

Take the free end of the 1/4” water tubing that comes from the saddle valve and connect it to the female quick disconnect. This is done by placing the hose coupling nut over the water tubing and placing the hose into the back of the female quick disconnect, then tightening the coupling nut.

Option “B” (Mounted Assembly.)

If you wish, the female quick disconnect may be mounted directly through the sink top or vanity counter. If you choose this way, you must first drill a 1/2” diameter hole through the surface in the space desired. (see previous page) Then mount the female quick disconnect and tighten the mounting nut to securely hold it in place. Then proceed to place the hose coupling nut over the 1/4” water tubing. Place this tubing into the back of the female quick disconnect and tighten the hose coupling nut securely.

The copper tube is ready to be pierced.

Confirm that the saddle valve assembly is tightened snug to the copper tube and the female quick disconnect is properly connected to the water line.

Turn the “T” handle of the saddle valve in a CLOCKWISE direction until it will go no further. Next, turn the “T” handle in a COUNTERCLOCKWISE direction until resistance is felt. Water will now flow to your dental unit. Check for leaks.

You may now connect the male end from the dental unit to the female quick disconnect.

NOTE: The “T” handle on the saddle valve does not shut water to the dental unit. It is only used to pierce the copper tube. It is very important that you mount the saddle valve after a shut off valve.

Saddle valve assembly w / female connector & tubing, part # A44303

Engler Engineering Corporation will not be held liable for any damage including, but not limited to leakage caused by improper installation of our products. It is suggested that a professional plumber make any necessary installations or connections.

WATER TANK INSTRUCTIONS



PT-1 Water Tank

DIRECTIONS:

1. Release air pressure by PULLING and TURNING pressure relief valve, located on the side of the bottle.
2. Remove pump and cap assembly.
3. Fill tank with distilled water or medicated solution up to the "FILL LINE" mark. Do NOT fill beyond this line.
4. Replace pump and cap assembly and tighten securely.
5. Pressurize tank by pumping it approximately 20-40 times (depending on the amount of liquid used). If a hissing sound is detected, tank is over-pressurized. Stop pumping. Leave tank on a level surface until hissing stops. Insert the male quick disconnect on the end of the waterline from scaler into female quick disconnect provided on tank.

WATER TANK CARE & MAINTENANCE

- a. Release air pressure by pulling and turning knob of pressure relief valve. Pull out fully and allow air to escape.
- b. Loosen cap slowly. Remove pump & cap assembly. Pour out any remaining liquid & rinse all parts thoroughly with clean water.
- c. Always store tank empty and with tank cap loose.

TROUBLESHOOTING:

PROBLEM: TANK FAILS TO PRESSURIZE.

- A. Be sure cap is tight.
- B. Check to see if pressure relief valve is in safety position.
- C. Remove the pump from the tank. Turn pump handle counterclockwise and lift handle to unlock. On top of the pump cap there is an opening that says "oil here". Place 3-5 drops of mineral oil into the opening. Pump several times to work the oil into the walls of the pump until it moves freely. Repeat if necessary. Screw the pump back into the tank and resume normal operations. This process should be repeated often as necessary and depending on usage, or when pump starts to work harder.
- D. 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 prior to shipping.

WARNING:

READ AND FOLLOW ALL INSTRUCTIONS.

ALWAYS INSPECT your pump before each use.

ALWAYS RELEASE AIR pressure before removing pump or servicing tank, by pulling pressure relief valve knob out fully.

DO NOT use mechanical devices to pressurize the tank .They can create excessive and dangerous pressure which could cause the tank to explode.

DO NOT STAND over pressurized tank while using it or pumping it

DO NOT USE solutions warmer than 105F.

DO NOT damage or alter the functions of the pressure relief valve or plug the pressure relief valve hole, as this could cause the tank to explode

DO NOT 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.

