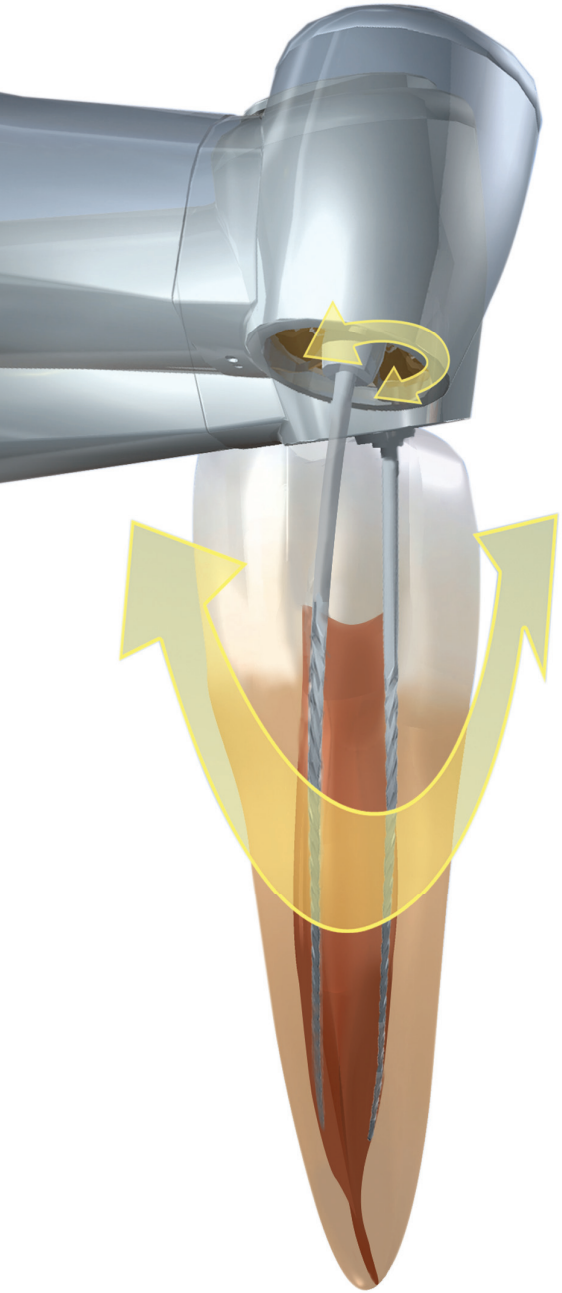
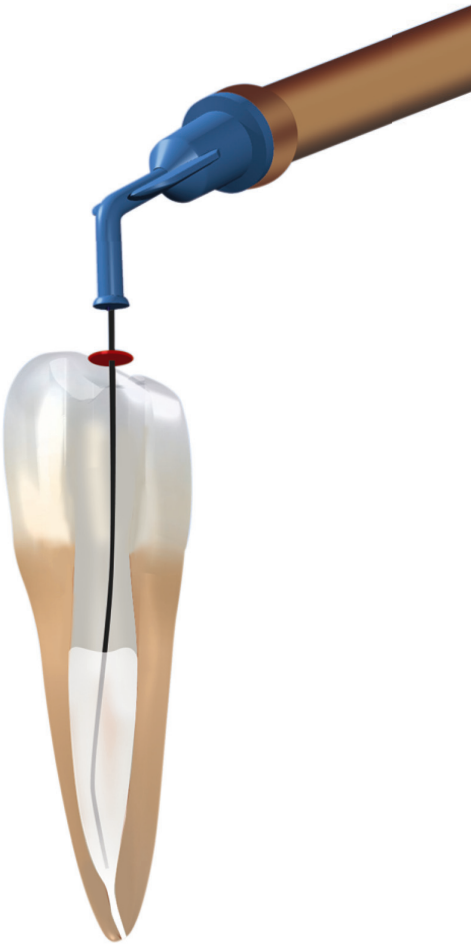
ENDO-EZE® AET™
endodontic system

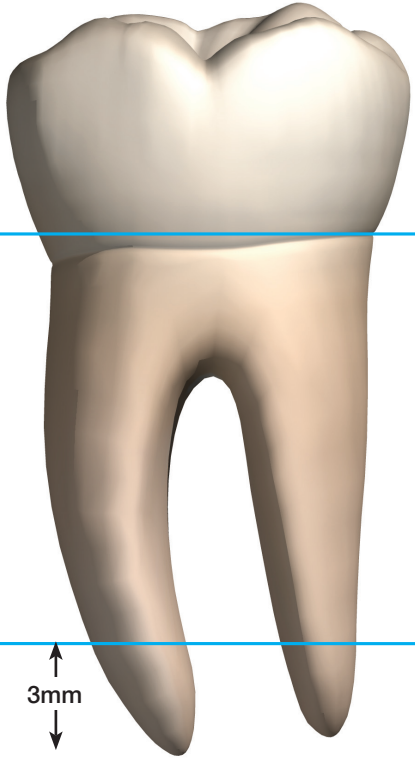
Illustrated Technique Guide





ULTRADENT PRODUCTS, INC.

AET at a Glance



I. Coronal “Third” Access



Riitano Access Bur Kit



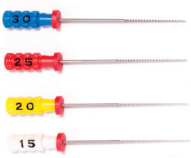
II. “Middle Third”

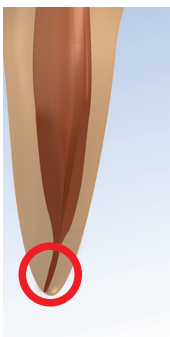
1.
2.
3.





I. “Apical Third” 3mm





Precautions:

Do not force files. Gently work shaping files toward apex with handpiece.
Discard files if tips become overly bent.
Discard files after patient treatment is complete.
Study individual instructions and precautions for each chemical used, including EndoREZ ®.

