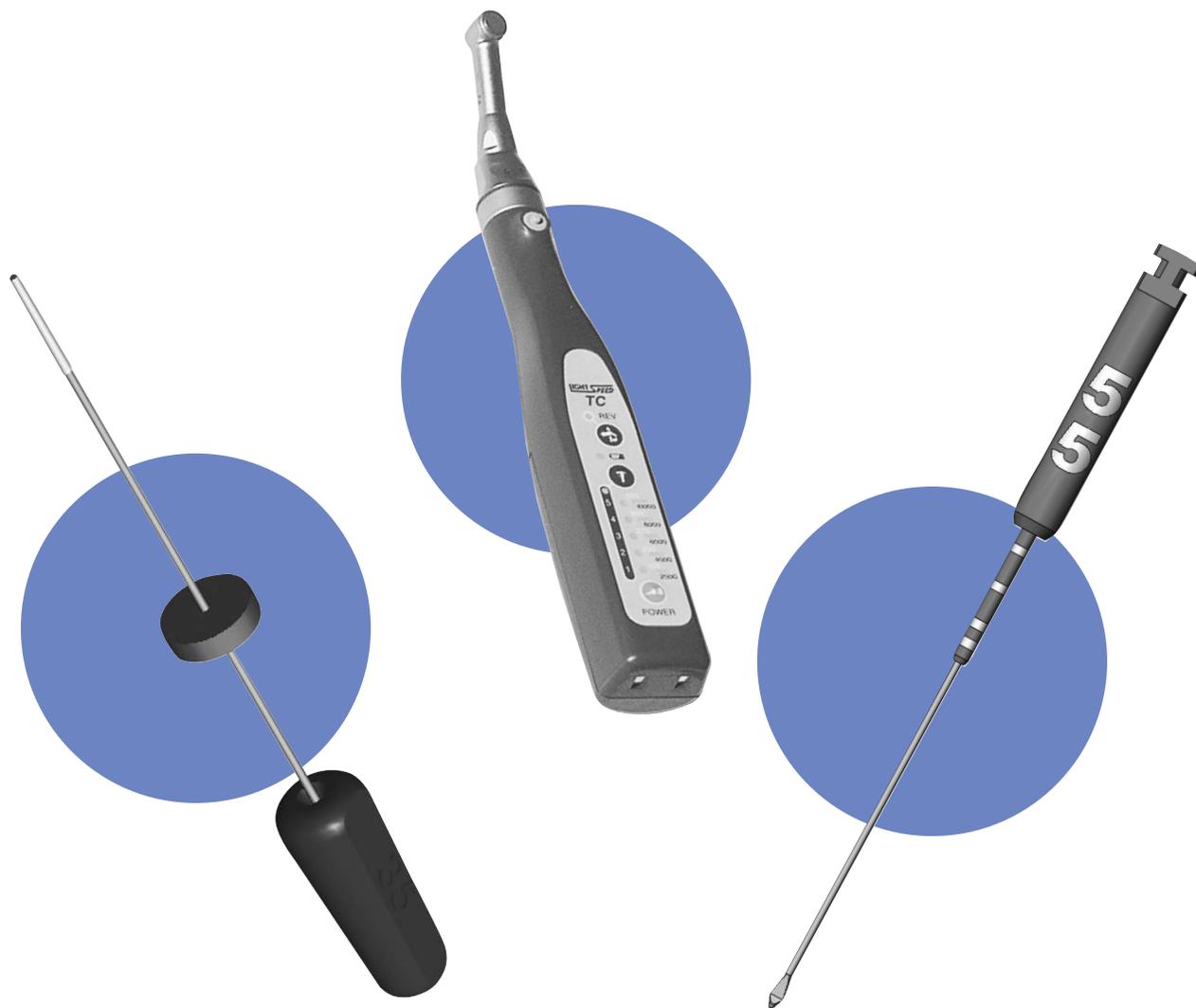


# LightSpeed® LSX/SimpliFill® Instructional Guide



**LIGHTSPEED**  
**ENDODONTICS**

*June 2005*

**SUPERIOR TECHNOLOGY • SUPERIOR RESULTS**

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## Introduction



**Thank You** for selecting LightSpeed products. LightSpeed and SimpliFill, verified with research and years of clinical experience, make possible the highest standards of performance. We are dedicated to ensuring they meet the standards of quality you expect--standards that have made LightSpeed products so popular throughout the world.

