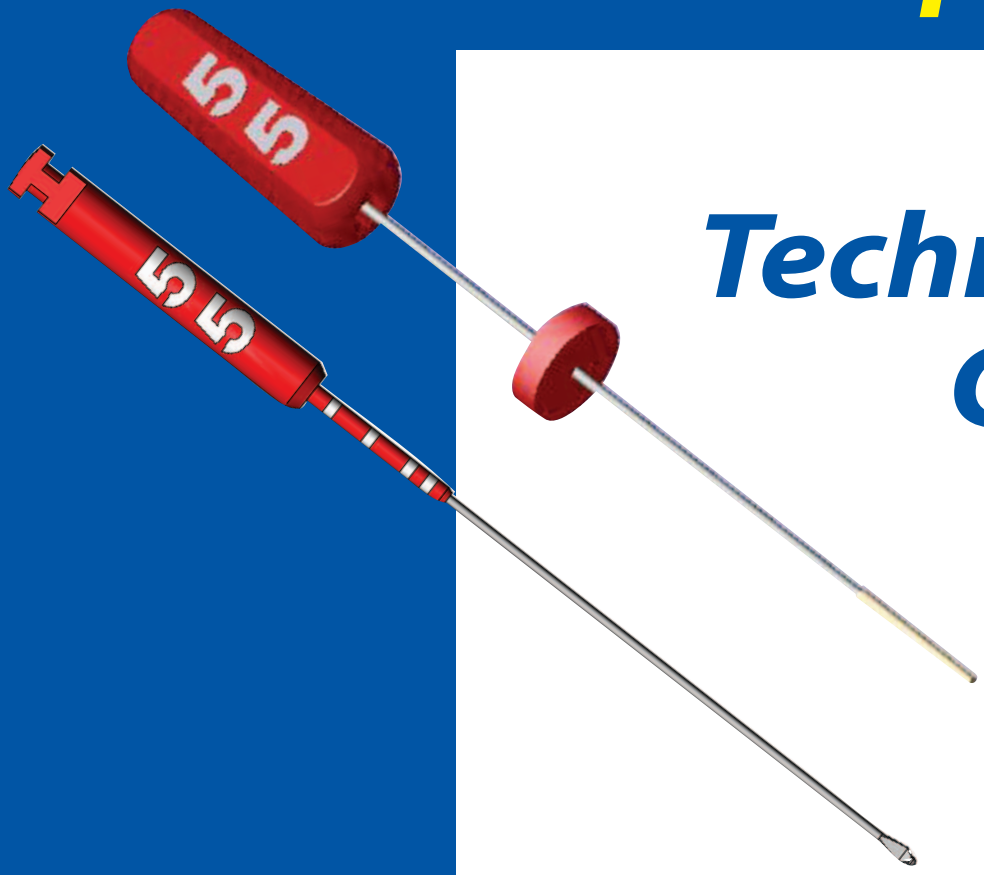
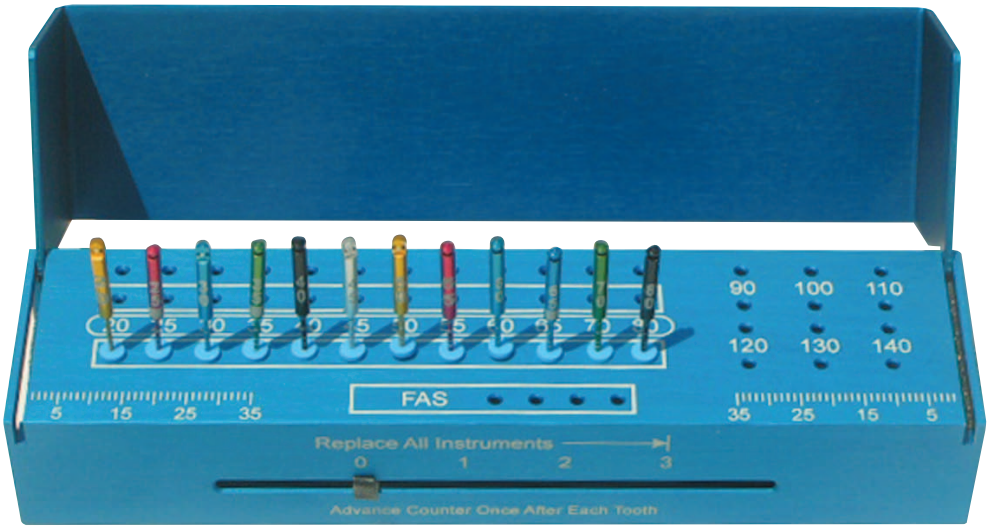
LIGHTSPEED®

LSX and SimpliFill®



Technique Guide



LIGHTSPEED ENDODONTICS

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Access, Flaring, Working Length, Canal Patency

Make access and flare the coronal 4 to 5 mm with Gates-Glidden Drills or Orifice Openers (see our StraightLine Access Technique Guide). Determine working length (WL) with an electronic foramen locator (recommended). Ensure canal patency to WL with a #15 K-file.