Endo-Ezé® System:

AET - Anatomic Endodontic Technology:

"Listen to the Needs of the Tooth"

Perception



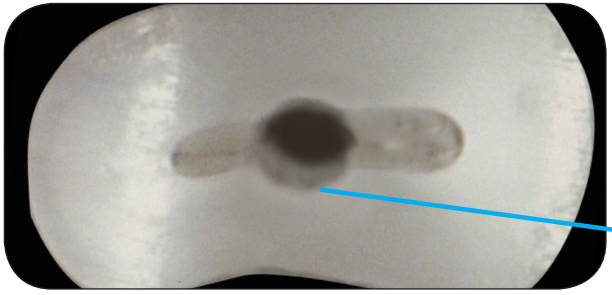
The buccal view (clinical radiograph view) of the canal leads one to believe it is round in cross-section throughout its length.

Reality



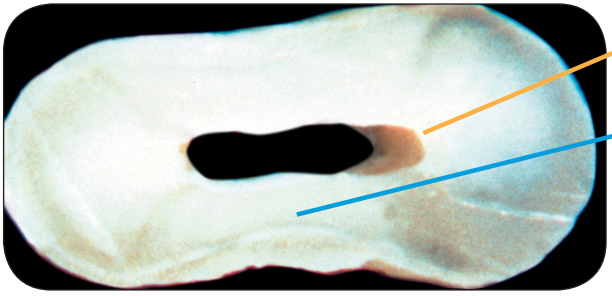
The same root rotated 90° and viewed from the mesial aspect shows most of the canal is not round in cross-section. This anatomical reality demonstrates the need for a system that treats the complete canal, thus listening to the needs of the tooth.

Rotary Type Preparation



Rotary instruments do not clean and shape the entire canal. Tooth structure can be unnecessarily removed even to the point of compromising the integrity of the tooth.

AET Reciprocating Preparation



- Less invasive
- Addresses all canal walls more evenly

AET cleans and shapes canals using the canal anatomy as a guide, hence preserving tooth structure.

Anatomical realities/foundations which guide AET cleaning and shaping:

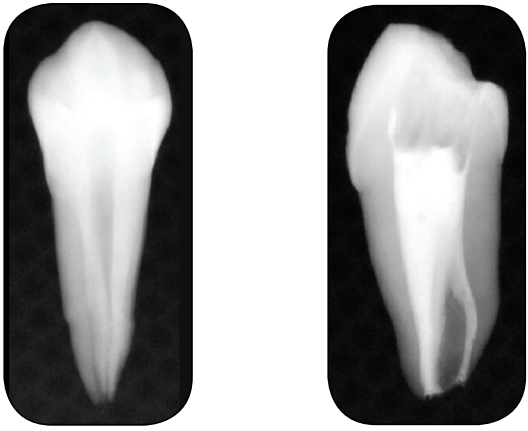
1 - Most teeth have canals with elliptical or even flat, ribbon shaped cross-sections in the "Middle Third." The greatest width runs buccolingually for lower teeth and bicuspids. It runs mesiodistally for palatal roots of upper first molar and upper centrals.

2 - The "Apical Third" is almost always close to round in cross section and approximately 3mm in length.

3 - The apical constriction is seldom larger than a #20 file.

Beginning Perception

Finished Reality



One gutta percha and EndoREZ

Treatment, Xrays and photo courtesy of Dr. Fred Barnett, Assoc. Prof., Albert Einstein Medical Center, Philadelphia

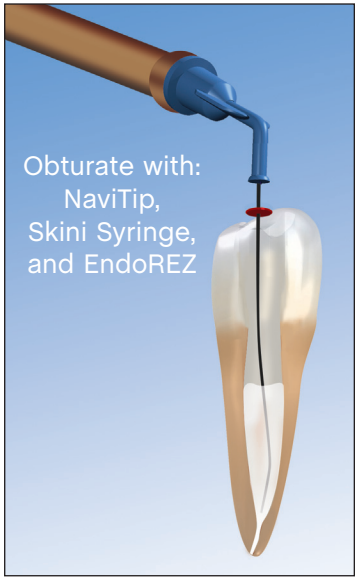
EndoREZ®:

Hydrophilic Sealant/Filler.

Actually has an AFFINITY for moist dentin!

Listens to the Requirements Necessary for Quality Obturation:

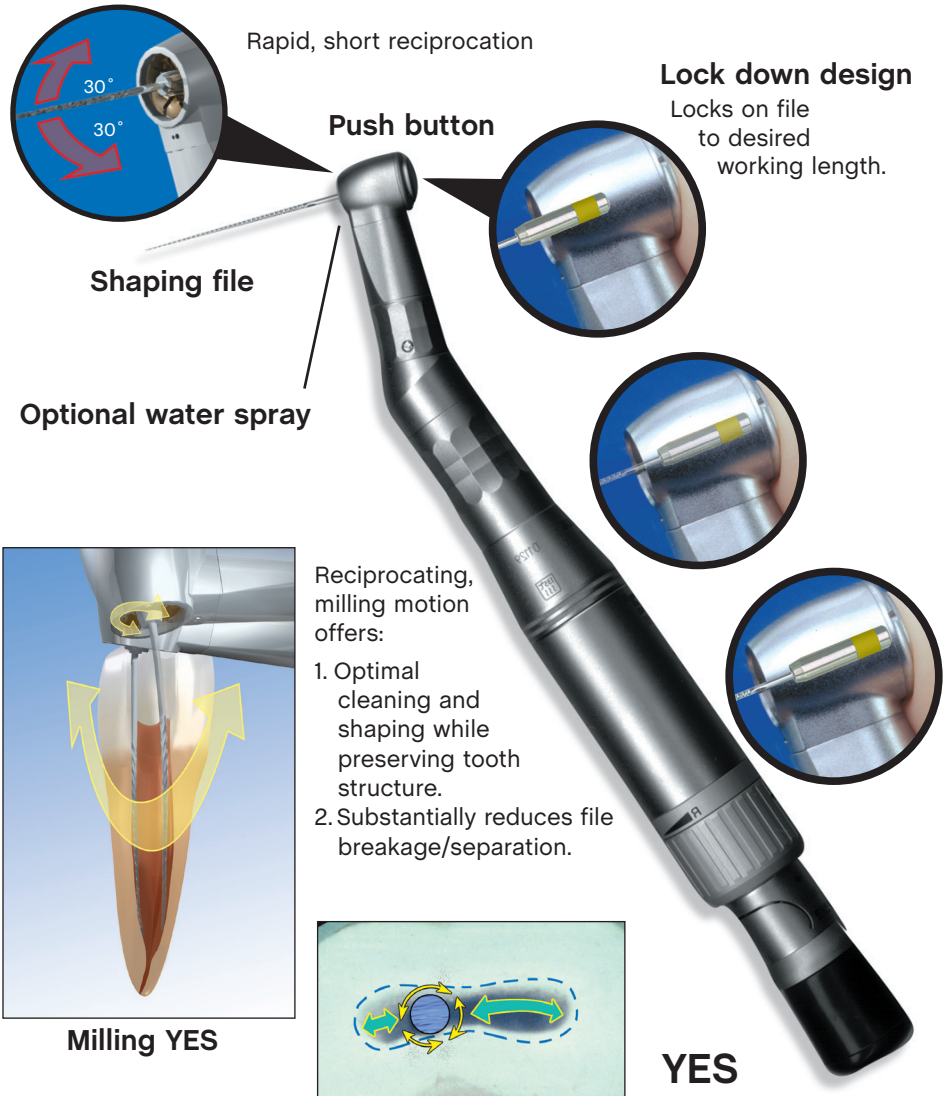
- Hydrophilic
- Highly radiopaque
- Biocompatible