CARE AND MAINTENANCE OF YOUR PORTABLE WATER TANK

TO KEEP SLIME FROM FORMING INSIDE THE TANK AND EVENTUALLY GETTING INTO THE DENTAL UNIT CAUSING IRREVERSIBLE DAMAGE:

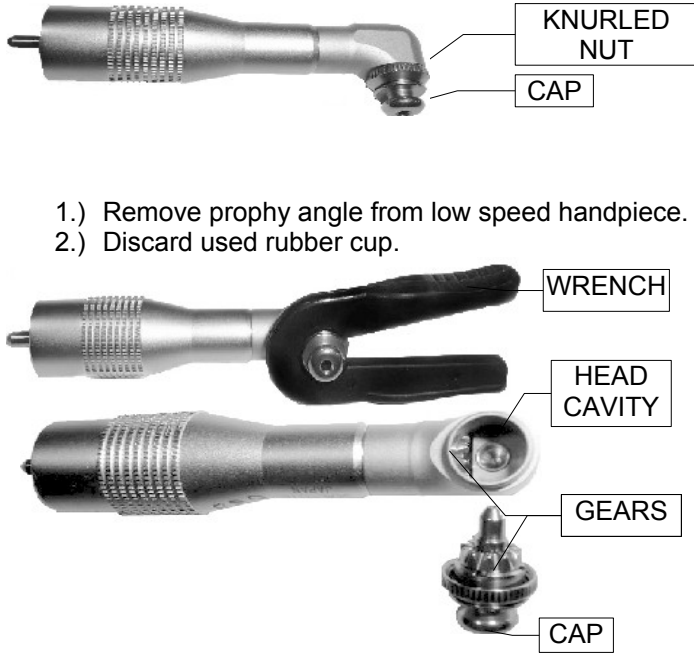
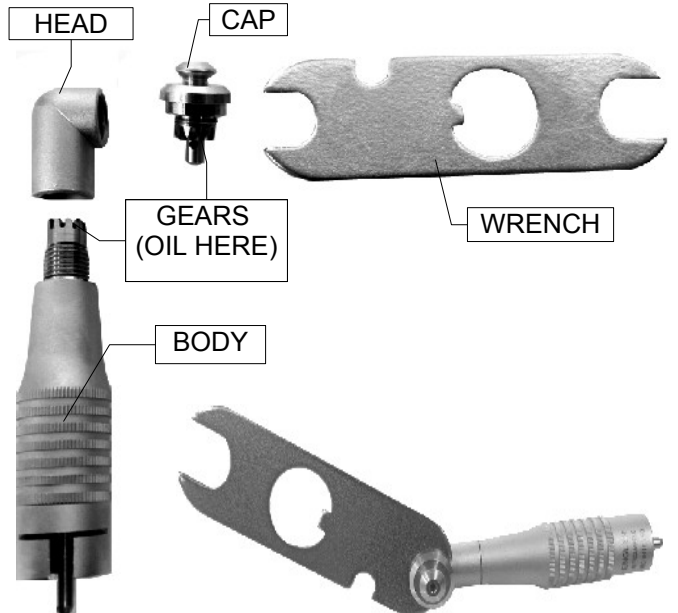
1. Every two weeks dispose of water in tank. Pour ½ gallon of hot water and 1 ounce bleach into tank and swirl the liquid thoroughly inside the tank.
2. Dispose of bleach mixture and rinse tank with clean water thoroughly and completely.
3. Clean the outside of the pump / tank according to your facilities normal cleaning procedures.
4. The pump assembly has been pre-lubricated. DO NOT TAKE THIS ASSEMBLY APART.

**It is critical for patient safety and corrosion prevention of internal components.
all cleaning fluids must be rinsed thoroughly**

PROPHY ANGLE CLEANING AND MAINTENANCE INSTRUCTIONS

The prophy angle is a precision engineered dental device. All gear and shaft assemblies are made of high grade stainless steel which must be kept free of debris. If cleaned and lubricated correctly will provide long, trouble-free service. The manufacturer recommends replacing prophy angles at least every 4 – 6 months depending on use. Prophyl angles may vary. Use the following instructions accordingly.

