

Engler Engineering Corporation



Tri-Mate Scaler, Polisher, & Electrosurgery

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READ BEFORE YOU START

The Scaler Handpiece, Ultrasonic transducer (Stack), and Tip are water cooled and must always have adequate water flow to function properly. The amount of water delivered to the Handpiece must be regulated according to the power level. If the power level is increased, the amount of water must also be increased. Not having enough water flow through the Scaling Handpiece may permanently damage the Handpiece, will cause the Handpiece to get hot, degrade transducer life and void the warranty. For more information, please turn to the **Scaler Operating Instructions** page.

When active, Ultrasonic Tips vibrate at over a million cycles per minute, if it touches soft tissue or skin it will cause burns. The Tip is not normally hot but the Ultrasonic vibration will burn you if you touch it, this is due to the friction between the skin and the vibrating Tip. This is normal for all Ultrasonic Scalers. Never let the scaling Tip touch soft tissue or skin, Engler Engineering Corporation is not responsible for any damage caused by improper use of this device and / or it's accessories.

When using a Water Bottle, it must be kept pumped to at least 30 PSI. The pressure release valve will slightly move out showing the yellow interior when pressure builds up. As water is used the pressure will decrease and the bottle must be pumped to keep adequate pressure.

Be careful not to twist or bend the Stack when inserting or removing it from the Handpiece. Pull the Stack Straight out to remove it. Always make sure the Stack is properly aligned when inserted into the Handpiece. There is a white dot in the Handpiece and a hole in the Stack, they must be aligned during insertion. Bending the Stack or inserting it incorrectly into the handpiece may irreparably damage the Stack and degrade it's ability to vibrate. Improper insertion of the Stack may also damage the handpiece as well as cause it to get hot. Damage caused by bending or forcing the Stack into the handpiece is not covered by the warranty.

Do not alter the scaling Tip. The Tip is shaped to deliver the optimum vibrating power level and keep its optimum frequency. Deforming or sharpening the Tip in any way will cause the handpiece to get hot, degrade performance, and void the warranty.

Remove the Tip and Nosecone from the Stack and clean / disinfect after every use. Stack, Tips, Prophyl Angles, Rubber Cups, Straight Handpieces, Burs, Electrosurge Tips, and Water Filters, are normal wear and tear items. In order to achieve optimum performance they should be replaced regularly.

Lubricate O-rings on the Stack with an appropriate lubricant for your practice, for example mineral oil or petroleum jelly is acceptable for most practices. If the Stack does get stuck, in the Scaling Handpiece, a Stack removal tool and a maintenance kit are available from Engler Engineering Corporation.

The water regulator has multiple turns. Turn the water control knob counterclockwise to increase water flow and clockwise to reduce water flow.

The Ultrasonic Stack normally last six months to a year, depending on use. To maintain optimum performance, replace every six months to a year or as needed. Do not leave the Ultrasonic Stack inside the handpiece for long periods of time. The O-rings may dry out and make it difficult to remove the Stack.

Turn off the unit and disconnect the waterline when not in use. The power switch is on the left side of the Unit.

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.

We also manufacture dental equipment for the human market. Please visit our website www.englerusa.com for more detailed information or call us at the numbers shown below.

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 Veterinary Dental Air Unit with Vacuum / Electrosurge / Ultrasonic Scaler / Low Speed / High Speed / Air / Water Syringe,
Son-Mate II, Ultrasonic Scaler / Polisher,
Sonus II, Ultrasonic Dental Scaler,
Poli-X, Micromotor Variable Speed Polisher,
Drill – Aire, High Speed Veterinary Dental Air Unit, High Speed, Air / Water Syringe,
Drill – Aire Plus, High Speed Veterinary Dental Air Unit, High Speed, Low Speed, Air / Water Syringe,
Scale-Aire Mini, High Speed Veterinary Dental Air Unit with Ultrasonic Scaler / High Speed / Low Speed / Air / Water Syringe,
Scale-Aire, High Speed Veterinary Dental Air Unit with Ultrasonic Scaler / High Speed / Low Speed / Air / Water Syringe and Compressor / tank,
Tri- Mate, Ultrasonic Scaler / Micromotor Polisher / Electrosurge,
A.D.S. 2000, Microprocessor Controlled Anesthesia Delivery System / Ventilator,
Sentinel V.R.M., Veterinary Respiratory Monitor.

Engler manufactures the **Sonus V** Ultrasonic Dental Unit for the human market

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 dental and 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.

If you have any questions or comments, please contact:

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INTRODUCTION

Thank you for purchasing the Engler Tri – Mate, Electrosurge / Scaler / Polisher combination.

The design of the Engler Tri - Mate Scaler circuitry combines Integrated Phase Lock Loop technology along with our time tested delayed cavitation circuitry. This combination produces a powerful and potent tool against periodontal disease. A reinforced solid aluminum chassis surrounds the circuit board, providing a very durable and reliable Unit.

The dental Scaler utilizes an Ultrasonic principle of operation. The circuitry converts ordinary line voltage to an operating frequency of approximately 18,000 Hz. This frequency is then amplified and delivered to the scaling Tip. As a result, the Tip vibrates at this Ultrasonic frequency with an amplitude of 0.001 to 0.004 in. (250 to 1000 um).

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

IMPORTANT:

We recommend that Ultrasonic Scalers and Electrosurgery units should not be used by or in close proximity to anyone who has any electronic implant device such as a pacemaker or defibrillator. Please check with the manufacturer of your (implant) device if this is a concern.