Endo-Eze® Handpiece

30° reciprocation preserves tooth structure and prevents file breakage!

Significantly less aggressive than a rotary "screw type" motion, plus it facilitates uniform instrumentation of all the walls of the canal.



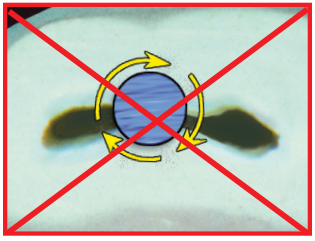
Milling YES

Reciprocating, milling motion offers:

1. Optimal cleaning and shaping while preserving tooth structure.
2. Substantially reduces file breakage/separation.

YES

Drilling/Screwing NO



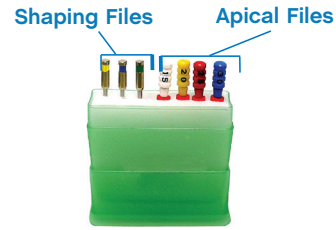
NO

Endo-Eze Files - Quality stainless by design.

I. Shaping Files

Designed for side cutting

The design facilitates cleaning and shaping of the "Middle Third" of the canal with "milling" (side-to-side type action). The tiny, flexible, non-cutting tips prevent ledging. The standard shaping files come in 3 tapers (for varying levels of stiffness) and 4 lengths.

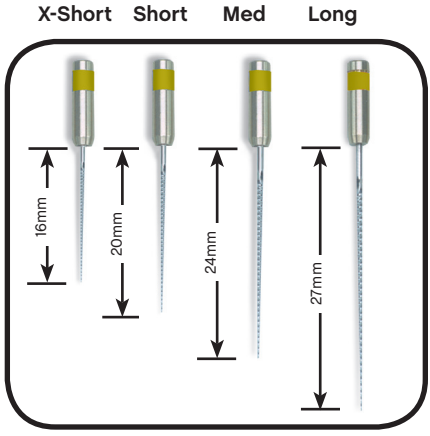




Approximate Taper:
Shaping 1 = 2.5%
Shaping C = 3.5%
Shaping 2 = 4.5%
Shaping 3 = 6%

Tip Diameter:
Shaping 1 = .10mm
All others = .13mm

Taper increases for progressive file stiffness and control!



Optional
Shaping **"C"** File
see next page

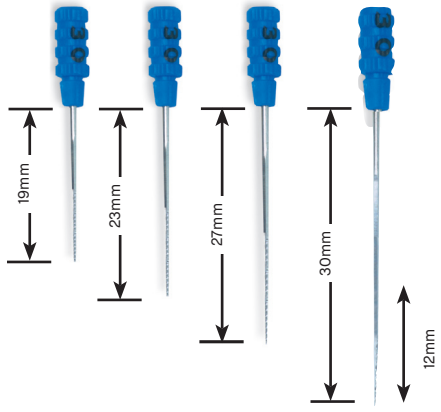


II. Apical Files

These are designed to cut only in the "Apical Third" of the canal. Because the cutting edges are only on the end of the file, the clinician knows that resistance is felt only in the "Apical Third." Additionally, the taper is slightly greater than the standard ISO 2%, assuring that when "tug back" is felt with an ISO 2% cone, it is only occurring at the tip. Four sizes of Endo-Eze apical files are included in the standard patient kits. These are available in four different lengths. Apical files are available in separate packages for diameters larger than a #30 file and also smaller than a #15.

Taper:
10-20 = 2%
25-50 = 2.25%

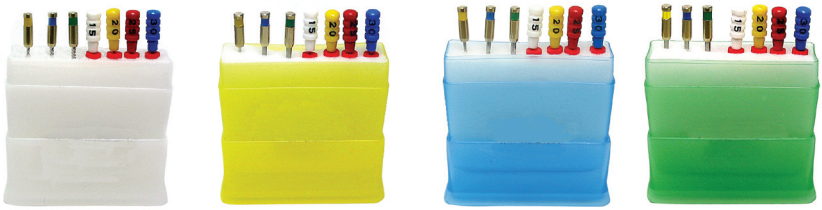
Tip Diameters = ISO



Endo-Eze File Kits
Standard Patient Kits



Only 7 files needed for approximately 95% of canals treated



Lengths	X-Short 16-19mm	Short 20-23mm	Medium 24-27mm	Long 27>mm

The standard kit contains all the file sizes needed for most root canals. Note that the largest apical file in the kit is a #30 because most apical constrictions are less than a size #20.

Shaping Kits



Auxiliary "C" Shaping File

The Auxiliary "C" shaping file is an additional size to use between yellow and blue files for the highly calcified canal.