DAILY CLEANING AND LUBRICATION:

 <ol style="list-style-type: none"> 1.) Remove prophy angle from low speed handpiece. 2.) Discard used rubber cup. 3.) Remove head cap by turning counterclockwise to unscrew the knurled nut with the wrench provided. 4.) Wash the cap and head cavity thoroughly with a toothbrush in a bowl of warm soapy water. 5.) Rinse thoroughly with running water and shake off excess water. 6.) DO NOT attempt to dry this part with paper or cotton towels, swabs or gauze. Any particles left on the gears will keep them from turning properly. Use only alcohol to speed the drying process and / or a blow dryer to thoroughly dry the angle. 7.) Lubricate by placing one drop of mineral oil 8.) (P-01) on the gears of the head cap and a drop inside the gear cavity. 9.) Being careful not to cross-thread, reassemble the prophy angle and wipe off all excess oil. Place a new rubber cup onto the head cap and confirm that the gears are meshing properly by rotating the cap – it should turn easily. If not, remove and try again. DO NOT use the wrench, only finger tighten. 10.) Slide the Prophyl Angle onto the handpiece and lock the handpiece. 	<ol style="list-style-type: none"> 1.) Remove prophy angle from low speed handpiece. 2.) Discard used rubber cup. 3.) Use the wrench to remove the cap from the head. 4.) Turn clockwise to unscrew the head (top portion) from the body (bottom portion). 5.) Place the cap, head and body into a bowl of hot soapy water. 6.) Wash thoroughly with a toothbrush. 7.) Rinse well with running water and shake off. DO NOT attempt to dry these parts with paper or cotton towels, swabs or gauze. Any particles left on the gears will keep them from turning properly. Use only alcohol to speed the drying process and / or a blow drier to thoroughly dry the angle. 8.) Lubricate by placing one drop of mineral oil (P-01) on each gear (see diagram). 9.) Being careful not to cross-thread, reassemble the prophy angle and wipe off all excess oil. Place a new rubber cup on the onto the cap and confirm that the gears are meshing properly by rotating the cap – it should turn easily. If not, remove the cap and try again. 10.) Slide the prophyl angle onto the handpiece and lock the handpiece. 
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MAIN UNIT MAINTANANCE

Flush Mode

The flush function is used to purge leftover water from the handpiece hoses. This procedure should be performed at the end of each day or when the Excelsior will be placed in storage for any length of time.

To flush the Excelsior, follow these steps with the compressor ON:

1. Disconnect the low and high-speed handpieces from their hoses by unscrewing the collar at the base of the handpieces.
2. If your unit is equipped with a 25K handpiece, Remove insert from scaler handpiece, **DO NOT** attempt to unscrew the scaler handpiece.
3. If your unit is equipped with piezo, remove the handpiece by unplugging the quick connect at the base of the handpiece .
4. Place hoses and ultrasonic handpiece back into their cradles.
5. Remove one handpiece hose at a time.
6. Flip the flush switch to the up position and press the footswitch. Air and water will now blow out through the hose. Please be sure to point the hose down into a sink or thirsty towel.
7. Once complete, flip the flush switch to the down position.
8. Repeat steps 5, 6, and 7 for each handpiece.
9. Re-install the handpieces and scaling insert.

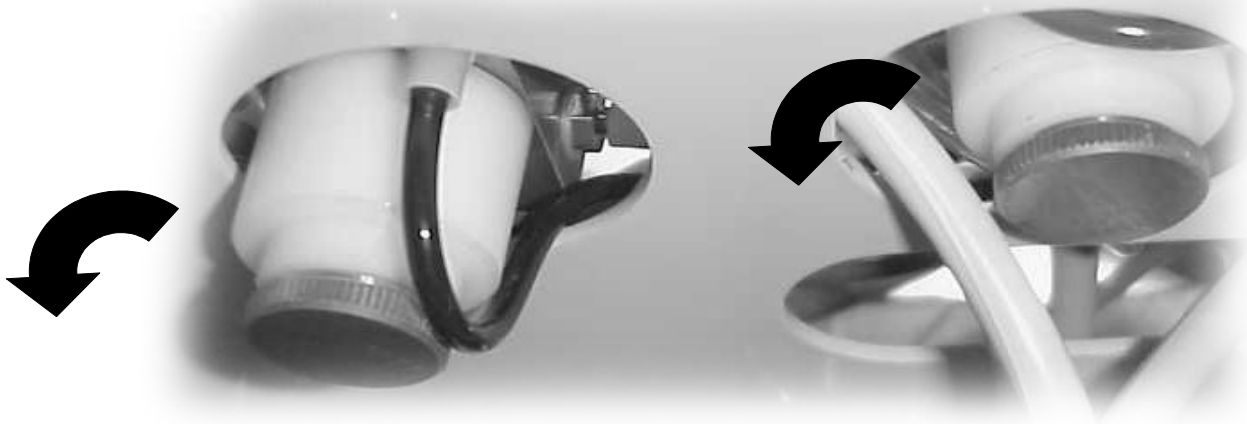
Warning: The flush function forces water and air to blow out of the handpiece connector under pressure. Place the handpiece hose end or ultrasonic handpiece in a discharge container, sink, or a towel. Point away from people or animals.