### **Important Note:**

This Instructional Guide is only applicable when using LightSpeed LSX instruments and must be read carefully to learn how to use LightSpeed products correctly. For previous versions of LightSpeed instruments see LightSpeed/SimpliFill Guide January 2004. As with all techniques, the desired result requires the correct technique. Please read this guide prior to using LightSpeed LSX and SimpliFill.

## Getting Started

- Read this Instructional Guide.
- Watch the Instructional Video (several times if necessary) before practicing with LightSpeed.
- Use the LightSpeed cordless handpiece. It is recommended.
- Follow the LightSpeed technique exactly as recommended. Once proficient, you may modify the technique.
- Practice on plastic blocks and extracted teeth. Any new technique requires time and practice. Proficiency with LightSpeed usually is gained quite rapidly. It is not a difficult technique to master. The key is realizing the technique is based on a logical sequence and paying attention to what you are feeling through the handpiece (tactile feedback).

- Instrument separation may occur while you are learning. If it occurs, do not be discouraged. Review the section on “Avoiding Instrument Breakage” in this Instructional Guide and try to determine the cause. If you still experience separation, please give us a call. When the problem is resolved you will be happy you gave LightSpeed a fair chance.
- When you begin using LightSpeed on patients, sound clinical judgement suggests not starting with the more difficult cases. In a short time you will be treating them quickly, predictably and safely.

## Questions & Answers

### ***Can I use LightSpeed for all my cases?***

Yes, with one exception. Very large immature canals cannot be instrumented with LightSpeed when they are larger than a size 140. In some cases (very abrupt curves) hand files should be used.

### ***Do I have to use a special handpiece?***

We highly recommend the LightSpeed cordless handpiece. It is very convenient and using two of these handpieces at the same time can save you significant chair time.

### ***Can LightSpeed be used to remove gutta percha in a retreatment case?***

Absolutely. First make a path to working length with hand files. Then follow this path with LightSpeed instruments. A gutta percha solvent hastens the process. If you are retreating a tooth with a plastic or metal carrier, the carrier must first be removed.

### ***How do I know when I have reached the correct apical preparation size when using LightSpeed?***

You know because LightSpeed tells you. Tactile feedback is a measure of how much dentin the instrument is cutting. If it is just rotating freely in the canal (no cutting), tactile feedback tells you. If LightSpeed is doing a lot of cutting, tactile feedback

will tell you that also. Briefly stated, the amount of cutting taking place is measured by the force required to advance LightSpeed to working length. When significant cutting occurs in the apical 4mm, LightSpeed is signaling that the correct apical preparation size has been reached. See the Technique Guide for further details.

***Sometimes I cannot advance LightSpeed beyond a certain point even though the previous LightSpeed did? Why? What is the solution?***

The inability to advance beyond a certain point may be caused by an unseen abrupt curve or a natural anatomical irregularity. Try instrumenting with LightSpeed (by hand) in a full rotary motion. Otherwise, remove the irregularity or reduce the severity of the curve with a K-type or Hedstrom file.

***Which obturation technique do you recommend?***

We recommend our own obturation system, SimpliFill. It is designed specifically to “match” the size and shape of the canal prepared by LightSpeed. We know of no obturation technique that cannot be used with LightSpeed, although some techniques may require additional canal flaring.

***How does one retrieve a separated LightSpeed instrument?***

See Retrieving Broken Instruments in this Guide. Better yet, follow the principles described in Avoiding Instrument Breakage.