Tip diameter = .13

Taper = .035

Note: Unless a general dentist is very experienced in endodontics, we recommend referring treatment of highly curved and/or calcified canals to an Endodontic Specialist.

File Refills
Shaping Files



1 2 3 C

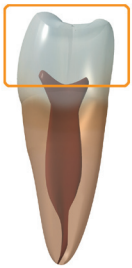


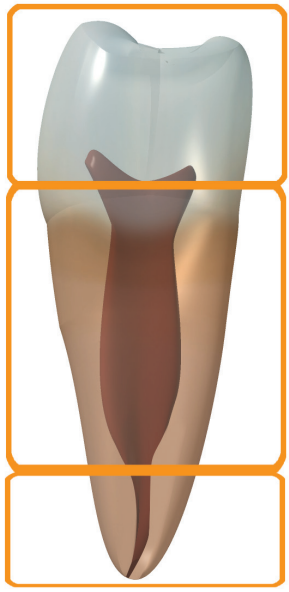
8 10 15 20 25 30 35 40 45 50

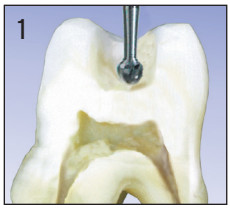
AET Procedure:

*Note: Refer to Endo-Eze Instructions for use for complete details and recommendations.

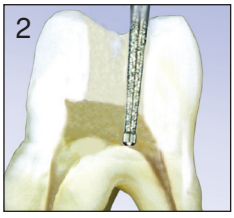
I. "Coronal Third”



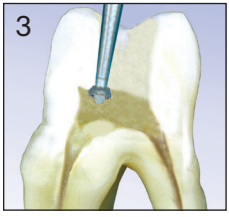




Use round or tapered diamond for initial access (some prefer the #4-6 round carbide).

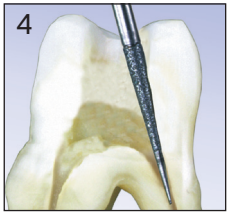


Enlarge access to pulp chamber laterally using safe end tapered diamond bur.



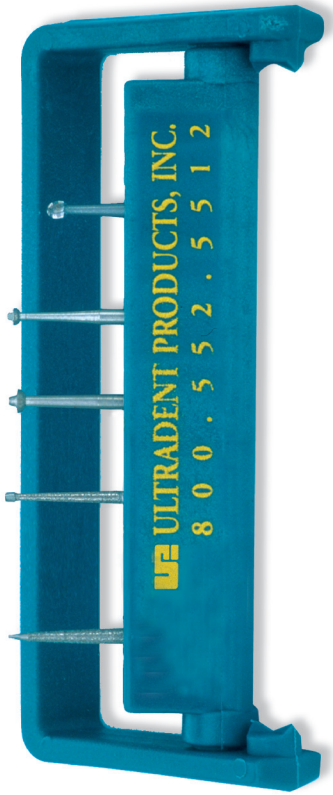
The acorn burs, available in two sizes, cut as they are withdrawn only.



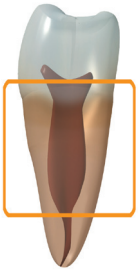


Improve the access (rectification) to the canals with a straight-line access diamond bur. Care should be taken to remove the minimum amount of dentin required to achieve access and/or negotiation of curved canal(s).

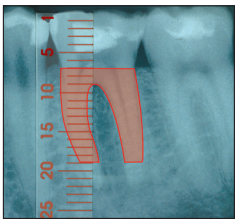
Riitano Access Bur Kit



II. "Middle Third"



Instrumentation of the "Middle Third" cleans and shapes most of the canal. This portion is completed before going to the "Apical Third" to prevent expulsion of tissue past the apex. The shaping files are designed to avoid creating ledging, even when used only in the "Middle Third."



Step: 1 Measure parallel radiographic length with clear Endo-Eze scale. (Optional: Apex locators)

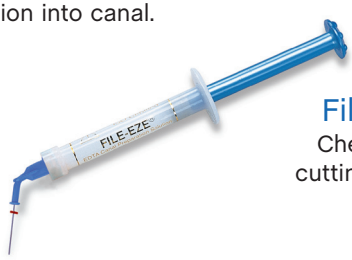
Shaping Files



#1 #2 #3

Step: 2 Insert #1 shaping file by hand. Briefly manipulate file to find path. File-Eze is recommended to facilitate initial file insertion into canal.

Important Note: If resistance is encountered going to length, never apply force.



File-Eze®
Chelator and cutting lubricant.



17mm 21mm 25mm 27mm

NaviTip®

File-Eze and sodium hypochlorite are delivered through unique NaviTip or NaviTip FX. File-Eze is used with the first two or three instruments only. Copious sodium hypochlorite is used during entire instrumentation and cleansing procedure alternating with liquid EDTA between each file.



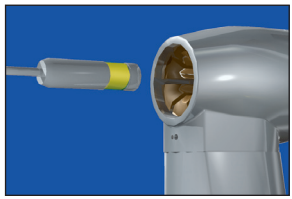
17mm 25mm

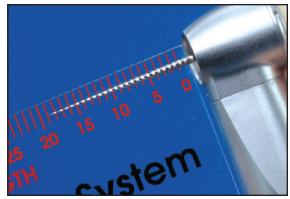
NaviTip® FX Tips

II. “Middle Third” (cont'd)

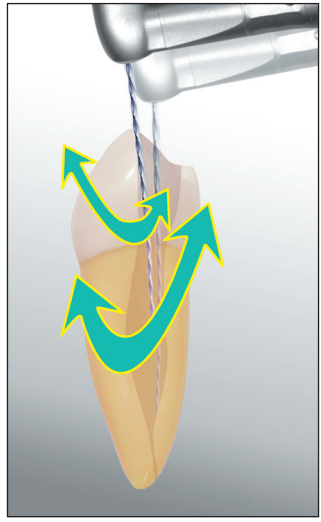
Step: 3

Insert shaping file #1 into Endo-Eze Handpiece and position file to previously determined radiographic length minus 3mm (average “Middle Third” length).