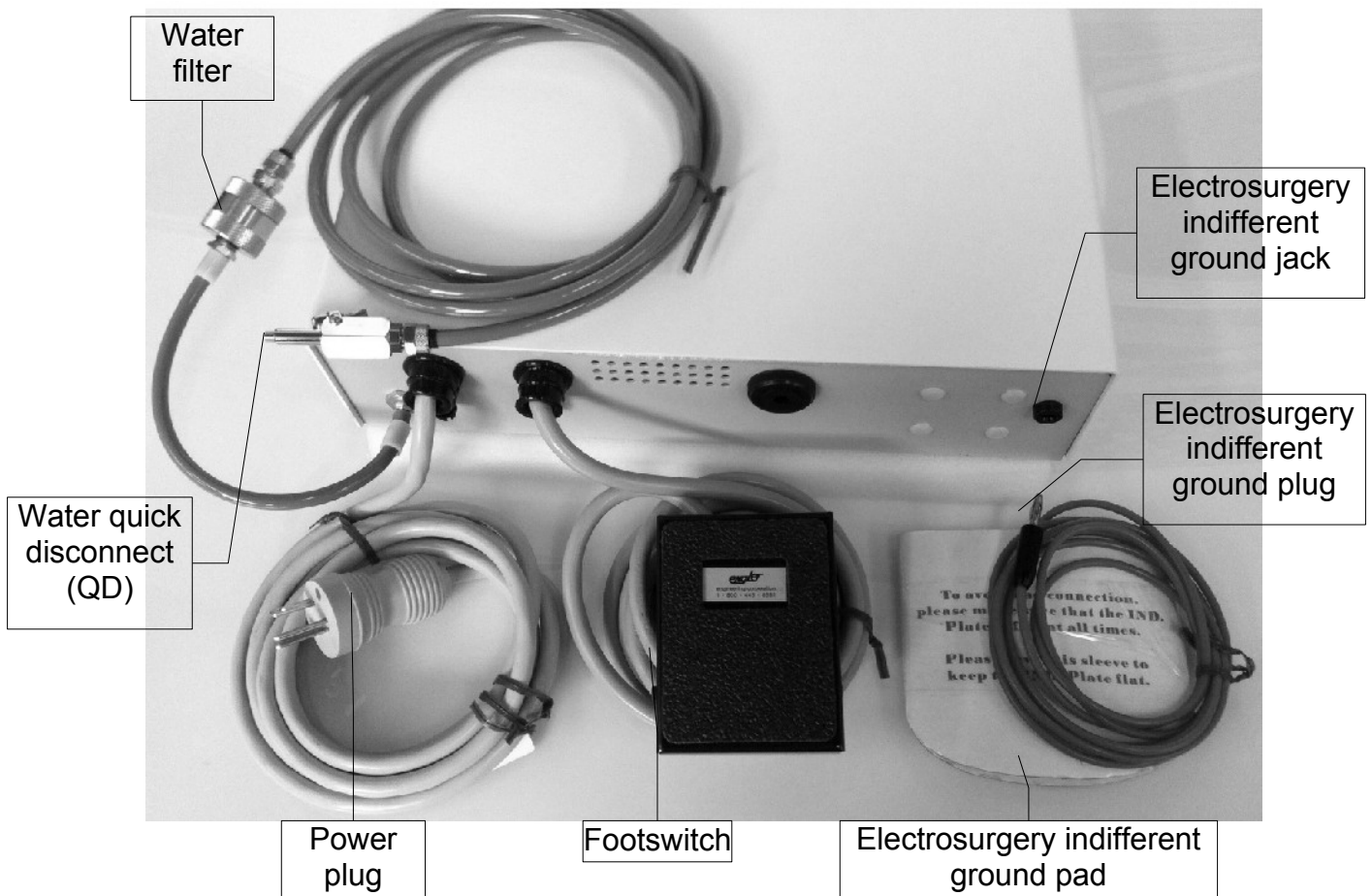
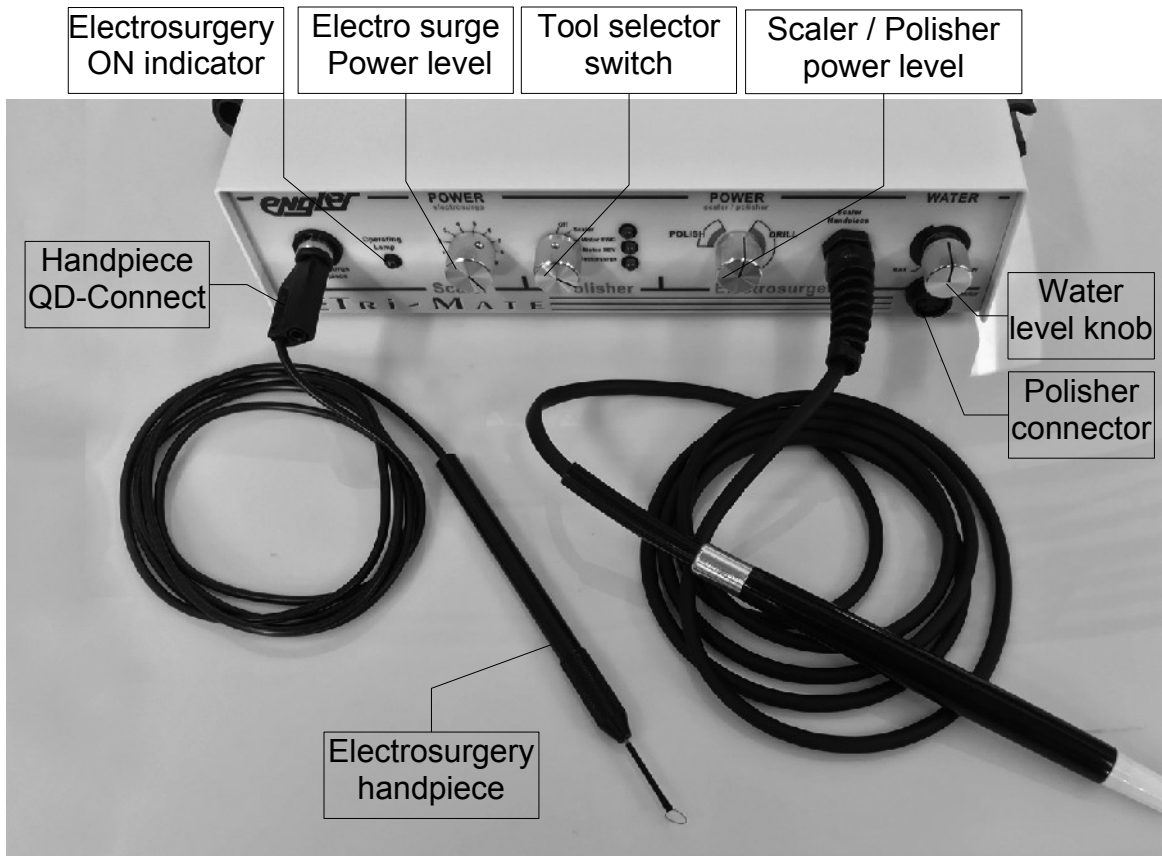
PLEASE READ VERY CAREFULLY

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

It is imperative that you inspect this unit upon receipt. If any parts are found to be missing or damaged, notify Engler Engineering Corp. immediately. All claims submitted after fifteen days of receipt will not be valid.

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.

Images and photos are for illustrative purposes only. Equipment and accessories (colors) are subject to change without notice.



QUICK START GUIDE

Electrosurgery

1. The Indifferent Ground Plug must be connected to the Indifferent Ground Jack, located at the back of the unit.
2. Indifferent Ground Plug must make proper contact with the patient.
3. Turn Tool Selector Switch to Electrosurgery.
4. Adjust Electrosurge power level to the appropriate power level.
5. Install Electrosurge Tip by unscrewing the knurled cap on the handpiece (autoclavable). Push Electrosurge Tip into the Handpiece, tighten the knurled cap, securing the tip.
6. Press the Footswitch to operate, **cycle 30 seconds ON and 30 seconds OFF**. Cut by gently pressing into the tissue and pulling back.
7. Clean and disinfect the Tip, Handpiece and unit after each patient. See page 34 for autoclave instructions.

Scaler

1. Connect the unit to a water source. The line pressure should be between 30 – 60 PSI. Typical municipal water pressure is between 40 – 60 PSI. When using the Water Tank, pump the bottle approximately 20 to 40 times depending on the amount of liquid used.
2. Turn Tool Selector Switch to Scaler.
3. Adjust Scaler power level to lowest power level.
4. Press Footswitch until water comes out of the Handpiece. Water control knob may need to be adjusted (counterclockwise to open). The water control knob has approximately three full turns.
5. Install Stack, Nosecone and Tip. Stack must be properly aligned and Tip must be properly tightened. See Stack installation instructions, page 13.
6. Press Footswitch, adjust water level and adjust power as needed. Water cools the Handpiece and flushes blood and debris. Always use plenty of water.
7. Clean and disinfect the Tip, Handpiece and unit after each patient.

Polisher

1. Install Micromotor Plug into the connector at the front of the unit.
2. Install Straight Handpiece onto the Motor (snap on).
3. To unlock Straight Handpiece, locate the Swivel Collar. Grasp the base of the Straight Handpiece and rotate / twist the Center Collar until you hear / feel a click.
4. Insert Prophylaxis Angle into the Straight Handpiece and lock Handpiece by reversing the above.
5. Grasp the base of the Straight Handpiece and rotate / twist the center collar till it clicks.
6. Install rubber cup. For assistance, visit engler411.com, click on videos. Click on Electric Dental Units, Maintenance, Lubrication, Troubleshooting & Tutorials, then select Video #5.
7. Clean Prophylaxis Angle as needed but at least once a day. Follow the Prophylaxis Angle cleaning and maintenance instructions. (Video #6)
8. Lubricate Straight Handpiece at the end of the day. Follow the Straight Handpiece maintenance instructions. (Video #2)
9. Clean (but do not lubricate) Motor and power cord.
8. Clean and disinfect the Unit after each patient or as needed.

Every Engler Tri – Mate comes equipped with one autoclavable handpiece, one disposable handpiece and Electrosurge tips.

Autoclavable Handpiece, cord, and connector;



Disposable Handpiece (Not autoclavable);



An assortment of Electrosurge tips;



(Representative sample, actual tips and handpieces may vary)

See Electrosurge handpiece / tip autoclave instructions on page 34

Contact Engler Engineering for replacement handpieces and tips.
800-445-8581

TRI - MATE ELECTROSURGERY

Electrosurgery uses solid-state technology. The Electrosurge is ready to operate as soon as the power is applied. The unit accepts electrical power from a standard outlet and converts 60 Hz cycle low frequency, to a high frequency radio wave, useful for surgery.

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.

These high frequency radio waves are transmitted from the insulated Handpiece into the patient's tissue by the metallic Surgical Tip Electrode. This device is a Capacitive Coupled Device.

WHEN OPERATING WITH THE ELECTROSUGE, ALWAYS USE PLASTIC SUCTION TIPS, MOUTH MIRROR, ETC.

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 be making good contact with the patient for the Electrosurge to work properly.

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 other than that intended because current flow through the body is less.

REFERENCE:

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

Principles of Electrosurgery

The Tri - Mate 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 Tri - Mate 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 THINGS TO REMEMBER WHEN SELECTING ELECTROSURGERY

A word about duty cycle

Duty cycle is a term that refers to the length of time an Electro Surgery Unit should be allowed to run. Generally speaking an Electro Surgery device uses high energy, which generates a lot of heat at the operative site AND inside the Electro Surgery device. It is generally recommended that the unit be used for no more than **30 seconds ON / 30 seconds OFF**. This allows sufficient time for the unit **and** the operative site to cool.