Step 1: Instrument the Apical Part of the Canal and Determine the Final Apical Size

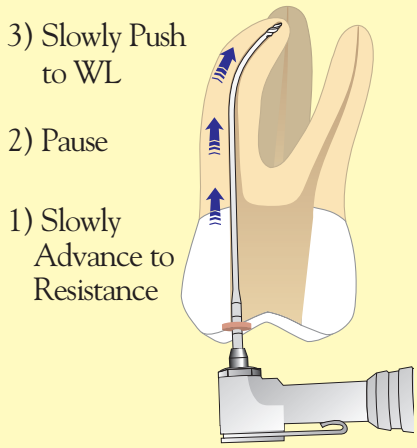
Begin with the LSX #20. If #20 does not go easily to WL, further enlarge canal with #20 K-file. Continue with sequentially larger sizes until the apical part of the canal is prepared to the correct **F**inal **A**pical **S**ize (FAS*). This is the size that requires a firm push in the final apical 4 mm to advance it to WL. Determining the FAS will become intuitive with experience. See Figure A for Average Final Apical Sizes.

The FAS defines the Working Width (WW). It is the instrument size that is slightly larger than the original apical canal diameter. The FAS mechanically cleans the apical canal walls. See Figure B, Apical Cross-Section.

*Also called the Master Apical File (MAF) or Master Apical Rotary (MAR)

Instrumentation Guideline

With the handpiece rotating, enter the canal and slowly advance the LSX apically. If there is no resistance (common with smaller sizes) keep advancing to WL. If there is resistance (blade engages walls), pause there for a moment, and then advance to WL with a **slow, continuous** pushing motion. Sometimes a LSX will not advance to WL because of a sharp curve (usually at the very end of the canal). Instead of using force, take the LSX out of the handpiece and try it by hand (see Hand Instrumentation below). In very rare instances, a #20 or #25 K-file is required to smooth out the curve.



Hand Instrumentation

Use a continuous clockwise (or counterclockwise) motion while applying firm apical pressure. Remove the instrument periodically to clean the blade and irrigate the canal. Continue with sequentially larger LSX instruments until the canal is enlarged enough with hand instrumentation to allow the next larger LSX to advance to WL while rotating in the handpiece.

Figure A

Average Final Apical Sizes (FAS)