Move the shaping file in a side-to-side motion, lifting slightly to facilitate removal of tissue coronally, while stroking along canal walls. Lean the file firmly, side to side, flexing the file. Repeat with shaping files #2 and #3. Irrigate with copious sodium hypochlorite (ChlorCid is recommended) after using each file. **Do not use peroxide-containing lubricants or irrigants with this system.**

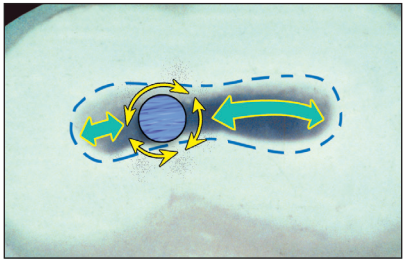


AET side-to-side “Milling”

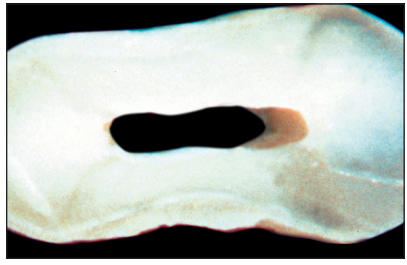
Helpful Hint:

If initial file insertion into calcified canals is difficult, work #2 shaping file into initial 1-2 mm of canal. Express File-Eze around tip end of file while it is engaged. Attach handpiece to the file. Run handpiece gently moving the file into the canal. Insert only one-third to one-half the length of the canal. This flares the upper canal.

Once initial flare is accomplished, go back to a #1 shaping file and treat in usual progression. Using this technique usually enables one to reach into problematic canals, avoiding the time-consuming “noodling” of small diameter, small taper files.

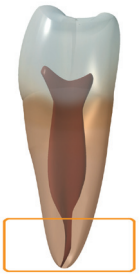


1. Equally addresses all walls for anatomical cleaning and shaping.
2. Minimally invasive.
3. Substantially reduces file breakage/separation.

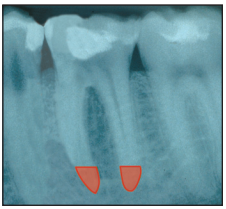


“Middle Third” instrumentation completed

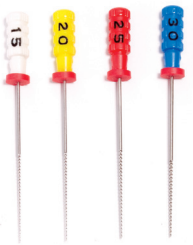
III. “Apical Third”



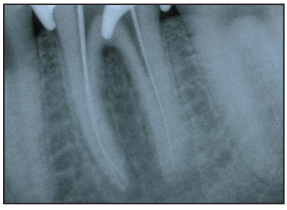
Canals are usually round in cross-section in the apical 3mm. AET addresses this anatomical feature by “listening to the tooth's anatomy.”



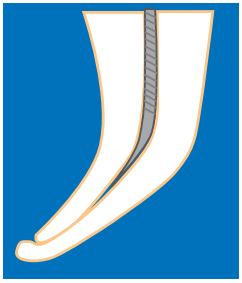
Apical files

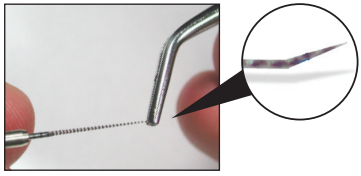






Measure file and set working length with rubber stop. X-ray verification is accomplished with shaping #1 and/ or apical 15 or 20 files in canal. Electronic apex locator may be used as an alternative.





Note: If resistance to vertical positioning is encountered in a curved canal, bend the file 1-2mm from the tip and rotate toward canal curvature while inserting.

III. “Apical Third” (cont'd)

The apical instrumentation occurs quickly with a conventional twist-pull motion starting with the #15 file and ending with the #30 file. If resistance is felt with the #25 file inserted to full working length, stop and move to obturation phase. If resistance to rotation at full working length is not realized with the #30 file, continue with larger apical (note: auxiliary apical files pg. 5) or ISO files until resistance is felt, then move to obturation phase. Always lubricating the file helps initial insertion of each size of file and helps prevent file separation. Continue copious irrigation with sodium hypochlorite solution (ChlorCid is recommended).

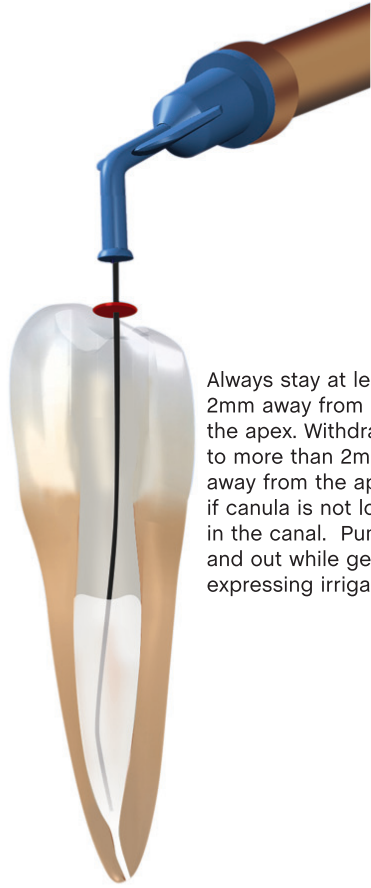


ChlorCid®: sodium hypochlorite



Ultradent® EDTA 18% Solution

Prior to obturation, canals have been instrumented then cleaned and disinfected using significant quantities of sodium hypochlorite solution (ChlorCid). Be sure all sodium hypochlorite solution or other antimicrobial irrigants are flushed from canal with clean water. Removal of all excess fluids is simplified with a capillary tip attached to the high velocity vacuum system followed by paper points. Note: If clean (bacteria-free) water is not available to thoroughly rinse antimicrobial agent (sodium hypocholorite) before placing EndoREZ, an alternative may be used: EDTA solution. Do not leave EDTA in the canal for more than one minute. **Important Note: Use peroxide-free lubricants or irrigants, as oxygen generated from peroxide can inhibit the set of resins, including EndoREZ.** EDTA is a root canal chelating agent that conditions / cleans through a chelation process. Ultradent EDTA 18% Solutions is the irrigant of choice for chelation and smear layer removal. Carefully read all manufacturers instructions. Do not use any lubricant or irrigants not specifically designed for endodontic use.