1. 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 Electrosurgery to work properly.
2. Never use the Electrosurgery side of the unit if you are fitted with any electrical implant device. All persons in the immediate area of the surgery should be advised of the potential hazards if they have any implant, which may be affected.
3. Never use the Electro Surgery Unit on a patient fitted with an electrical device, or in the immediate area of any metallic implant.
4. When operating the Unit, **always use non-conductive (plastic) implements on the patient.** This includes suction cups, mirrors, probes, etc.
5. For the electrode to work efficiently during surgery, it must be kept clean. The best way to accomplish cleaning is with a damp cloth thick enough so the active electrode will not burn the operator. Tissue comes off easier when the electrode is activated.
6. Suggested power setting for a cut is 5 to 6 on the dial. The cut should be performed without 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 10 seconds.
7. 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, the setting is too high or you are moving too slowly. If you bury the electrode into the tissue, nothing will happen. As coagulating tissue correctly is quite difficult, it is suggested practicing on a piece of steak.
8. Because the electrodes are delicate, they are not covered under warranty except for manufacturer defects. When they are used correctly, with care, they will last a considerable length of time.
9. Sparking can occur at the point of the electrode. **DO NOT** use the Unit in the presence of flammable gasses or metallic items.

INSTALLATION INSTRUCTIONS

Before installing or operating your new Tri - Mate, carefully read and follow all of the instructions.

IMPORTANT: This device must be connected to a clean, filtered, water supply, capable of delivering 30 to 60 PSI (2.0 to 4.2 kg/cm²) of water input pressure. This unit comes with an In-Line Water Filter (P/N: A52030). When kept clean and free of foreign matter, it will assist in proper water flow to the unit. If the water pressure in your office is above 60 PSI, we recommend you install a water pressure regulator on the supply line to your Scaler.

CONNECTING WATER SUPPLY:

Engler Engineering Corp. strongly recommends that a manual shut off valve be placed before the Female Quick Disconnect, so that the water can be completely shut-off, and line pressure relieved when the Unit is not in use.

This device comes equipped with an 8 foot (244 cm) water line, a male quick disconnect fitting, a water filter.

We suggest that you use one of the four methods as shown on the next two pages.



44301 Male quick disconnect

**** Please note, male quick disconnect is supplied as a standard item with all Engler scalers.**

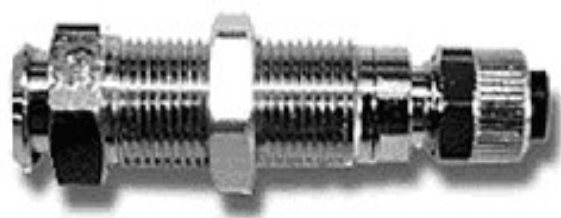
PLEASE REMEMBER -

The Unit should be disconnected from the water supply when it is not in operation. Failure to disconnect the device from the water supply when it is not in use, will void your warranty.

Engler Engineering Corporation will assume no liability for damage due to not following recommendations in the Engler manuals.

CONNECTING WATER SUPPLY (cont.)

1. Female Quick Disconnect (P/N: 44300) - This is the female mating connector to the male quick disconnect supplied with the Tri - Mate. Use this to create a custom water installation utilizing $\frac{1}{4}$ " I.D. water tubing.



44300 Female Quick Disconnect

2. Saddle Valve Assembly (P/N: A44303) - This kit contains all parts to quickly and easily connect your Unit to an existing existing $\frac{3}{8}$ " to $1\frac{3}{8}$ " copper tubing cold water supply line.



A44303 Saddle valve assembly with Female Quick Disconnect & tubing

3. Faucet Adapter Assembly (P/N: A22303) - This screws onto an existing faucet and has a Female Quick Disconnect included.



A22303 Faucet attachment with Female Quick Disconnect & tubing

4. Portable Water Tank (P/N: PT-1) - This is a self-contained water source, which is ideally suited for portable operation. We suggest using distilled water and fill the tank to the water fill line (approximately $\frac{2}{3}$). Tighten the cap, insert the male quick disconnect on the water line into the Female Quick Disconnect on top of the tank, pressurize the tank by pumping the handle until the pressure relief valve's yellow indicator begins to show. Lock the handle in place.

Note: Some water pumps may not be equipped with a relief valve.



IMPORTANT: Engler Engineering Corp. recommends the services of a professional plumber. Engler Engineering Corporation will not be held liable for any damage including, but not limited to leakage caused by improper installation of our products.

CONNECTING WATER SUPPLY (cont.)

PLEASE NOTE: Minerals and foreign particles in the water may cause a buildup or blockage of hoses and parts.

The water filter supplied with this device must be opened and inspected quarterly. We suggest that the filter disc and O-ring be changed out at least once a year. See WATER FILTER CLEANING INSTRUCTIONS.

CONNECTING POWER

Plug the power cord into a grounded power outlet. DO NOT remove or bypass the ground pin from the power cord of this device. Doing so will void the warranty.

SCALER OPERATING INSTRUCTIONS

Initial procedures at the start of every day:

1. Make sure the water is turned on and flowing to the Unit. Rotate the Selector Switch to the "Scaler", the red LED indicator will light up, showing there is power to the Unit.
2. Adjust the **POWER** control knob to the **MINIMUM** power setting fully counter-clockwise.
3. With no transducer (Stack) in the Handpiece, set the **WATER CONTROL** to its **MAXIMUM** setting by rotating it counterclockwise (knob will rotate up to 3 and a half turns), hold the Handpiece over a sink and depress the Footswitch until water comes out in a stream. This should take 20 - 30 seconds. This step is done to insure proper operation of the delay cavitation feature by removing air that may be trapped in the water lines.

Warning: DO NOT run the Scaler Handpiece for more than 30 seconds without water flow. Doing so will permanently damage the Handpiece and void the warranty.

NOTE : The O-rings on the Stack should be lubricated every week or two with a small amount of petroleum jelly to keep the Stack from sticking in the Handpiece.

4. Place the transducer (Stack), into the Handpiece, install the Nosecone and then drop a sterile Tip into the Nosecone, and rotate the Nosecone in a clockwise direction. Then firmly tighten the Tip by hand.

IMPORTANT: It is important that you DO NOT over-tighten the Tips, as this may damage the Handpiece, Stack and / or Tip and void your warranty.

5. Always keep the power control at the lowest setting and the water control to a level where you have a fine mist at the Tip. **Higher power settings will result in hotter water.**

NOTE: Tips sent from our facility are not sterilized.

IMPORTANT: If you find that tightening the Nosecone by hand is not successful, you may lightly tighten the Nosecone with the Tip Wrench. Since the Tip wrench is designed to **remove** the Tips, it is important that you **DO NOT over-tighten the Tips with the Tip wrench**, as this will damage the Handpiece, Stack and / or the Tip and void your warranty.

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 volume. Thus, high power settings require high water flow rates and conversely low power requires low water flow rates.

6. The Scaler is now ready for use.

IMPORTANT: Operating this device with hot water may cause damage to gums, lips and tongue. If the Handpiece begins to get warm, stop and check water temperature. If it is hot, make sure that the power is at the lowest setting and the water is set at a high enough setting to provide a lukewarm mist. Do not use this device if the water temperature is too hot.

Engler Engineering Corporation will not be liable for damage due to improper use of this device.

Ultrasonic SCALING PROCEDURES

1. 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.
2. It is recommended that when a Tip is placed into a patient's mouth, the lips, cheek and tongue be retracted to prevent accidental contact.
3. Bring the Tip up to the teeth, press the footswitch then gently move the tip over the surface of the teeth with an erasing motion.
4. A saliva ejector or HVE is recommended.

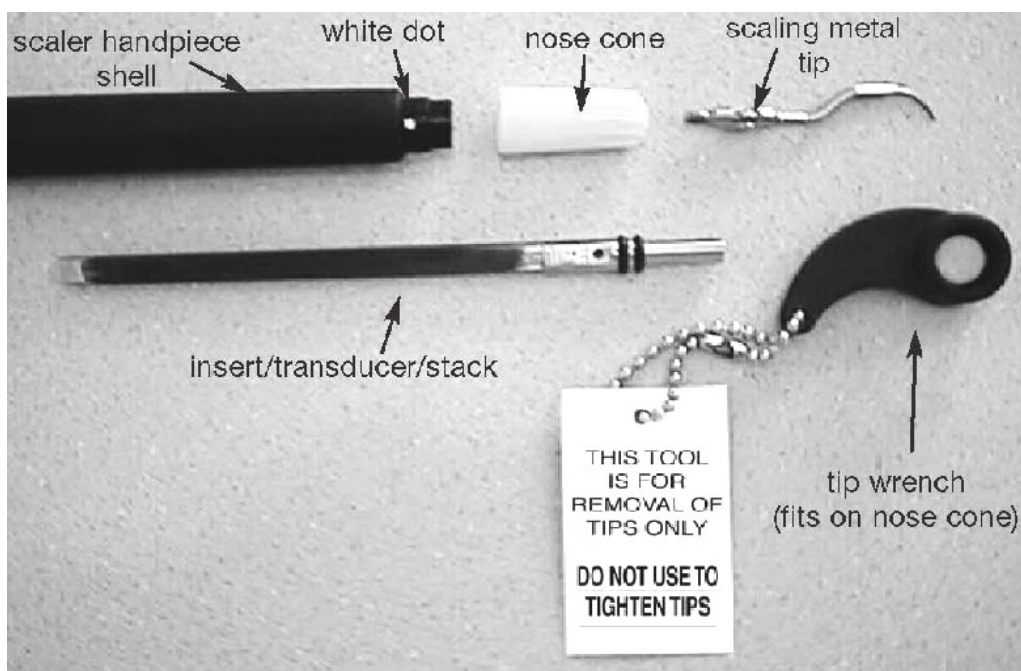
IMPORTANT: Do not leave the vibrating Tip in one place as it can cause serious damage to the tooth or surrounding tissues. Engler Engineering Corporation will not be liable for damage due to improper use of this device.