***Will I lose my “tactile feel” when switching from hand to LightSpeed instrumentation?***

Absolutely not! There is no loss of tactile feel. In fact, with LightSpeed, it will be enhanced and much more accurate. LightSpeed’s taperless shaft and very short cutting blade reveals, through tactile feedback, when, where, and how much of the canal wall LightSpeed is cutting. Its tactile feedback will also reveal when the instrument is not cutting. With a little experience your sense of touch will reliably apprise you of what is happening during instrumentation.

The LightSpeed instrument transmits a much more accurate tactile feel than a tapered instrument. Tapered instruments are always “doing something.” You just can’t be sure what these instruments are doing or where they are doing it.

***What is tactile feel or feedback?***

Tactile feedback is the ability of an instrument to transmit sensations of touch that reveal what the instrument is doing. Since we cannot see what an instrument is doing, we must be able to feel what it is doing. There are four distinct sensations that can be felt when LightSpeed is being advanced apically:

**1. A sensation of rotating freely in the canal (no resistance).** This sensation indicates the blade diameter is smaller than the canal diameter and therefore no cutting (cleaning) of the dentin wall is taking place.

**2. A sensation of feeling a little resistance to apical advancement.** This sensation indicates the blade diameter is slightly larger than the canal diameter (at that location) and minimum cutting is taking place.

**3. A sensation of feeling a moderate resistance to apical advancement.** A sensation of moderate resistance is defined as significant in the apical 4mm. Feeling this slow advancement indicates that the blade is working hard cutting the entire circumference of the canal. This sensation means that the instrument is the Final Apical Size (FAS) and the apical part of the canal is prepared correctly.

**4. A sensation of feeling a lot of resistance to apical advancement.** A lot of resistance is defined as a resistance requiring much more force than the previous instrument. Whenever LightSpeed advances slowly and reluctantly, the tactile sensation is advising you that the canal is being over-prepared (or you have encountered a severe curve). Do not force the instrument when this much resistance is felt; pushing it harder may over-prepare the canal or cause instrument separation.

When you recognize what LightSpeed’s tactile

feedback is telling you, it will quickly become your “eyes in the canal”. Remember to always use a light touch and never force the instrument to go where it doesn’t want to (or cannot) go.

*What sizing system does LightSpeed use?*

*What do the rings on the shank indicate?*

LightSpeed uses the standard ADA/ISO colors and sizes.

The rings on the shank are length markings. The position of the rings indicate the length (in mm) from the tip. Using the length markers instead of rubber stops can save considerable time. See Technique Guide for more details on the length markings.

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## Avoiding Instrument Breakage

LightSpeed is uniquely designed to minimize breakage. However, as with all other instruments, total elimination is not possible. The following suggestions will help avoid overstressing and breaking LightSpeed instruments.

### 1. Take our hands-on course

This is the best way to learn how to use LightSpeed. The concepts, design features and correct technique will be explained. You will have the opportunity to practice under the guidance of an experienced LightSpeed instructor.

### 2. Study Instructional Guides carefully

View and review the LightSpeed Instructional Video and Technique Guides. Have assistants do the same.

### 3. Make a good endodontic access

The importance of good access cannot be overemphasized. It allows instruments to reach the mid-root portion of the canal without placing excessive bending forces on the instrument. See StraightLine Access Technique Guide for details.

### 4. Keep LightSpeed in a straight line during canal instrumentation

If the handpiece is not kept straight or lateral

pressure is exerted, LightSpeed will be bent excessively and breakage may occur up towards the handle.

### 5. Lighten up and use light apical pressure at all times

When the LightSpeed bends, it means too much pressure is being applied. Excessive force shortens instrument life. Let the instrument do the work.

The secret is to hold the handpiece so gently that it feels like it may fall out of your hand.

### 6. Use the correct hand movements

Advance instrument slowly until resistance is felt, pause at resistance, then push LightSpeed apically in a slow, continuous motion.

If no resistance is felt, the instrument is not cutting the canal walls (blade diameter is smaller than canal diameter).