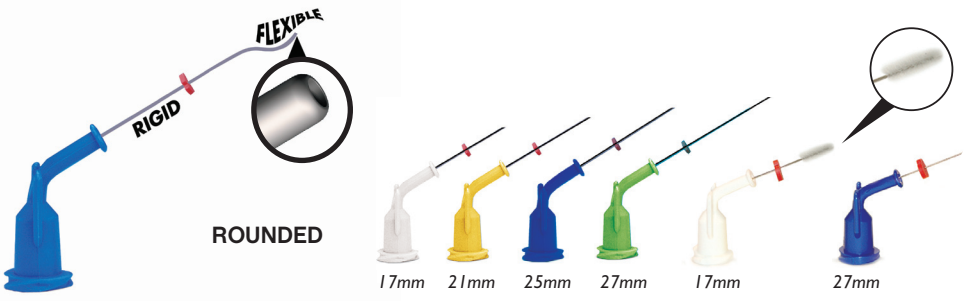


Always stay at least 2mm away from the apex. Withdraw to more than 2mm away from the apex if canula is not loose in the canal. Pump in and out while gently expressing irrigants.

Auxiliary Materials and Procedures

NaviTip®/ NaviTip® FX

The NaviTip has been specially designed to “navigate” through curved canals. The hub and shank are rigid to support insertion. The flexible rounded end negotiates curves. The NaviTip® FX Tip simultaneously scrubs walls and cleans irrigants.



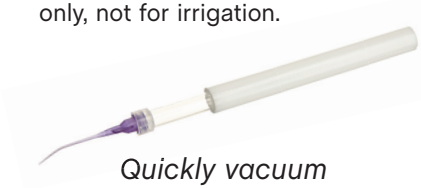
Color-coded for length to correspond with patient kit lengths.

Lengths:	X-Short	Short	Medium	Long
	19mm	23mm	27mm	30mm

See page 5 for file kits.

Luer Vacuum Adapter

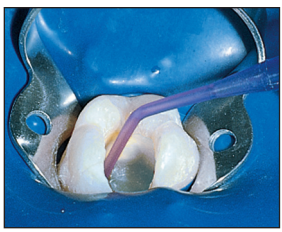
Connect Luer Vacuum Adapter to high velocity evacuation valve. Using Capillary or Micro Capillary tip, vacuum canals dry! Capillary tips are to be used for evacuation only, not for irrigation.



Quickly vacuum canals dry!

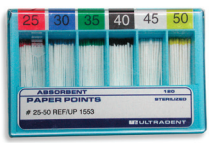


Capillary Tip

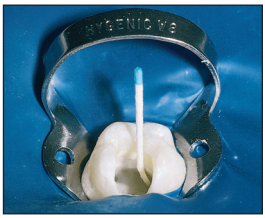


Absorbent Points

Most of the moisture is evacuated with the Capillary tips and Luer Vacuum Adapter; usually one or two paper points are all that are needed to verify canal is dry.
Tedious insertion of multiple paper points is a thing of the past!



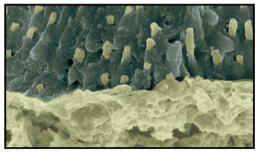
Ultradent Paper Points



Now...canals are ready for obturation!

EndoREZ: Obturation

EndoREZ is a unique biocompatible, radiopaque, resin-based root canal sealer/filler.



This hydrophilic, two-part, chemically set resin penetrates into dentinal tubules and accessory canals!

Mix and dispense directly into Skini Syringe

Mixing Tip

Mixes base and catalyst as it is being delivered from the dual barrel into Skini Syringe.

Mixing:

Step 1. Remove dual barrel cap; express a small amount of EndoREZ on a pad (or 2x2 gauze) to assure both sides are flowing. Attach mixing tip to dual barrel.

Skini Syringe

Small diameter Skini Syringe facilitates flow of viscous, thixotropic EndoREZ through tiny NaviTip with minimal plunger pressure.

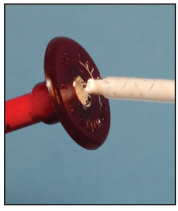




Step 2. Attach NaviTip to Skini Syringe.

Step 3. Insert mixing tip into back of Skini Syringe and express an appropriate amount of EndoREZ (usually 1/3 of a syringe is more than adequate to fill a multi-rooted tooth). Fill syringe to back flange so no air remains between the plunger and the EndoREZ.

Step 4. Insert plunger into Skini Syringe and express a small amount of material to verify flow.

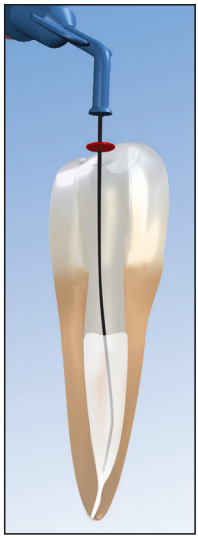




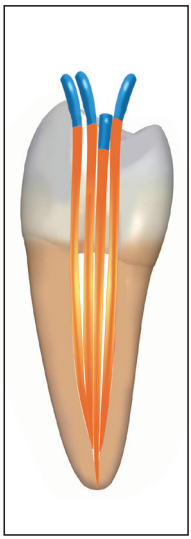
Before obturating with EndoREZ, see irrigation protocol on page 10.

Two materials cannot occupy the same space at the same time. Many times, one of the materials is air. To predictably seal and fill the canal preparation, the canal not only requires hydrophilic materials but also air displacement. EndoREZ "listens to the needs of the tooth and canal preparation."

Note: Refer to EndoRez Instructions for use for complete details and reccommendations.



Deliver from apical portion outward.



In large canals, additional gutta percha may be inserted. No "condensation" is necessary.

Sequence for Obturation



Step 1. Fit gutta percha to length. Verify radiographically. Ultradent's EndoREZ Points are recommended.