Note: The scaler has a feature called Delayed Cavitation. This function purges the Tip of water after releasing the Footswitch to prevent bacteria from entering the Tip.

IMPORTANT: Pressure on the Tip is not necessary to remove calculus or tartar. Enamel on the teeth may be damaged or removed when using excessive pressure. Enamel may also 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 may damage the teeth and incidentally, change the shape of the Tip, which in-turn, changes the operating frequency. The normal power setting for most procedures should be LOW range. Since every operator has a different technique the power may be adjusted to satisfy specific requirements.

CAUTION: Contact with Soft Tissue May Cause Burns. Engler Engineering Corporation will not be liable for damage due to improper use of this device.

The use of a face mask is recommended when operating the Scaler, to avoid inhalation of bacterially contaminated aerosol (water mist) by the operator.



SCALER MAINTENANCE

FINAL PROCEDURES AT THE END OF EACH DAY

1. Turn the he Unit off.
2. Remove the Tip and Nosecone and sterilize.
3. Disconnect the Unit from its water source or turn off the water supply.
4. Clean and disinfect all surfaces.

The Scaling Tips:

IMPORTANT: The scaling Tips should be thoroughly cleaned and free of blood, tissue, or any other debris before sterilization.

The Scaling Tips, Nosecone and Stack may be sterilized by autoclave or chemiclave, always following the manufacturer's instructions and recommendations. Do not autoclave over 270 degrees F or more than twenty (20) minutes..

It is recommended that you do not leave Tip / Stack in the Handpiece for extended periods as water and sediment may make them difficult to remove, possibly damaging the Stack. Lubricate the O-rings regularly with petroleum jelly or equivalent.

Transducer / Stack

The Stack may be sterilized using the same methods as listed above. **Do not sterilize the entire Stack, Tip and Nosecone assembly as one piece. Separate the Tip from the Stack before sterilization.**

To re-install Stack into Handpiece, follow correct procedures on the next page.

Note: To achieve optimum performance of your equipment, we recommend that the Stack, Tip and Nosecone be replaced every 6 months to one year or as necessary.

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 on 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 chemiclave manufacturer. Dry completely.

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

Handpiece, Footswitch and cables

At least once a day, it is suggested that the Handpieces and their cables be thoroughly cleaned and sterilized. The recommended procedure is as follows:

1. Remove Tip, and Nosecone - sterilize these items as listed above.
2. Clean the outer surface of the Handpieces and cables with an antiseptic soap, rinse off with water and sterilize with a chemical sterilization solution.

Note: If any chemicals are allowed to get into the Handpiece you must flush it out with clean water.

3. Place sterilized Tip and Nosecone into Handpiece for next patient.
4. The Footswitch and power cables should be cleaned periodically by spraying a fine mist of sterilization or 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.

STACK (TRANSDUCER) INSTALLATION / REMOVAL

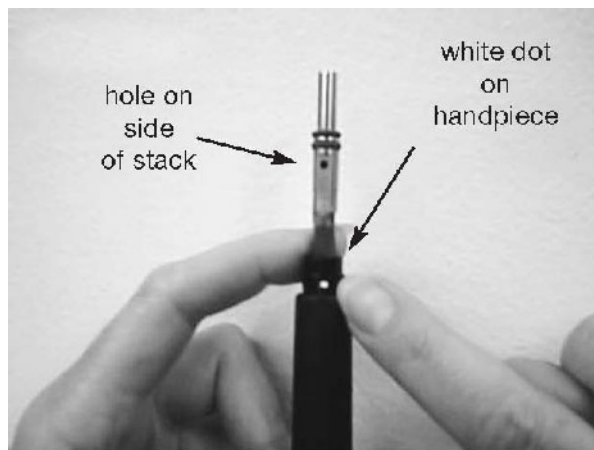
You have purchased a precision instrument. Please handle gently - It is easily damaged

TO REMOVE THE Stack

1. Unscrew the Scaling Tip by turning the Nosecone counterclockwise using the Tip wrench.
2. Remove Tip.
3. Pull off Nosecone. Pull Stack straight up. **DO NOT USE PLIERS!** If you have difficulty pulling the Stack out, screw the Tip back in (without the Nosecone) and pull the Stack Straight out using the Tip.

Do not twist or rotate Stack while inserting it into the Handpiece, as it will damage the Stack / Handpiece and void your warranty.

TO INSTALL THE Stack:



Carefully remove the new Stack from the clear shipping tube.

1. Locate the hole (see photo above) on the side of the Stack. Align it with the white dot on the top of the Handpiece and let the Stack slide down into the Handpiece.
2. Gently push the Stack down until it stops. There should be approximately $\frac{1}{2}$ inch showing above the Handpiece.
DO NOT force the Stack into the Handpiece.
3. Push Nosecone onto Scaler Handpiece.
4. Place Scaling Tip into Nosecone and turn Nosecone clockwise.

NOTE 1: Tighten securely by hand. **DO NOT USE TIP WRENCH.**

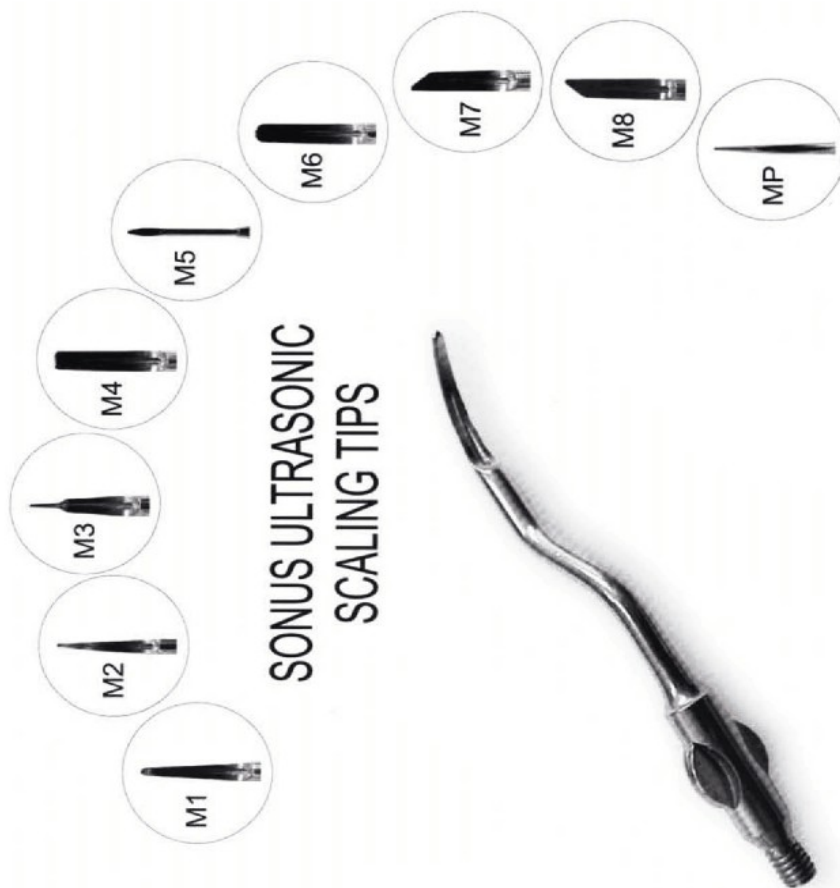
NOTE 2: The O-rings on the Stack should be lubricated every week or two with a small amount of petroleum jelly or equivalent to keep the Stack from sticking in the Handpiece.

NOTE: Twisting the Nosecone or Tip with excessive force can damage the Stack and void your warranty.