### 7. Treat severe or abrupt curves with respect

Severe or abrupt curves overstress all instruments. They accelerate metal fatigue and greatly increase the possibility of breakage. Instrument abrupt curves using a combination of both mechanical and hand instrumentation as follows:

**A.** Complete instrumentation (short of the abrupt curve) using the normal LightSpeed technique.

**B.** With LightSpeed in hand, instrument the abrupt curve and beyond to the working length. When hand instrumenting, use a continuous rotation motion (clockwise or counter-clockwise rotation and firm apical pressure). With this motion, instrument by hand to working length and determine the FAS size. The FAS is reached when significant cutting resistance is felt. Continuing by hand, step back until hand instrumentation merges with the previously prepared canal (1 mm coronal to the abrupt curve). While instrumenting by hand, clean the blade frequently; it is very important to do so.

Hand instrumentation, as compared to mechanical instrumentation, greatly reduces the number of stressful bending movements the instrument makes in an abrupt curve. **Abrupt curves**

**greatly accelerate** metal fatigue. Reducing the number of bending movements reduces the possibility of instrument separation from metal (cyclic) fatigue. **We recommend using a new set of instruments and discarding them (the ones used in the abrupt curve) after a single use.** Fortunately, these abrupt curves are not common.

## 8. Practice, practice, practice before using LightSpeed on a patient

Take the time to learn how to use the instrument correctly. Do not be discouraged if you break a few instruments when you are learning. Continue to practice until you are proficient with the technique. When treating patients, start with the easier cases, then move on to the more difficult ones.

## 9. Do not overuse LightSpeed instruments

Any metal that bends will fatigue and eventually fail. Organize a system that helps keep track of instrumentation usage. The LightSpeed Instrument Organizer is specifically designed to help you easily track instrument usage. See Assistant's Reference Guide for details. In abrupt curves, use LightSpeed (by hand) only once. Overuse of instruments will cause you frustration and wasted time dealing with a separated instrument.

## 10. Use the right handpiece

The best cutting efficiency is achieved between 2500 and 3000 RPM. **Do not go below 2000 RPM.** LightSpeed should be rotating before entering the canal and during the time it is in the canal. We strongly recommend the cordless (battery) LightSpeed Handpiece.

## 11. Beware of anatomical traps

*There are three traps that can be avoided*

### A. An unseen (radiographically) abrupt canal curvature or a natural anatomical irregularity

Remove the irregularity or straighten the abrupt curvature with a K-type or Hedstrom file. Check that

the trap has been removed (try bypassing the trap with LightSpeed by hand). If successful, continue with mechanical instrumentation. Forcing the LightSpeed when encountering this trap may cause it to “catch” and then break.

**B. An unseen abrupt curve close (1-2 mm) to the apex** If you feel you must go past this curve, instrument to WL by hand (see #7).

**C. A canal that joins another canal at an acute angle (apical 1/3)** This is seen most often in mesial roots of mandibular molars and mesio-buccal roots of maxillary molars. In this situation, end the canal preparation where it joins the other canal (resistance is felt). Do not force LightSpeed around the acute bend and risk instrument separation.

### D. Occasionally you may feel the instrument “catch” as it is inserted or retrieved from the canal.

This occurs when the orifice is elongated and the instrument enters a narrow uninstrumented space (fin). The solution is to refine the access opening (if possible) or direct the instrument so that it does not enter this space.

## 12. Respect the apical stop

Once you have developed the apical stop, usually 1 mm short of the foramen, (at the dentino-cemental junction) you should be able to feel when you have reached it. Do not force LightSpeed beyond this stop. Using force causes LightSpeed's shaft to buckle. Buckling bends the shaft which causes metal fatigue and may lead to separation at the bend. Be aware of the apical stop and do not be fixated by a rubber stop that may be slightly off the reference point. Instead, change the working length and move the rubber stop.

**Remember:** If LightSpeed cannot be advanced using light pressure, do not force it. LightSpeed is telling you that it has encountered an abrupt curve or the apical stop. It is giving you a warning...heed it!