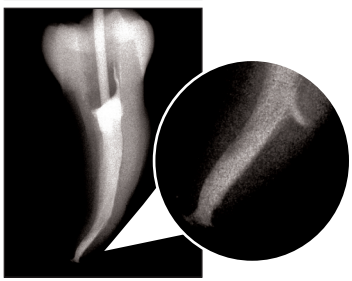
Step 2. Canal is dried with Capillary tip and Luer Vacuum Adapter followed by paper point(s). Dry canel with paper points for 1-2 seconds each (point should be damp 1-3mm at tip). Do not over-dry canals. Capillary tips are used for evacuation only, not for irrigation.

EndoREZ delivery:

NaviTip on filled Skini Syringe is inserted to 2mm short of the apex. Test to see if it is loose in canal. If not, withdraw slightly until it is. Express while slowly withdrawing until EndoREZ is seen at top of canal. Verify that EndoREZ is coming up the canal as you express material. Do not use force to push Skini Syringe plunger to express material as this may cause material to be pushed out the apex.

To avoid bubbles, keep end of tip buried in EndoREZ as you withdraw.





Step 3. Insert master cone to length. EndoREZ will set in about 15 minutes* in canal. Note hydrophilic, radiopaque EndoREZ filling accessory canals. Melt off extraneous gutta percha and restore coronal aspect as usual. Note: A quality seal/fill can occur with EndoREZ using master cone and EndoREZ only. However, EndoREZ is conducive to lateral condensation and warm gutta percha techniques.

Note: Contrary to other obturation systems, the single cone/EndoREZ fill is conducive to immediate correction/ retreat. Simply shoot your "final" X-ray before melting off the one cone; if you feel you need to lengthen or shorten, remove and address.

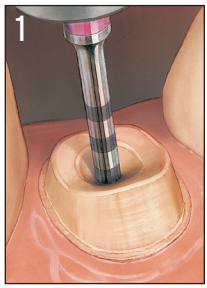
Recommendation for Post Preparation & Core Buildup*

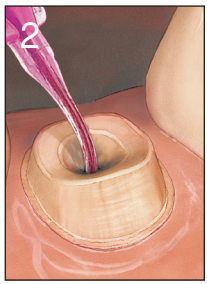
*Note: Refer to UniCore and PermaFlo DC Instructions For Use for complete details and recommendations.

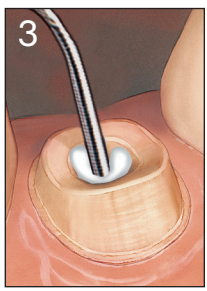
UniCore® Posts

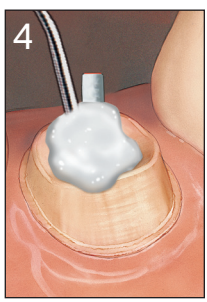
Radiopaque pre-activated fiber posts, encased in a bondable resin matrix

Sequence for Bonded Post









WARNING: UniCore Drills and Posts are not shipped sterile and must be sterilized prior to use.

Determine post size by comparing a UniCore Drill to the completed endodontic radiograph.

Use a round bur to remove coronal obturation material down to canal orifice and to provide a guide (or pilot).

Place a rubber stop on UniCore Drill at desired length based on radiographs.

NOTE: If you are using UniCore Analog Try-In Posts* to aid in the diagnostic steps of a post procedure, place a rubber stop or locking plier at the same place on the UniCore Analog Try-In that is matched to the specific drill size.

At full 20,000 RPM, (use drill size 4 at 5,000 RPM) place the UniCore tip into the pilot hole (Image 1). Using light pressure, follow the obturation material to desired length at the rubber stop. Keeping the drill at full speed, withdraw from the canal. To avoid disruption of the apical plug, DO NOT stop the drill at anytime while entering or withdrawing it from the tooth.

Verify post space is appropriately prepared by placing the same size UniCore Post as UniCore Drill used and seat to length.



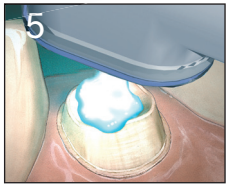
Apply PermaFlo DC Primer A for 10 seconds (image 2); DO NOT air dry. Apply PermaFlo DC Primer B for 10 seconds, then blow dry with TriAway and appropriate size Endo-Eze bendable metal tip. Prepare core preparation with Primers A & B as well. Repeat A & B until surface is shiny.



Use Permaflo® DC Opaque White (or appropriate shade) Dual Cure composite luting and core resin. As with EndoREZ (pg 12), insert mixing tip into back of the Skini Syringe. Attach appropriate size Endo-Eze metal tip on syringe (as large as possible for minimizing resistance to flow, but still loose in channel). Deliver mixed PermaFlo DC luting resin into syringe. Resin is delivered from depth of post preparation coronally to push air out ahead of resin (Image 3).



Insert and cut to length the appropriate UniCore post. PermaFlo DC resin can be light accelerated with curing light (1-3 seconds) (Image 5) to prevent unwanted flow during build-up of core. This eliminates the need for a matrix. Lute post and build core in one mix/procedure (Image 4)!



CAUTION: Always use drill sizes 0-3 at full 20,000 RPM. Use drill size 4 at 5,000 RPM.

5900 ***EndoREZ Refill Kit***
1 - Dual Barrel Syringe, 20 - Mixing Tips

5920 ***Mixing Tips - 20pk***

5905 *Endo-Eze Technique Kit with Handpiece*
5906 *Endo-Eze Z-Axis Technique Kit*
5907 *Endo-Eze Technique Kit with Contra Angle Only*
5908 *Endo-Eze Mini Technique Kit (International Only)*

1136 *Endo-Eze AET Handpiece*
1155 *Reciprocating Contra-Angle for AET*
1178 *Air motor with internal spray*

5901 *EndoREZ Obturation Kit - 0.02 Taper*
5902 *EndoREZ Obturation Kit - 0.04 Taper*
5903 *EndoREZ Obturation Kit - 0.06 Taper*
5904 *EndoREZ Mini Obturation Kit (International Only)*

Shaping File Patient Kits
3246 *Patient Kits, Extra Short 16/19mm*
3247 *Patient Kits, Short 20/23mm*
3248 *Patient Kits, Medium 24/27mm*
3249 *Patient Kits, Long 27/30mm*