FOR FURTHER ASSISTANCE WITH THIS OR ANY ISSUE, CALL CUSTOMER SERVICE
800-445-8581 OR 305-688-8581

SONUS TIP SHAPES

- M1 (133-1201) - UNIVERSAL POINTED
- M2 (133-1202) - EXTRA FINE
- M3 (133-1203) - INTERPROXIMAL SICKLE TYPE
- M4 (133-1204) - BROAD FLAT SPATULA
- M5 (133-1205) - HYPODERMIC NEEDLE TIP
- M6 (133-1206) - BROAD ROUNDED SPATULA
- M7 (133-1207) - GOLDMAN LEFT
- M8 (133-1208) - GOLDMAN RIGHT
- MP (133-120P) - PERIO SUBGINGIVAL



Tip styles may change without notice.

POLISHER INSTALLATION

1. Plug the Micromotor into the front of the control box. Insert the male connector at the end of the Micromotor cable, into the female receptacle on the front panel of the Unit and rotate the lock collar clockwise.
2. Slide the Straight Handpiece down over the top of the Micromotor until it clicks into place.
3. Line up the slot on the Propy Angle with the aligning pin on the Straight Handpiece, and then push the shaft of the Propy Angle into the chuck of the Straight Handpiece.
4. Rotate the lock ring (middle of Straight Handpiece) clockwise, until it clicks and locks the Propy Angle (or other accessory) in place.
5. Place a disposable rubber-polishing cup on the end of the Propy Angle by snapping it on. The Propy Angle is now secured and ready for operation.
6. Rotate the selector knob on the front of Unit to either forward or reverse.



NOTE 1: When using the Polisher the green LED indicator should be on.

NOTE 2: High speed will damage the gears in the Propy angle, splatter the polishing compound and overheat the teeth, possibly burning them. **Always start at the lowest setting, then increase speed as necessary.**

SAFETY INFORMATION:



P-MM-E 35,000 RPM
Micromotor W/Cord



P-SH-A1:1 Straight
Handpiece



P-A1-B Propy
Angle (Sealed
Bearings)



Snap on rubber cups



Polishing
paste

Never turn the lock ring while the Handpiece is in operation.

1. Never reverse the direction of the Micromotor while it is in operation. Possible damage to the Unit may occur.
2. Do not lock or run the Micromotor / Straight Handpiece assembly without a Propy Angle, Cutting Disc, Contra Angle, Test Shaft or other accessory installed. doing so could damage the Straight Handpiece and / or Micromotor.
3. Never oil the Micromotor.
4. When installing the Propy Angle or other accessory, make sure that the lock ring is rotated fully in the unlock position, otherwise the accessory can not be installed and the Straight Handpiece will not operate.
5. Do not rotate the selector switch on the front of the control box between forward and reverse rapidly. always allow the Micromotor to stop before switching.
6. As this is a precision instrument, always return it to Engler Engineering Corporation for maintenance and repair.

POLISHER OPERATION

1. Dampen the rubber cup and place a small amount of polishing paste on it.
2. Rotate the POWER control knob to the **MINIMUM** setting in the Prophy Range.
3. Depress the Footswitch and the rubber cup will begin to rotate. The speed may be adjusted to your desired level by readjusting the POWER control.
4. To keep the paste from flying off the cup, bring the cup up to the teeth before pressing the Footswitch. Maintain a low speed.

IMPORTANT: The Prophy Angle is only rated for speeds up to 5000 RPM - therefore, in order to prevent premature failure of the angle keep the Unit set in the Prophy range whenever the Prophy Angle is attached to the Straight Handpiece.

5. High-speed settings will throw the polishing paste off of the rubber cup. Always start with a low speed and then adjust to a higher speed as required.
6. Place the end of the angle into the patients' mouth and gently apply the rubber cup to the surface of the teeth with a circular motion. Do not allow the rubber cup to remain stationary on one area for an extended period of time. The friction will overheat the teeth and cause burns.

POLISHER MAINTENANCE: PROPHY ANGLE

The Prophy Angle is a precision engineered dental device. All of the gears and shaft assemblies are made of high-grade stainless steel, which if cleaned and lubricate correctly will provide long, trouble-free service.

Daily Cleaning and Lubrication:

1. Remove Prophy angle from Straight Handpiece.
2. Discard used rubber cup.
3. Follow the cleaning instructions that were supplied with the Prophy Angle.
4. Place a new rubber cup onto the angle after each patient.

IMPORTANT: For a long dependable life, the Prophy Angle should be lubricated daily, if possible after each use. Keep hair away from Prophy cup and head cap.

SUGGESTION: To keep hair from being tangled in the angle, we recommend using a gentle adhesive tape such as masking tape around the lips, keeping hair in place away from treatment area.

This unit is shipped with

STRAIGHT HANDPIECE MAINTENANCE

LUBRICATION

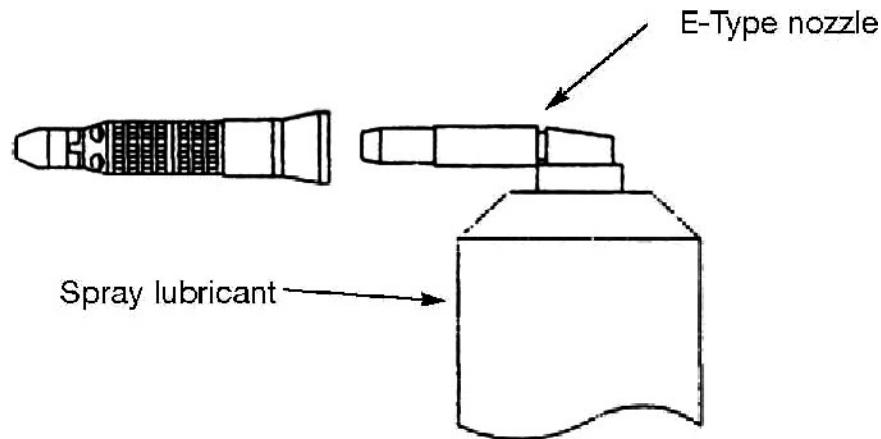
The spray nozzle oiling method is optional but highly recommended because it cleans as well as lubricates. The alternate method is to place 1 – 3 drops of approved oil in the chuck hole. Do not lubricate the Handpiece while it is on the Micromotor.

Lubrication of the Straight Handpiece is required at least once a week.

LUBRICATION BY SPRAY LUBRICANT

1. The Straight Handpiece (center ring) must be unlocked prior to lubricating.
2. To lubricate, insert the E-Type nozzle from the spray can into the bottom of the Handpiece. Holding the two together tightly, with can in the upright position, push spray button for 2 to 3 seconds.

NOTE: If spray time is too short oil may not be propelled into all areas of the Handpiece.



Cleaning and sterilization of the Straight Handpiece.

CLEANING

1. Wipe the Handpiece clean with an alcohol-soaked soft tissue.
2. Never clean the Handpiece with boiling water, chemical solutions, ultrasonic cleaner, or with wire brushes.

STERILIZATION

1. Autoclaving is recommended for the Engler Straight Handpiece.
2. Clean the Handpiece as described above.
3. Lubricate the Handpiece as described above .
4. Place the in an autoclave pouch and seal it in accordance with the instructions on the pouch.
5. Autoclave the Handpiece for no longer than 20 minutes at 121 C (250 F), or 15 min. at 132 C (270 F). Finish the autoclave cycle and remove from pouch. Keep the Straight Handpiece away from water vapor or mist that may settle and cause premature damage to the bearings.

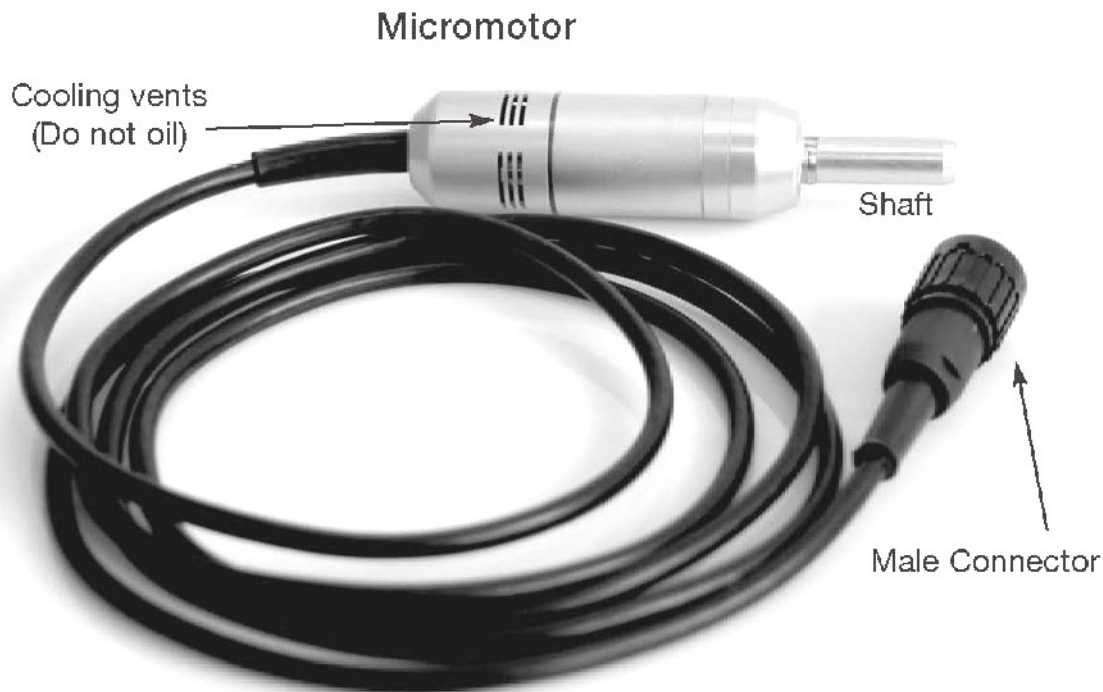
IMPORTANT: DO NOT UNDER ANY CIRCUMSTANCE, attempt to repair, disassemble or unscrew the Straight Handpiece. Doing so may shift the internal springs, causing permanent damage to the Unit and will void the warranty. If you experience problems during operation, call our repair department.