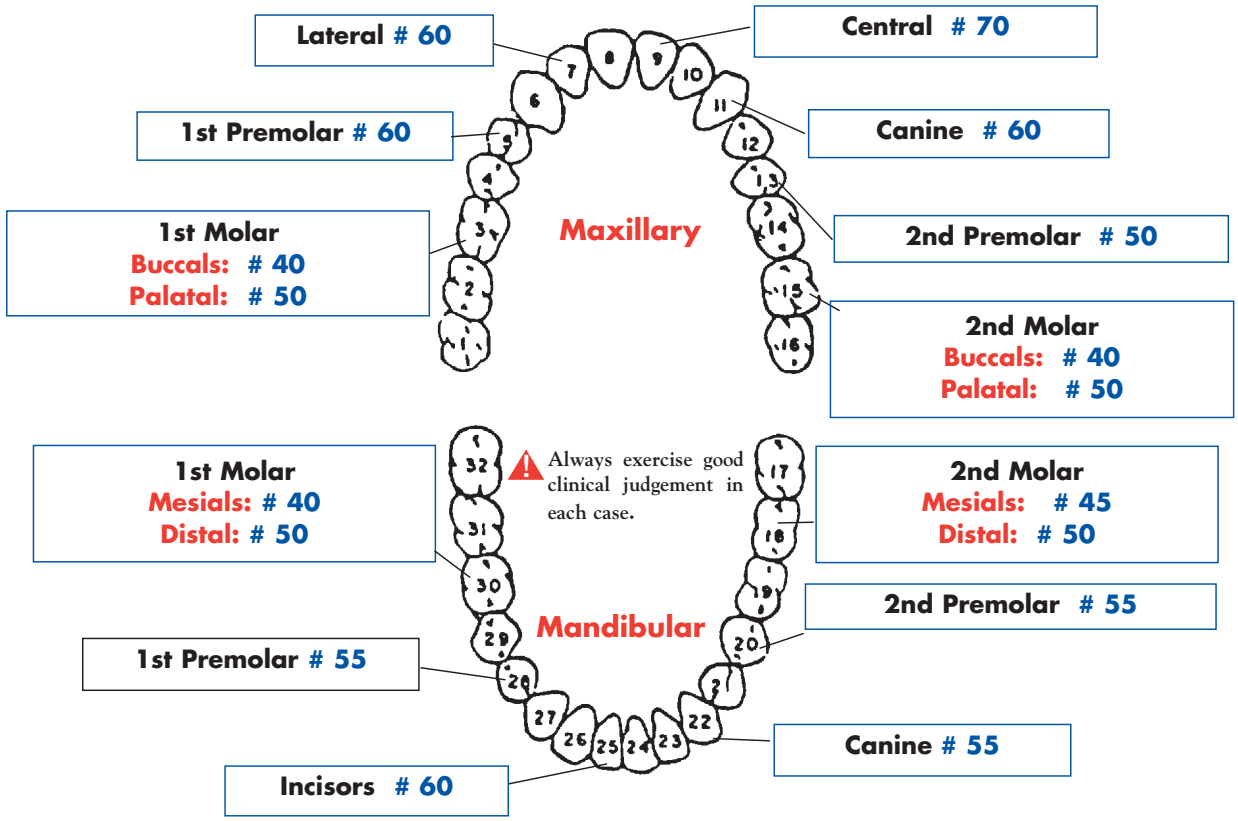
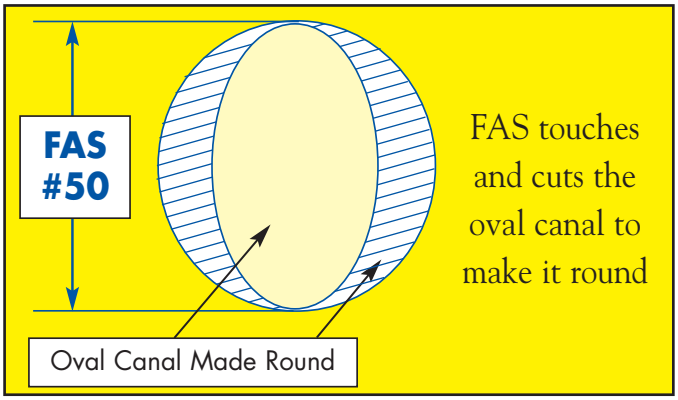
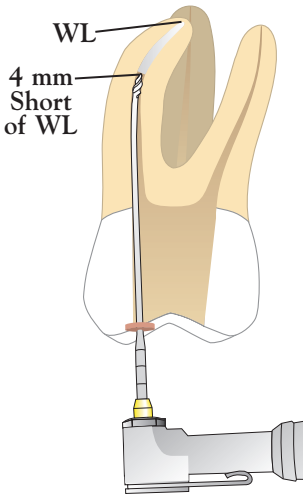


Figure B

Apical Cross-Section





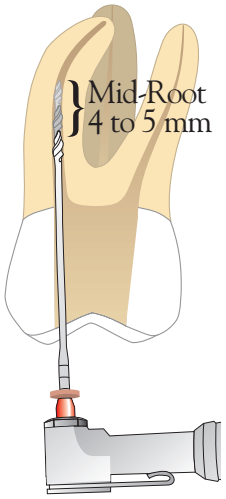
Step 2: Complete Apical Shaping

Instrument 4 mm short of WL with the next larger instrument (than the FAS). This shapes the apical 5 mm to accept the 5 mm SimpliFill Apical Plug used for obturation.

Note: If obturating with a Standardized cone (.02 taper) instead of SimpliFill, step-back from WL in 2 mm increments with sequentially larger instruments until reaching an instrument size that is 25 larger than the FAS. For example, if the FAS is a # 45, instrument 2 mm short of WL with a # 50, 4 mm short of WL with a # 55, 6 mm short of WL with a # 60, 8 mm short of WL with a # 65 and 10 mm short of WL with a # 70. This provides canal shape for the Standardized Master cone.