Filters

Right side view

Air filter

External water filter



The excelsior is equipped with several filters.

The input air filter, external water filter, water bottle filter.

The input air filter, external water filter are located next to the water bottle.

The air and external water filter must be kept cleaned or replaced when needed.

To open the air and external water filter unscrew in the direction shown by black arrow (counterclockwise).

Water bottle filter



The water bottle filter is located inside the water bottle. (2 liter on-board bottle)

The water bottle filter may be inspected and if dirty, it should be replaced. The water filter assembly is available at Engler Engineering Corporation.



To replace filter unscrew quick connect as shown, then screw in the new filter.

Maintenance Free prophylaxis angle



P-MF Maintenance free prophylaxis angle



P-106

P-106 screw on rubber cups 144/pkt

CARE and STERILIZATION PROCEDURES

After each prophylaxis:

Rinse abrasive paste from head and cup area with water. Then remove cup.

Thoroughly clean the outside of angle with disinfectant.

Place angle into a sterilization bag

Follow sterilizer manufacturer's recommendations.

Do not exceed 275 ° F(135 °C).

Keep angle in bag until ready for use.

You are now ready for your next prophylaxis.

CAUTIONS AND WARNINGS:

Sterilize prior to disposing.

Do not attempt to disassemble.

DO NOT submerge in liquids, including ultrasonic solutions.

Operate handpiece in the forward direction (counterclockwise when facing you) to prevent threaded cups from unscrewing during the procedure.

Not recommended for use above 3000 R.P.M.

If the head of the angle becomes hot during use, lubricate the rim of the cup / screw hole with oil.

Use only Engler Care Free Prophylaxis Rubber Cups. Other brands will not properly seal the angle, causing premature wear and voiding the warranty.

Use 1 year, sterilize, then dispose of properly.

YOUR CAREFREE ANGLE IS WARRANTED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR 6 MONTHS. A COPY OF OUR INVOICE OR PICKING TICKET WILL BE REQUIRED AS PROOF OF PURCHASE.

CAREFREE ANGLE WARRANTY IS VOID IF

Engler Care-Free rubber cups are not used exclusively.

Sterilization procedure is not followed properly.

The angle has been submerged in any liquid.

The angle has been damaged or abused.

Damaged due to use at high speed.

EXTENSION ARM

The Excelsior can be mounted on a extension arm (optional). The following are the mounting instructions:



1. Assemble arm.
Note: Arm can extend a maximum of 25 inches.
2. Attach arm wall plate to flat surface using 4 screws.



3. Connect arm to the bottom of the control unit and tighten the four wing nuts.

TECHNICAL SPECIFICATIONS:

Low speed handpiece: 20,000 rpm

High speed handpiece: 360,000 rpm

Scaling handpiece:

Piezo handpiece: 30 KHz

25K handpiece: 25 KHz

Power supply (main unit):

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

Output: 24 Vdc, 2.5 Amps

Compressor: On-demand compressor (no tank)

115 V~, 5.8 Amps, 60 Hz, 671.6 W

Control box dimensions: 15 1/4" W X 14" D X 4 1/4" H

Base dimensions: 20" D X 19" W

Shipping box dimensions: 4" X 24" X 24"

Height (telescopic): 27"- 39".

Net weight: 76 lbs.

Shipping weight: 92 lbs.