MICROMOTOR MAINTENANCE

The Micromotor is capable of speeds up to 35,000 RPM for use in cutting, sectioning and drilling. It contains sealed bearings and **does not require any lubrication**. The Micromotor has cooling vents. Do not allow water, oil, or any other substance to enter these vents. Failure to keep debris out of the Micromotor will shorten the life of the Unit and cause permanent damage.

IMPORTANT:

1. NEVER change the direction of the Micromotor while it is in operation. ALWAYS wait until it has come to a full stop.
2. NEVER oil, or allow oil to get into the Micromotor.



ELECTROSURGERY TROUBLESHOOTING

THE ELETROSURGERY TIP WILL NOT OPERATE

1. 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 Electrosurge to work properly. (See page 8)
2. The selector switch in the front of the Unit must be set to Electrosurgery.
3. The Unit is not plugged in to a power outlet: verify that the Unit is plugged in.
4. Power outlet not active: try another outlet.
5. The power cord is not connected to the device.
6. Call Engler for troubleshooting help, 800-445-8581

SCALER TROUBLESHOOTING

“ON” LED INDICATOR DOES NOT ILLUMINATE

1. The Unit is not plugged in to a power outlet: verify that the Unit is plugged in.
2. Power outlet not active: try another outlet.
3. The power cord is not connected to the device.
4. Contact Engler Engineering Corporation.

“ON” LED INDICATOR ILLUMINATES, NO WATER FLOW

1. Verify that the selector switch is in Scaling Mode.
2. Verify water line is connected and water is flowing to Unit.
3. Verify that the waterline is correctly connected to the coupling insert at the back of the Unit.
4. Check if water line is kinked or twisted.
5. Check Water Filter and Disk: clean Disk with plain water and a toothbrush. If clogged, replace O-ring and Disc.
6. If using Portable Water Tank: Verify you have the correct water level and sufficient pressure.
7. Water blockage in Tip: replace the Tip. (Clean with # 3 (0.012”) piano wire)
8. Contact Engler Engineering Corporation.

“ON” LED INDICATOR ILLUMINATES, LITTLE OR NO VIBRATION / CAVITATION AT THE TIP

1. Tip loose: tighten the Tip.
2. Tip damaged: replace the Tip.
3. Old or damaged Stack: replace the Stack.
4. Contact Engler Engineering Corporation.

HOT WATER COMING OUT OF SCALING HANDPIECE

The Stack requires a constant flow of cool water in order to maintain Tip temperature below 100 degrees F. You may correct the problem by:

1. Adjusting water control knob higher (counter clockwise).
2. Tip clogged. Replace Tip.
3. Check and / or replace O-ring and Inline Filter Disc.
4. Water restriction in Unit: contact Engler's repair department.
5. If using a Portable Water Bottle, check water level then pump to pressurize the bottle.

INTERMITTENT OPERATION

I Tip vibrates / cavitates and then stops:

1. Tip loose: tighten Tip.
2. Foot switch damaged: Contact Engler Engineering Corporation.
3. Handpiece / Cable damaged: Contact Engler Engineering Corporation.

II Tip action ceases abruptly during operating procedure.

1. Tip not tightened: tighten Tip.
2. Transducer broken: replace.
3. Handpiece / Footswitch / Cable damaged: Contact Engler Engineering Corporation.

POLISHER TROUBLESHOOTING

NO POWER

“ON” LED INDICATOR DOES NOT ILLUMINATE

1. Verify that the unit is switched ON, the ON / OFF switch is located on the right side of the unit.
2. The unit is not plugged in to a power outlet: verify that the unit is plugged in.
3. Power Outlet not active: try another outlet.
4. Contact Engler.

“ON” LED INDICATOR LIGHTS UP POLISHER NOT FUNCTIONING

1. Switch Unit to Polisher Mode.
2. Micromotor not plugged in: Plug Micromotor in.
3. Short in Micromotor or its Cable: Contact Engler for instructions.

HOT STRAIGHT HANDPIECE

1. Straight Handpiece not lubricated properly: Lubricate as shown on page 17.
2. Bearings in Straight Handpiece are becoming worn, causing drag. Contact Engler.

HOT MICROMOTOR

1. Straight Handpiece causing drag, lubricate Straight Handpiece correctly or replace Straight Handpiece.
Never oil Micromotor.
2. Worn brushes in Micromotor, Contact Engler.
3. Oil inside Micromotor, return to Engler for repair.

INTERMITTENT OPERATION

Unit polishes and then stops

1. Damaged Micromotor Cable: contact Engler for replacement.
2. Damaged Footswitch: contact Engler for replacement.

STRAIGHT HANDPIECE ROTATES ON THE MICROMOTOR

1. Straight Handpiece center ring not properly locked.
2. Prophylaxis Angle gears worn.
3. Hair may be enmeshed in the gears of the Prophylaxis Angle, Disassemble and clean Prophylaxis Angle according to Prophylaxis Angle cleaning and maintenance instructions (next page).
4. Straight Handpiece or Prophylaxis Angle not properly lubricated.

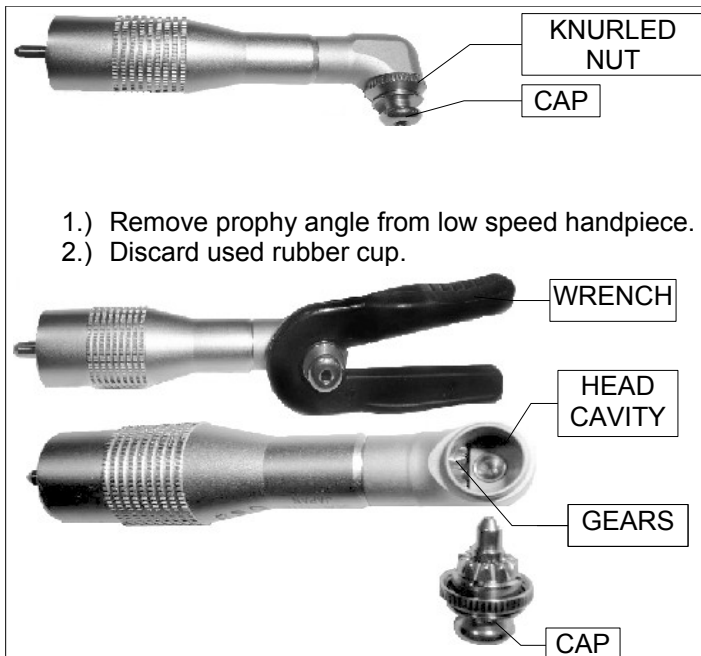
MISCELLANEOUS

5. Micromotor speed not adjustable (runs at one speed): Return the complete Tri - Mate with Micromotor to Engler.
6. If the Prophylaxis cup unscrews, (“flies off”) the Prophylaxis Angle: Micromotor is rotating in the wrong direction, change direction by rotating the selector on the front of the Unit to the opposite direction.

