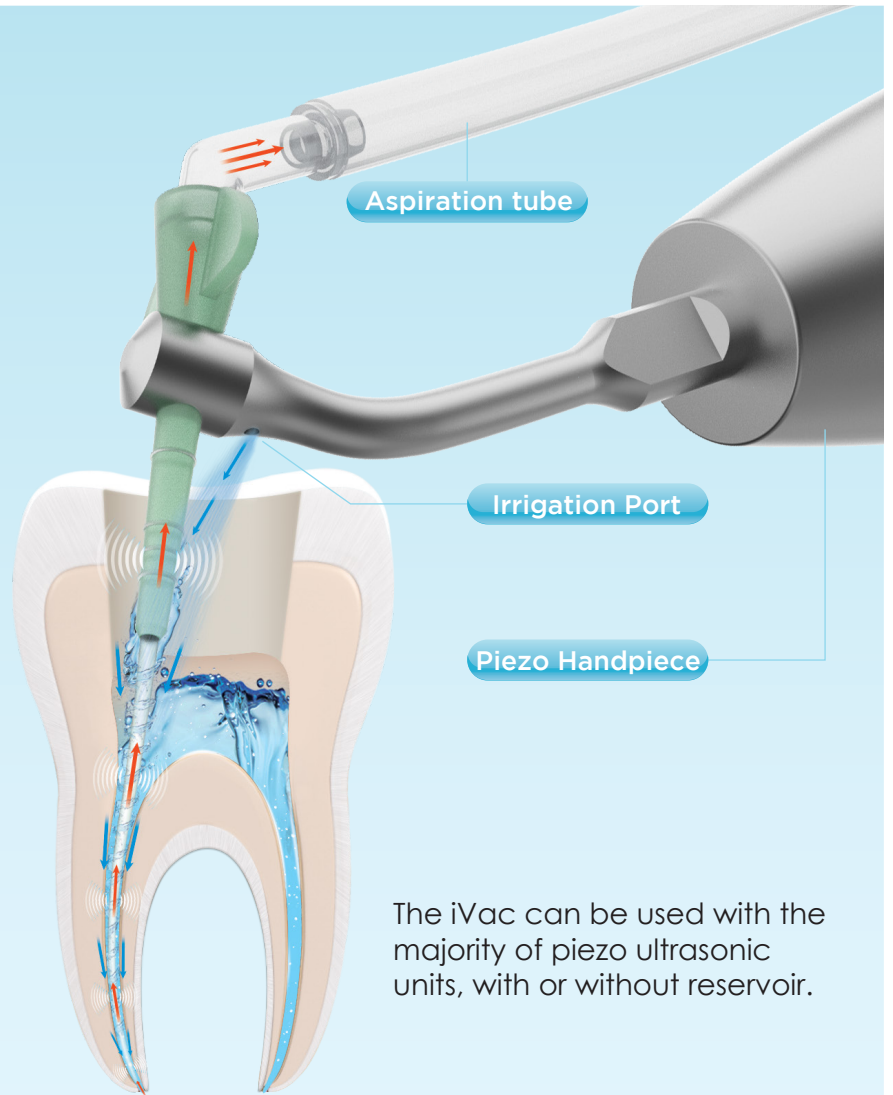




Apical Negative Pressure Irrigation and Activation System **Step-by-Step**



The iVac can be used with the majority of piezo ultrasonic units, with or without reservoir.

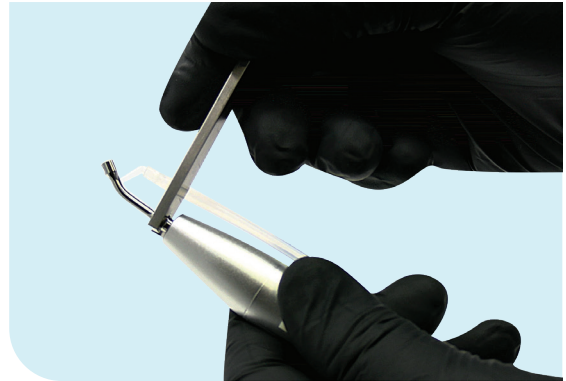


i IMPORTANT:

The iVac system can be used during and right after the instrumentation phase. During the instrumentation phase, the iVac 50 yellow tip is recommended. Before obturation, the iVac green 35 tip can be used after preparation with a final diameter of 25 .06, 30 .04, 35 .04, or larger. Preparations over 50 will allow the use of the iVac yellow 50.

Set up the iVac and the ultrasonic unit

1. Identify the type of ultrasonic unit (S or E-type) and install the corresponding connector. Start screwing it with your fingers in a clockwise motion. With a flat wrench, finish screwing with light pressure.



i IMPORTANT:

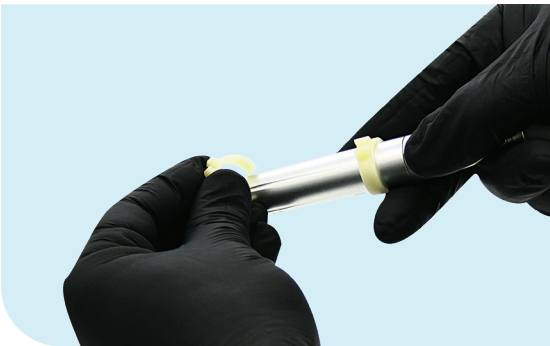
Consult your piezo ultrasonic device's instruction manual to set up operating parameters in endodontic mode (E), twenty or higher percent power (amplitude of vibration), reservoir/bottle irrigation, or no-irrigation mode.