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## Retrieving Separated Instruments

An unbreakable instrument has yet to be invented. Separation of LightSpeed instruments should be minimal if the right handpiece is used, the instruments are not overused, abrupt curves are instrumented by hand, and the recommended technique is followed. Should separation occur, there is a good possibility of removing or bypassing the broken instrument because:

A. LightSpeed's non-tapered, small diameter shaft (always smaller than the blade diameter) allows room alongside the shaft for a retrieving device. It also allows room for bypassing, if necessary.

B. When separations occur it is more often high up the shaft near the handle, this makes the fragment easier to see and remove.

### *Location of Separation*

A. Near the handle: The broken fragment usually can be seen, grasped and removed with pliers.

B. At the tip or behind the blade: If an instrument separates here, removal is unlikely. Try bypassing the fragment. If unable to bypass, clean, shape and obturate to the fragment. Use the SimpliFill Syringe to inject sealer around (and perhaps beyond) the broken fragment.

### *The following methods may be used to remove a broken instrument:*

**1. Direct method:** Remove the broken instrument with pliers, a small hemostat or Stieglitz forceps.

**2. Others:** Sonics, Ultrasonics and Gutta Percha Extractor files (GPX) may also be used to remove broken fragments.

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## Sterilization of LightSpeed Instruments

LightSpeed instruments must be sterilized prior to each use. Sterilize and clean with alcohol prior to reuse.

- Do not sterilize LightSpeed instruments in sodium hypochlorite or any other strong chemical. This will corrode and weaken the metal.
- LightSpeed instruments should be sterilized in a steam autoclave (121° C [250° F] at 15 PSI for 20 minutes).
- Steam sterilization does not adversely affect the sharpness of the blade, strength of the nickel-titanium metal, or its resistance to corrosion.
- **High heat, or other caustic chemicals must not be used for sterilization.** These sterilization methods can remove the color from the handle.

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## Disposal of LightSpeed Instruments

For safe disposal of biohazardous materials, discard used instruments in a "SHARPS" or similar approved container.



## Introduction

SimpliFill is a unique root canal obturation system that, as the name implies, makes filling the canal a simple procedure. SimpliFill incorporates a flexible stainless steel shaft, and a short screw-like retainer thread at the tip of the shaft. The retainer holds the 5 mm long Apical Plug on the shaft.

SimpliFill is not only simple--it is effective and predictable. The SimpliFill Plug showed virtually no leakage and obturation with Simplifill was accomplished in less than half the time of lateral condensation (Journal of Endodontics, Sept., 1999).

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## Questions & Answers

### *Does SimpliFill leave any metal in the canal?*

No, the entire carrier including the retaining threads are removed when the carrier is removed from the canal.

### *Can I use SimpliFill in all my cases?*

Yes, as long as the Final Apical Sizes are within the range of 35 to 130. SimpliFill is made in those sizes. Also, canals must be cleaned and shaped appropriately for SimpliFill to seal properly. The surest way is by using LightSpeed rotary instruments and the correct instrumentation technique.

### *What if the SimpliFill Plug inadvertently comes off the Carrier in the canal?*

Usually, it can be easily removed with a #25 Hedstrom file. Push the file apically with moderate pressure and rotate the file to engage the Plug. Then withdraw the file. If, after several attempts this is not successful, remove the Plug with hand files then finish with the LightSpeed FAS in the handpiece. A gutta percha solvent will speed up the process.

### *What if the SimpliFill Plug stops 0.5 to 1.00mm short of working length (WL) even with heavy apical pressure?*

If this happens, there is no reason for concern. Usually, it is caused by a blocked foramen. With nowhere to go, the sealer becomes a hydraulic barrier. Remember, sealer is what actually seals the canal.

### *What if SimpliFill will not release from the Carrier when I want it to? What's happening?*

This is SimpliFill's quality assurance design in action. If the Plug doesn't fit properly it will not disconnect from the Carrier when the Plug is at WL. SimpliFill is simply reminding you of the poor fit and suggesting you use a larger size Plug or enlarge the size of the existing Plug by cutting 1-2 mm from its tip (do not cut more than 2 mm from tip of Plug).