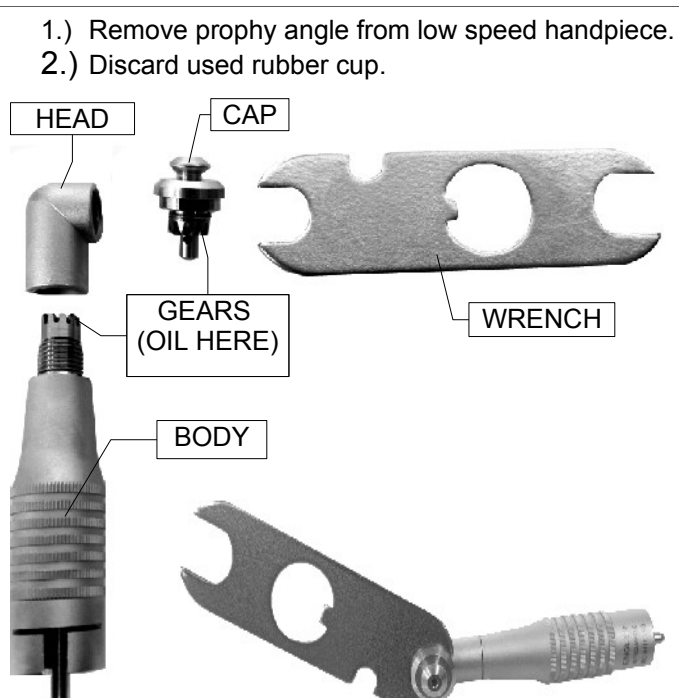
PROPHY ANGLE CLEANING AND MAINTENANCE INSTRUCTIONS

The Propphy 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 Propphy Angles at least every 3 to 4 months depending on use. Propphy Angles may vary. Use the following instructions accordingly.

DAILY CLEANING AND LUBRICATION



- 1.) Remove propphy 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 on the gears of the head cap and a drop inside the gear cavity.
- 8.) Being careful not to cross-thread, reassemble the propphy 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.
- 9.) Slide the propphy angle onto the handpiece and lock the handpiece.

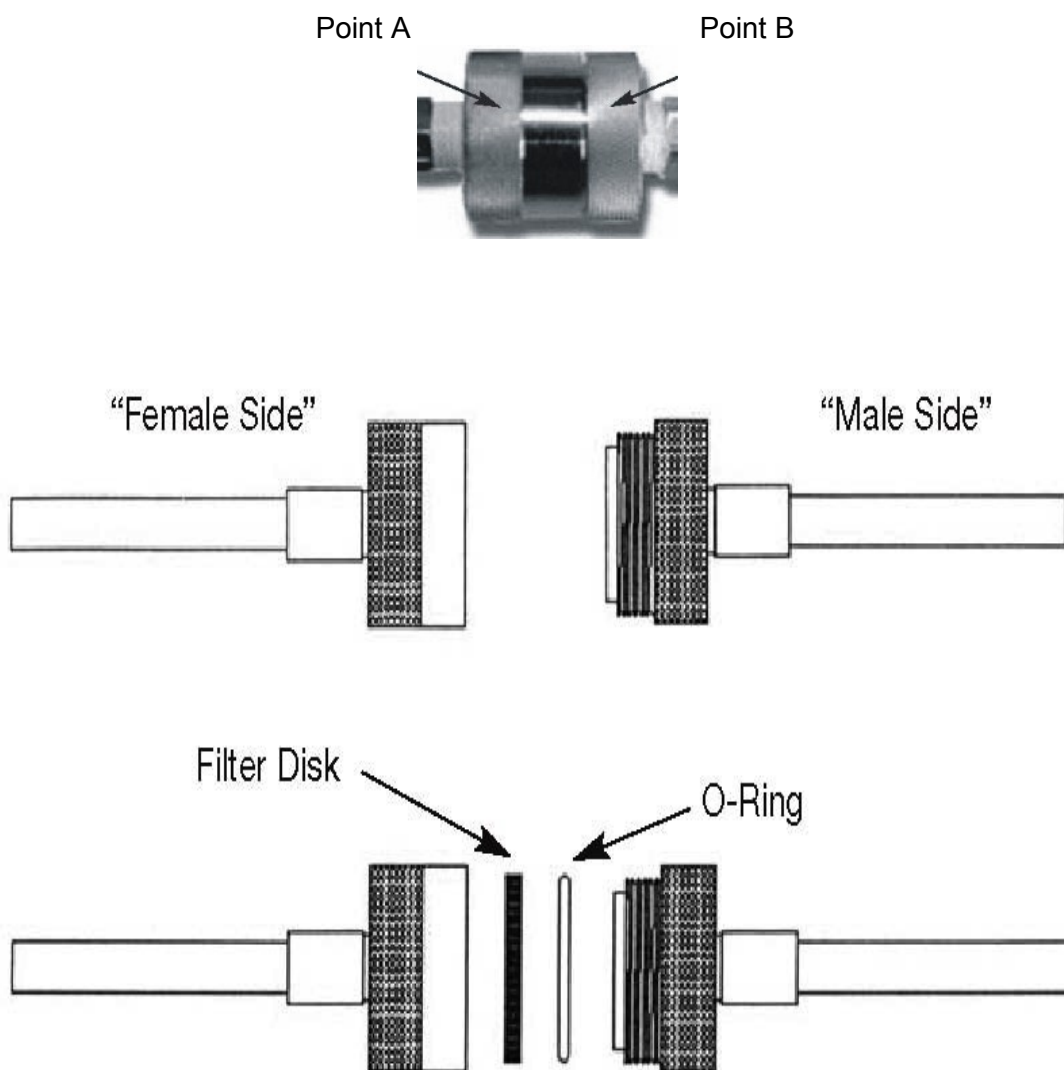


- 1.) Remove propphy angle from low speed handpiece.
- 2.) Discard used rubber cup.
- 3.) Use the wrench to remove the cap from the head.
- 4.) Turn **clockwise** to unscrew the head (top portion) from the body (bottom portion).
- 5.) Place the cap, head and body into a bowl of hot soapy water.
- 6.) 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 dryer to thoroughly dry the angle.
- 8.) Lubricate by placing one drop of mineral oil on each gear (see diagram).
- 9.) Being careful not to cross-thread, reassemble the propphy 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 propphy angle onto the handpiece and lock the handpiece.

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 pieces.
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. Next, remove the filter disc by turning the female side over and tapping it gently into the palm of your hand.
6. Replace with new disc and O-ring part # A52034.
7. Reassemble the filter in the reverse order as you disassembled it.
8. Turn on the water supply and check for leaks.



SADDLE VALVE ASSEMBLY



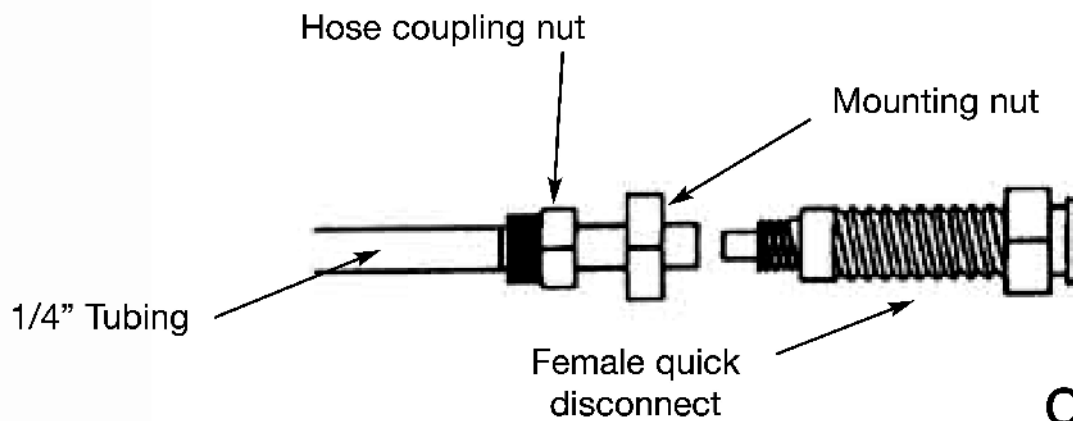
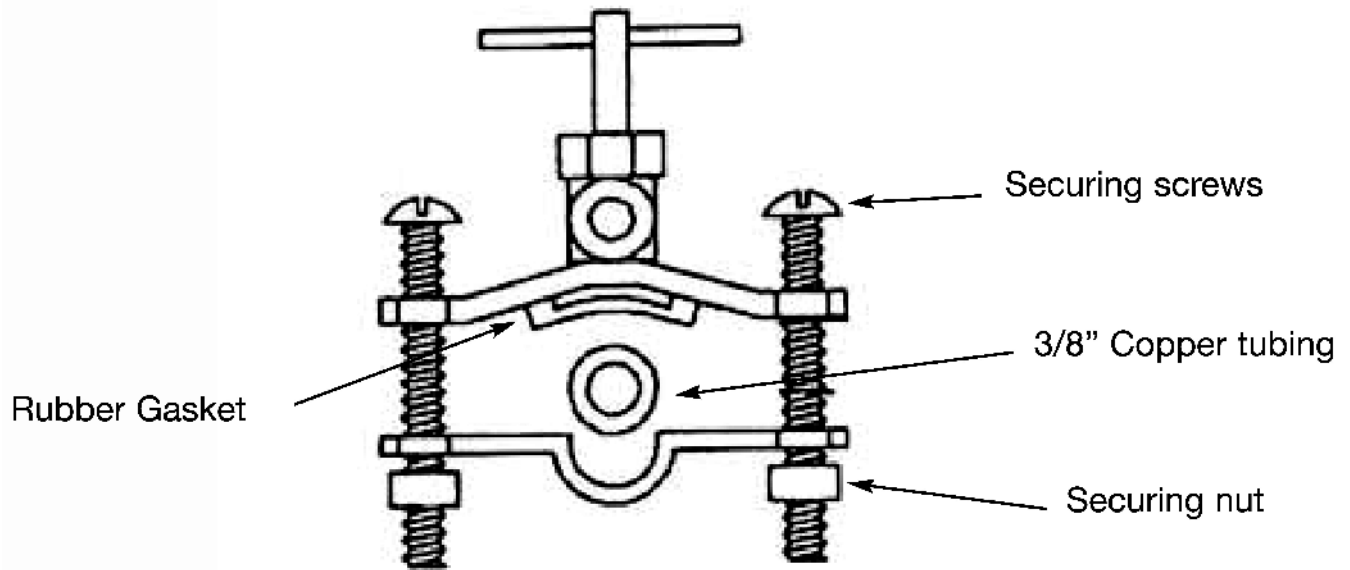
Installation Instructions

1. 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.