In case a piezo ultrasonic device is used with a reservoir/bottle for concomitant irrigation:

- A. Fill the tank/bottle with distilled water.
- B. Turn on the device. Choose the E frequency. Ensure the equipment is set to the reservoir option. Choose power 2 or twenty percent of the maximum capacity.
- C. **Irrigant volume test:** using a disposable plastic cup or container, press the pedal and determine the desired volume of irrigation using the fluid volume control knob. Select the minimal irrigant volume possible.
- D. **Power test:** Increases the power until a mist at the top of the connector head is noticed. Stop increasing the power and return to the previous value or until the mist disappears.

Installing the iVac

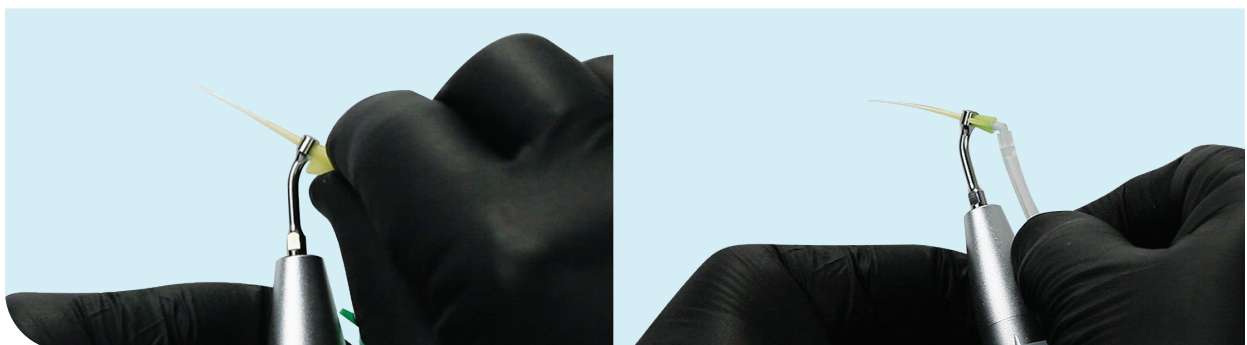
2. Install the rings on the handpiece. Place one of the rings on the outer face of the handpiece. Position the second ring leaving a space between them.



3. Pick up one short tube and install it by connecting it to the ring slots. Leave the elbow connector at the handpiece's tip end.



4. Choose the iVac tip based on the final diameter preparation [35 (green) and 50 (yellow)]. The iVac tip is a self-screwing type of device. Insert the tip into the connector threads space, and with light pressure, screw the tip all the way. After installing, insert the elbow connector tightly to the iVac tip.

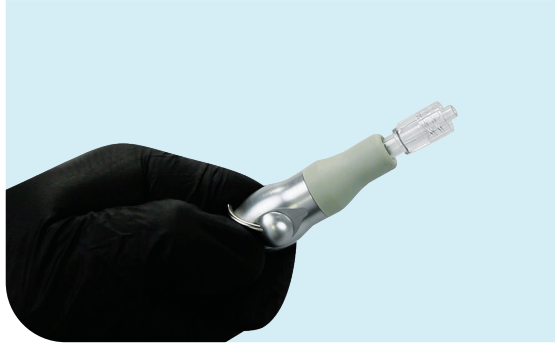


i IMPORTANT:

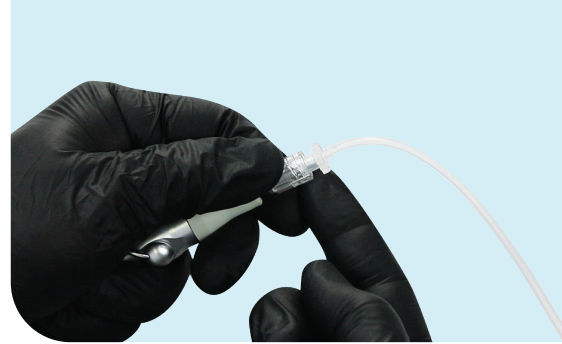
For a better vibration transmission, ensure to screw the iVac tip to the end of the threads, realizing that the base of the tip head touches the connector flat. When removing, inspect the connector internally, and certify no polymer chips between the threads.



5. Take the long tube. Pick up the end with a male connector. Connect the male connector to the short-tube female connector. Next, install the low vac adaptor on the low vacuum terminal outlet. Finally, connect the other end of the long tube (female connector) to the adaptor.



