

Micro-ultrasonics

Magnetostrictive
Piezo

Magnetostrictive

- 25 or 30 kHz options
- Elliptical motion with all sides of tip effective
 - Tip is most effective
 - Concave surface next
 - Convex surface follows
 - Sides are least effective

Piezo

- Ceramic crystals energize the scaling tip by expanding and contracting in an electrical field
- 24,000-45,000 vibration frequency (24-45 kHz)
- Linear motion with sides of the tip as most effective

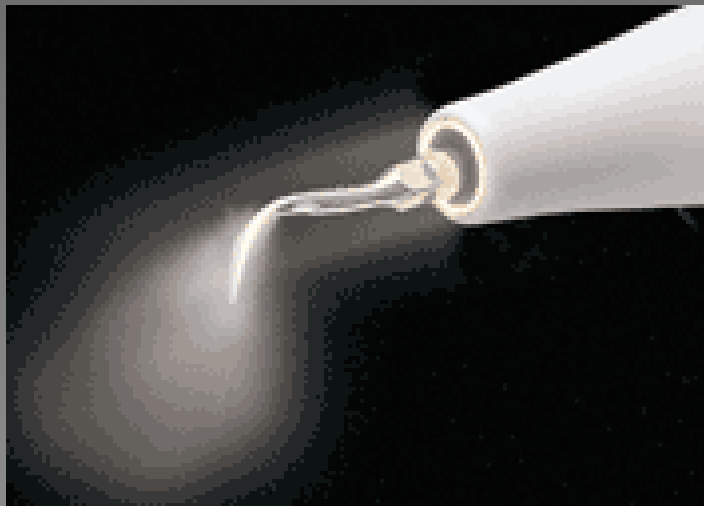
Comparison

- **Magnetostrictive**
 - Easy to change tips
 - Popular & widespread in the United States
 - More inserts are brand interchangeable
 - Less vibration, more comfort?
 - All sides of the tip are effective
 - Limited lower power may burnish calculus
- **Piezo**
 - Wider range of inserts including more bladed tips
 - May need wrench for inserts
 - Produce less heat
 - More vibration, more power?
 - Does not affect pacemakers
 - Can take thinner tips to higher power
 - Only lateral sides are effective

Satelec Piezoelectric



NSK Varios 350 Brasseler




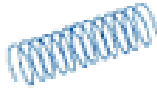


Optic handpiece illuminates work area



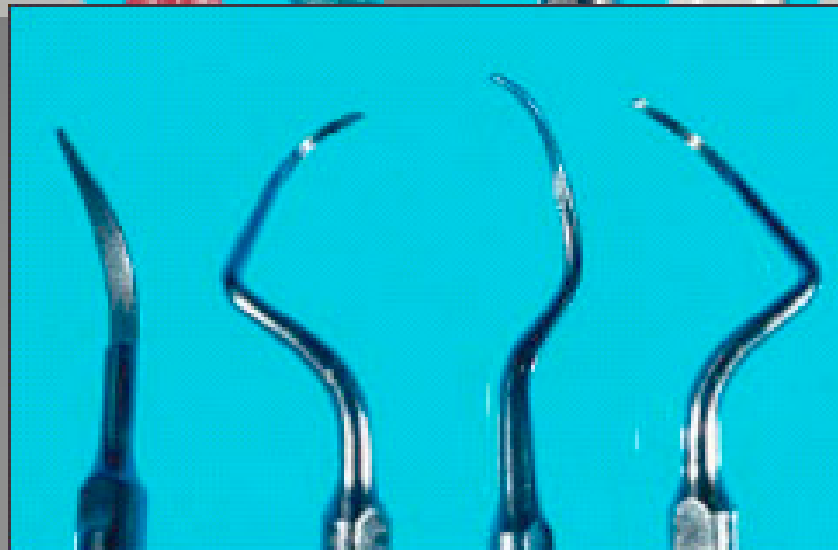
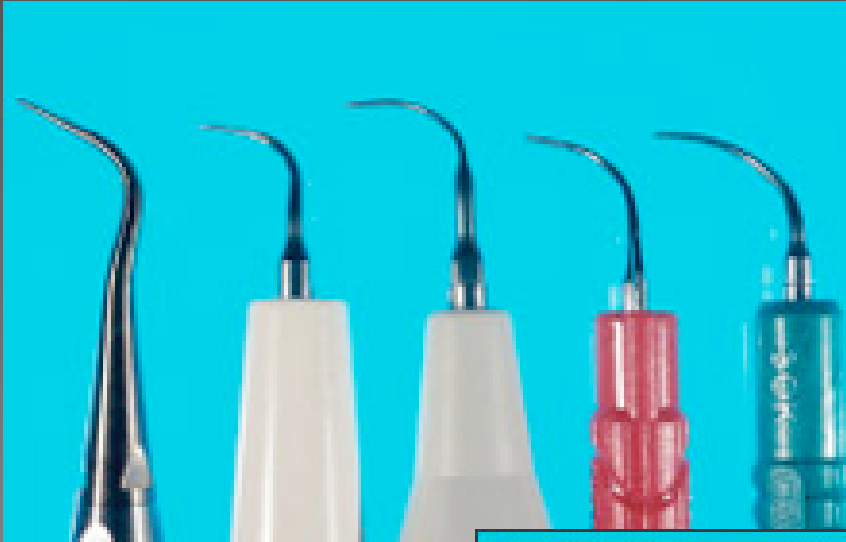
Hu-Friedy Symmetry IQ



Ultrasonic comparison

	Magnetostrictive	Piezoelectric	Sonic
Optimal Frequency	20-42 kHz	29-50 kHz 	2,5000 to 7,000 cycles per second
Transducer (converts energy to vibration)	Metal rod or stack of metal sheets	Ceramic	Driven by compressed air
Stroke Pattern	Elliptical 	Linear 	Elliptical or Orbital 
Power Dispersion on Tip	All surfaces active	Lateral surfaces more active	All surfaces active

Ultrasonic tips



Implant Ultrasonic Tips



Ultra-thin Ultrasonic tips