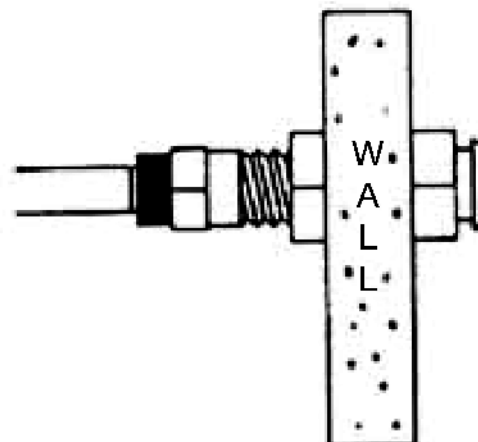
2. To mount the Female Quick Disconnect, there are two options.

Option "A" (Unmounted Assy.)



Option A

Option B



Option “A” (Unmounted Assy.)

Connect the Saddle Valve to the copper cold water line, leave the other end (with the Female Quick Disconnect) free (unmounted). Tuck under the sink or cabinet when not in use.

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. (#A44303 Saddle valve assembly w/female connector & tubing)

Option “B” (Mounted Assy.)

The Female Quick Disconnect may be mounted directly through the sink top, counter top or through a wall.. 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.

Connect the water line to the dental Unit.

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.

ATTENTION:

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 strongly 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 water line from Scaler into Female Quick Disconnect provided on tank.

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.

WATER TANK CARE & MAINTENANCE

1. Release air pressure by pulling and turning knob of pressure relief valve or unscrew the pump / cap assy. Pull out fully and allow air to escape.
2. Loosen cap slowly. Remove pump & cap assembly. Pour out any remaining liquid & rinse all parts thoroughly with clean water.
3. Always store tank empty and with tank cap loose.

TROUBLESHOOTING:

PROBLEM: TANK FAILS TO PRESSURIZE

1. Be sure cap is tight.
2. Check to see if pressure relief valve (if supplied) is in safety position.
3. Remove the pump from the tank. Turn pump handle counterclockwise and lift handle to unlock. On top of the pump cap, locate the "oil here" port. Place 3-5 drops of mineral oil into the port. 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.
4. 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 pump before each use.

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 (if supplied) 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 PREVENT 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.

ELECTRO-SON ELECTRODE / HANDPIECE AUTOCLAVE INSTRUCTIONS

The Electro – son is available with disposable and / or autoclavable handpieces. Disposable handpieces should be discarded after one use. Disposable handpieces cannot be sterilized using steam as outlined below.

The following are general infection control guidelines;

Standard personal protection is always recommended when performing medical or dental procedures. Gloves, face shields / masks, eye protection, and gowns are all strongly suggested.

DO NOT sterilize using dry heat, low temperature plasma, gas, radiation, or ethylene oxide, etc.

Always sterilize electrodes and handpiece after each patient

Electrodes

Read the manufacturers recommendations for safe handling of used electrodes. Save all packaging / manufacturers instructions for future reference.

Prevent the spread of germs, bacteria, disease, and cross contamination. Disposable electrodes should be discarded after each use.

To sterilize autoclavable electrodes, using a mild detergent, rinse / wipe debris, blood, and saliva from the electrode, dry thoroughly.

Following manufacturers recommendation, place electrode(s) in a bag and steam autoclave at 275F / 135C for three minutes. Allow to dry before use

Handpiece

Remove electrode from the handpiece, follow above recommendations.

Wipe handpiece with disinfectant or antiseptic soap and water, dry thoroughly.

Follow autoclave manufacturers recommendation, place handpiece in bag, steam autoclave at 275F / 135C for 3 minutes. Allow to dry before use.

Use only steam autoclave for electrodes and handpiece.

Always follow manufacturers recommendation when using chemical disinfectants. Do not allow chemicals to remain on surfaces as damage may result

Do not allow handpiece / cable to become submerged in either water or disinfectant as damage may result.

OPTIONAL TRI - MATE ACCESSORIES



P-MF

P-MF Maintenance Free Propy angle



P-106

P-106 Screw On Rubber Cups 144/pkt

CARE FOR YOUR MAINTENANCE FREE PROPHY ANGLE / STERILIZATION PROCEDURES

After each Propy

1. Discard used rubber cup.
2. Rinse abrasive paste from head area with water.
3. Thoroughly clean the outside of angle with disinfectant.
4. Autoclave angle - not more than 275 °F (135 °C) over 20 minutes.
5. After sterilization cycle is complete, install a new disposable rubber cup and attach angle to Handpiece. The angle is ready for the next procedure.

CAUTIONS AND WARNINGS

1. Do not attempt to disassemble.
2. DO NOT SUBMERGE IN LIQUIDS, including Ultrasonic solutions.
3. Do not heat over 275 °F (135 °C).
4. Use only Engler Care Free Propy Rubber Cups. Other brands will not properly seal the angle, causing premature wear and voiding the warranty.
5. Replace as necessary.

YOUR CARE-FREE 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.

WARRANTY IS VOID IF

1. Engler Care-Free rubber cups are not used exclusively.
2. Sterilization procedure is not followed properly.
3. The angle has been submerged in any liquid.
4. The angle has been damaged or abused.
5. Damaged due to use at high speed.



P112 Polishing paste (8 oz. jar)



P-105 Snap on rubber cups 144/pkt
P-110 polishing paste (200 cups)



Optional Oiling Accessory
Spray lubricant with E-type nozzle
for all Engler Polisher Straight Handpieces
NET WT. 8.8OZ (249.48 GRAMS)

If you have any questions or concerns, please contact us.
ENGLER ENGINEERING CORP
800-445-8581

To contact us via E-Mail please use:
info@englerusa.com

To help troubleshoot problems, download manuals and see our products,
Visit us at:
www.engler411.com

TECHNICAL DATA

SCALER:

Input power: 120VAC @ 1.2A or 240 VAC@ 0.6 A (set when purchased)

Input Frequency: 60 or 50Hz.

Transducer Style: Magnetostrictive
Operating frequency: 17,800 -18,300 Hz

Ultrasonic Generator: Auto-Tuned
Variable Amplitude Power Control

WATER:

Input Pressure: 30 PSI (min.) 60 PSI (max)

POLISHER:

Power Control: Variable Voltage Style
Output Voltage: 3 - 30 VDC
Output Current: 2.3 Amps (max)

MICROMOTOR:

RPM Range: 500 - 35,000 RPM
Style: Sealed Bearing "E" type
Brush Design: Fully Replaceable

STRAIGHT HANDPIECE:

Maximum Drive Velocity: 30,000 RPM
Style: Sealed Bearing "E" type

PROPHY ANGLE:

Max. Recommended RPM: 3,000 - 5,000 RPM
Type: Sealed Bearing / Open Bushing

ELECTROSURGERY:

Type: Monopolar operation only
Frequency: 0.8-1.2 MHz. Approximate
Voltage: 60 – 1000 VAC

DIMENSIONS

NET WEIGHT: 10 Lbs. (4.5 Kg.)

CHASSIS DIMMESION:
Length: 12.5 in. (32 cm)
Width: 8.25 in. (21 cm)
Height: 3.10 in. (8 cm)

CABLE LENGTH:
Handpiece: 96 in. (244 cm)
Foot switch: 96 in. (244 cm)
Power Cord: 72 in. (183 cm)
Water Line: 96 in. (244 cm)

WEIGHT:
Net: 10 Lbs. (4.5 Kg.)
Shipping: 12 Lbs. (5.5 Kg.)



Web: www.englerusa.com / Email: info@englerusa.com
www.dynaxusa.com, www.ez-stretcher.com for brochures, manuals
and "how to" pages please visit www.engler411.com

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