Patient Kits (shaping, apical files)
1564 *Patient Kits Extra Short 16/19mm (7 files)*
1565 *Patient Kits, Short 20/23mm (7 files)*
1566 *Patient Kits, Medium 24/27mm (7 files)*
1567 *Patient Kits, Long 27/30mm (7 files)*

Shaping File Refills
1586 *Shaping File Refills (6) #1, 16mm*
1501 *Shaping File Refills (6) #1, 20mm*
1502 *Shaping File Refills (6) #1, 24mm*
1503 *Shaping File Refills (6) #1, 27mm*
1589 *Shaping File Refills (6) C, 16mm*
1504 *Shaping File Refills (6) C, 20mm*
1505 *Shaping File Refills (6) C, 24mm*
1506 *Shaping File Refills (6) C, 27mm*
1587 *Shaping File Refills (6) #2, 16mm*
1507 *Shaping File Refills (6) #2, 20mm*
1508 *Shaping File Refills (6) #2, 24mm*
1509 *Shaping File Refills (6) #2, 27mm*
1588 *Shaping File Refills (6) #3, 16mm*
1510 *Shaping File Refills (6) #3, 20mm*
1511 *Shaping File Refills (6) #3, 24mm*
1512 *Shaping File Refills (6) #3, 27mm*

Apical File Refills
1601 *Apical File Refills (6) #8, 19mm*
1602 *Apical File Refills (6) #8, 23mm*
1603 *Apical File Refills (6) #8, 27mm*
1604 *Apical File Refills (6) #8, 30mm*
1610 *Apical File Refills (6) #10,19mm*
1519 *Apical File Refills (6) #10,23mm*
1520 *Apical File Refills (6) #10, 27mm*
1521 *Apical File Refills (6) #10, 30mm*
1611 *Apical File Refills (6) #15, 19mm*
1522 *Apical File Refills (6) #15, 23mm*
1523 *Apical File Refills (6) #15, 27mm*
1524 *Apical File Refills (6) #15, 30mm*
1612 *Apical File Refills (6) #20, 19mm*
1525 *Apical File Refills (6) #20, 23mm*
1526 *Apical File Refills (6) #20, 27mm*
1527 *Apical File Refills (6) #20, 30mm*
1613 *Apical File Refills (6) #25, 19mm*
1528 *Apical File Refills (6) #25, 23mm*
1529 *Apical File Refills (6) #25, 27mm*
1530 *Apical File Refills (6) #25, 30mm*
1619 *Apical File Refills (6) #30, 19mm*
1531 *Apical File Refills (6) #30, 23mm*
1532 *Apical File Refills (6) #30, 27mm*
1533 *Apical File Refills (6) #30, 30mm*
1620 *Apical File Refills (6) #35, 19mm*
1534 *Apical File Refills (6) #35, 23mm*
1535 *Apical File Refills (6) #35, 27mm*
1536 *Apical File Refills (6) #35, 30mm*
1537 *Apical File Refills (6) #40, 23mm*
1538 *Apical File Refills (6) #40, 27mm*
1539 *Apical File Refills (6) #40, 30mm*
1540 *Apical File Refills (6) #45, 23mm*
1541 *Apical File Refills (6) #45, 27mm*
1542 *Apical File Refills (6) #45, 30mm*
1543 *Apical File Refills (6) #50, 23mm*
1544 *Apical File Refills (6) #50, 27mm*
1545 *Apical File Refills (6) #50, 30mm*
1618 *Apical File Refills (6) Asst, 19mm*
1516 *Apical File Refills (6) Asst, 23mm*
1517 *Apical File Refills (6) Asst, 27mm*
1518 *Apical File Refills (6) Asst, 30mm*

7120 ***UniCore Kit***
4 - Drills (one of each sizes 1-4)
20 - Posts (five of each size 1-4)

7132 ***UniCore Starter Kit***
2 - Drills (one of each sizes 1 & 2)
20 - Posts (five of each size 1 & 2)

7133 ***UniCore Size 0 Supplement Kit***
(1 Drill and 5 Posts)

UniCore Refills
7134	*1 - Size #0 Drill*	*7135*	*5 - Size #0 Posts*
7121	*1 - Size #1 Drill*	*7125*	*5 - Size #1 Posts*
7122	*1 - Size #2 Drill*	*7126*	*5 - Size #2 Posts*
7123	*1 - Size #3 Drill*	*7127*	*5 - Size #3 Posts*
7124	*1 - Size #4 Drill*	*7128*	*5 - Size #4 Posts*

NaviTip (20pk - 29ga)
5112 NaviTip, 17mm
5113 NaviTip, 21mm
5114 NaviTip, 25mm
5115 NaviTip, 27mm
5116 Assorted NaviTip, 5 each length

NaviTip (50pk - 29ga)
1378 NaviTip, 17mm
1374 NaviTip, 21mm
1376 NaviTip, 25mm
1377 NaviTip, 27mm
1379 Assorted NaviTip, 5 each length

NaviTip (20pk/50pk - 30ga)
1249 NaviTip, 17mm
1349 NaviTip, 21mm
1250 NaviTip, 25mm
1354 NaviTip, 27mm
1351 Assorted NaviTip, 5 each length

NaviTip (50pk - 30ga)
1421 NaviTip, 17mm
1422 NaviTip, 21mm
1423 NaviTip, 25mm
1424 NaviTip, 27mm
3319 Assorted NaviTip, 5 each length

NaviTip (20pk - 31ga)
5121 NaviTip, 21mm
5123 NaviTip, 27mm

NaviTip (50pk - 31ga)
5122 NaviTip, 21mm
5124 NaviTip, 27mm

1562 Riitano Access Bur Kit
5 - Burs (Round carbide, Button, Acorn Small, Acorn Large, Straight line)
1 - Autoclaveable Bur Block

1397 Riitano Straight Line Access Bur 3pk
1398 Riitano Button Bur 3pk
1403 Riitano Acorn Bur Small 3pk
1404 Riitano Acorn Bur Large 3pk

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