*Why is there no need to use lateral or vertical condensation in the coronal and mid-root areas of the canal?*

The only reason for ever using lateral and vertical condensation is to move gutta percha and sealer three-dimensionally. The sealer that is injected into the canal with the SimpliFill syringe is fluid enough to flow easily within the canal system, obturating it in all dimensions.

*What is the purpose of the Backfill Cone(s) that are used in the coronal and mid-root parts of the canal?*

The purpose is two fold: 1) allows easy removal of the obturating material if a post is needed in the future and, 2) allows easy removal of the obturating material if retreatment becomes necessary. Sealer, used alone, would be difficult to remove because it is very hard when set.

*What if the SimpliFill Plug cannot be released from the carrier?*

See Technique Guide for suggestions.

*I was always taught to use maximum gutta percha and minimum sealer for obturating canals because sealers shrink. Doesn't the SimpliFill System ignore this widely accepted concept?*

No. This concept was probably valid with ZOE type sealers. However, newer sealers have minimum to no shrinkage. Also important is that these types of sealers are very fluid and resistant to being dissolved or resorbed.

*Can other obturation techniques or materials be used to replace the backfill portion of the SimpliFill technique (coronal and middle thirds of the canal)?*

Yes, use the material and technique of your choice.

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## **Sterilization of SimpliFill**

Place SimpliFill in Sodium Hypochlorite for at least one minute.

Do not sterilize with heat.

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## **Disposal of the SimpliFill Carrier**

For safe disposal, discard used SimpliFill carriers in a "SHARPS" or similar approved container.

# Other Products Information



## Instrument Organizer

Useful for organizing LightSpeed instruments and tracking usage. The instruments can be steam autoclaved in the Organizer. Do not use ultrasonic cleaning methods. Use caution as chemicals may cause damage to color strip.

See Assistant's Reference Guide for additional information.

## EDTA

Clinical experience has shown that a liquid chelating agent (EDTA) is an effective intracanal irrigant. We highly recommend its use. Remember to always use LightSpeed in a flooded canal (preferably with EDTA).

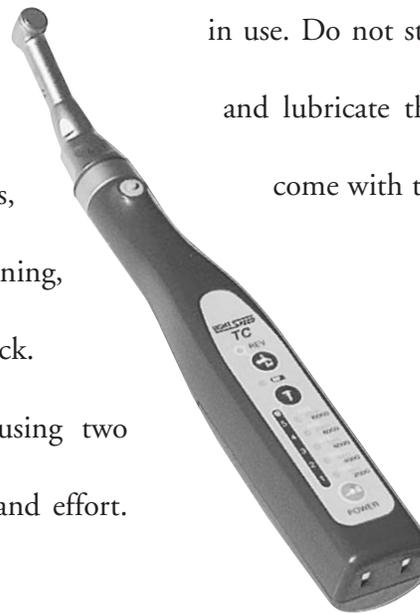
The extra handpiece will speed the process and relieve the doctor from having to change instruments. The assistant can have the second handpiece ready with the next instrument while the doctor is using the first handpiece.

Liquid can seep through the case ruining the parts inside. Therefore, wrap the handpiece in plastic when in use. Do not sterilize the handpiece body. Sterilize and lubricate the head only. See instructions that come with the handpiece for more details.

## Cordless Handpiece

The LightSpeed cordless handpiece is highly recommended. There are no wires, hoses or foot pedal. It is quiet, smooth running, portable and provides superb tactile feedback.

During root canal instrumentation, using two handpieces instead of one can save time and effort.



# StraightLine® Access Kit

Useful for organizing the instruments used for creating straight-line coronal access. Kit can be steam autoclaved, do not attempt to clean in ultrasonic units.



## Notes:

## To Order LightSpeed Products

**Call:** (800) 817-3636  
(210) 495-4943

**Fax:** (210) 495-4945

**Mail:** LightSpeed Technology Inc.  
403 E. Ramsey, Suite 205  
San Antonio, Texas 78216

**E-mail:** [Info@LightSpeedUSA.com](mailto:Info@LightSpeedUSA.com)

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