6. install the high vac adaptor on the high vac terminal for additional suction at the pulp chamber level. Connect the angled capillary tip to the high vac adaptor.



i IMPORTANT:

- A. If the operator finds the tube too long, remove one of the connectors, trim the tube to the desired length, and reinstall the connector.
- B. Typically, the irrigation volume exceeds the iVac 35 tip aspiration capacity. Use the angled capillary tip connected to the high vac connector to evacuate the excess liquid.



In case a piezo ultrasonic device is used with a reservoir/bottle for concomitant irrigation:

- A. Install the high vac adaptor on the high vac terminal for additional suction at the pulp chamber level. Then, connect the angled capillary tip to the high vac adaptor.

In case a piezo ultrasonic device is used without a reservoir/bottle for concomitant irrigation (syringe and cannula must be used for irrigation):

- A. Connect one angled capillary tip to a 10cc syringe (not included) filled with the preferred solution (sodium hypochlorite, EDTA or distilled water). Next, install the high vac adaptor on the high vac terminal for additional suction at the pulp chamber level. Finally, connect another angled capillary tip (or another suction tip of your choice) to the high vac adaptor.
- B. Perform **irrigation at the pulp chamber level**, controlling the pressure to avoid liquid overflow.

i IMPORTANT:

For feasible concomitant irrigation with the iVac, the pulp chamber must act as a tank to receive the irrigating fluid from the exit port at the connector or even from a syringe and cannula manual irrigation. If the crown is compromised, create a temporary crown using a composite restorative material.

6. Mark the working length using a fine permanent marker or the depth marks (18, 19, 20, and 23 mm).
7. Fill the reservoir with the irrigant fluid of preference.
8. Insert the iVac tip up to the working length. If resistance is encountered, withdraw 0.5 mm to free the tip.
9. Turn it on by pressing the pedal. Ensure irrigant flows from the connector port, in case of using the reservoir, or from the cannula, in instances of syringe and cannula irrigation. The iVac tip needs to operate under irrigation.

i IMPORTANT:

Activating the iVac tip during the clinical procedure should always be done **with irrigation and with the iVac tip positioned inside the canal**, at the middle third level, or beyond.

10. Use the angled capillary tip attached to a 10cc syringe filled with the chosen irrigating fluid. Deliver irrigation at the pulp chamber level controlling the pressure to avoid liquid overflow.

i IMPORTANT:

Gripping the syringe plunger with the palm of the hand rather than the thumb will reduce hand fatigue.

11. For better results, the iVac tip should be stationarily positioned at the vicinities of the working length with minimal up-and-down movement.
12. The operator can use the preferred irrigation sequence/protocol since the iVac is an irrigant delivery and activation device. In case the operator wants to follow the suggested irrigation protocol, proceed as follows:

Using the reservoir	Using a syringe and cannula
A. 1 minute of NaOCl 2%	A. 5 ml NaOCl 2%
B. 1 minute of EDTA 17%	B. 5 ml of EDTA 17%
C. 1 minute of NaOCl 2%	C. 5 ml of NaOCl 2%
D. 1 minute of distilled water	D. 5 ml of distilled water



13. To dry the canal before obturation, turn off the vibration, stop irrigation, and keep the vacuum on. Use the iVac tip, vacuum at the working length for at least 3 seconds, and conclude with paper points.
14. The piezo device and iVac tubing must be purged after use. After finishing the operating session, perform the purge cycle (flush) as determined by the piezo ultrasonic unit instruction manual. Always use distilled water to complete the purge cycle. Keep the iVac connector installed to remove fluid traces.

i IMPORTANT:

Despite being relatively uncommon, the iVac tip can clog during use. The ultrasonic vibration and the tip's inner diameter help not block the cannula. However, if it clogs, disconnect the end of the short tube from the long tube. Next, connect the short tube female connector to a Luer-Lock syringe with water. Press the syringe's plunger gently until you notice that water comes out of the tip of the cannula.



- A. Failure to achieve irrigation/aspiration can occur if the iVac tip is taken past the foramen.
- B. As per Endodontic Standards of Care, **always use rubber dam isolation when performing endodontic treatment.**
- C. Although iVac can be used during the instrumentation phase, its best performance will be achieved before obturation in the final irrigation phase. If the operator desires to use it during instrumentation, the iVac 50 tip should be the best option. Use a depth length that keeps the tip free, preventing it from being blocked against the canal walls. In these cases, there will be a **high probability of clogging** due to debris.
- D. Typically, the irrigation volume exceeds the iVac 35 (green) aspiration capacity. Use the angled capillary tip connected to the high vac connector to evacuate the excess liquid.
- E. The iVac tips are made of polymer **sensitive to high temperatures**. Therefore, they **deform by melting** due to the sudden connector temperature increase when used at a high power setting without irrigation. Depending on the manufacturer or the time of use of the piezo ultrasonic handpiece/device, discrepancies in power may be noticed. In addition, some equipment may have the wrong resonance for the iVac ultrasonic connector. If there is uncertainty about the best power setting, perform a test starting with twenty percent potency before beginning the procedure. **Accomplish the test using irrigation** from the reservoir or a syringe and cannula. If distortion at the iVac tip is noticed, reduce the power until no more extended deformation is noted.