Step 3: Instrument Mid-Root

Instrument the remaining 4 to 5 mm of the mid-root with sequentially larger instruments. Advance to resistance, pause, then push 2 to 3 mm apically. BE CAREFUL NOT to advance any instrument to within 5 mm of WL as this may result in a loose fitting SimpliFill Plug. Repeat this step until reaching a size that will not easily advance past the coronal third of the canal. Mid-root instrumentation usually requires 3 instruments.



Step 4: Recapitulate

Using the FAS rotating in the handpiece, recapitulate to WL and:

1) Confirm that the canal is prepared so that the FAS goes easily to WL without encountering any obstructions
2) Confirm that the WL was maintained
3) Then stop the handpiece rotation and confirm the existence of an apical stop by attempting to push the FAS past the WL. The FAS should not advance past WL.

Step 5: Final Irrigation*

1) Irrigate with NaOCL (or irrigant of your choice), suction and dry
2) Rinse with EDTA, suction and dry
3) (Optional) Irrigate with CHX, suction and dry.

Once you have confirmed that the canal is clean and free of debris the canal is ready for obturation.

* **Follow** the obturation system manufacturer's recommendations for final irrigation procedure.

Do Not

Do not push hard or force LightSpeed instruments

Do not instrument in a dry or semi-dry canal. Instead, instrument with liquid EDTA in the canal

Do not exceed 3000 RPM or go below 2000 RPM

Do not overuse LightSpeed instruments

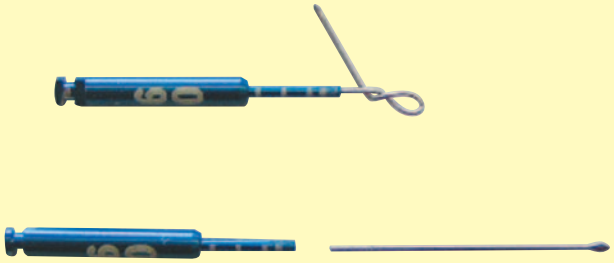
Do not use LightSpeed without rubber dam

CAUTION: When overstressed, LSX instruments are designed to twist-up or pull loose from the handle.

This may occur when they:

- become dull from overuse
- are pushed too rapidly
- encounter unusual anatomy
- encounter inadequate coronal flaring

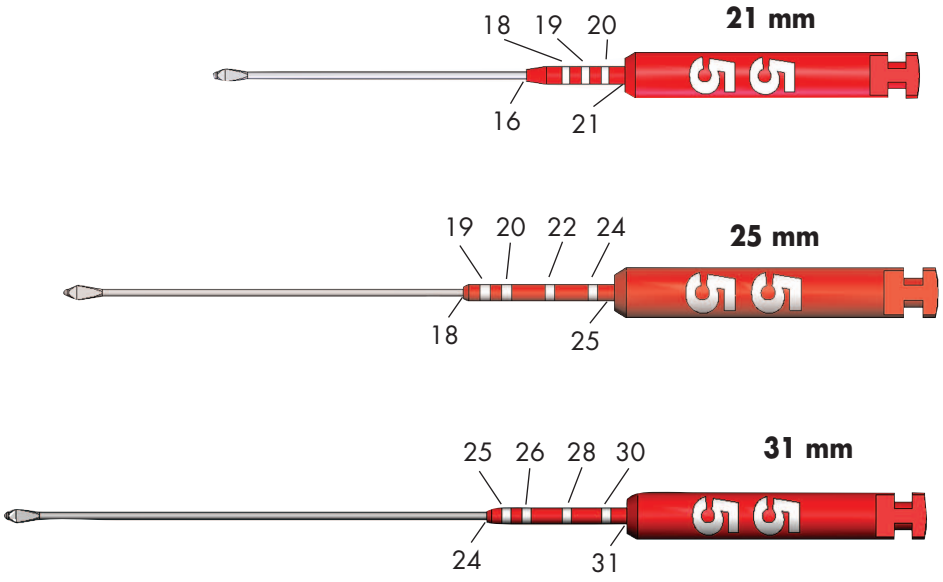
If fracture occurs the fragment usually is easily removed. If the fragment cannot be removed, try bypassing it with K-type files.



Irrigation Sequence

Irrigate after every other LSX instrument that cuts dentin (applying suction while irrigating enhances debris removal). Flush with NaOCL (or irrigant of your choice) until the solution is clear. Fill the canal and chamber with liquid EDTA (do not suction it out). More frequent irrigation is not discouraged.

Length Ring Guide



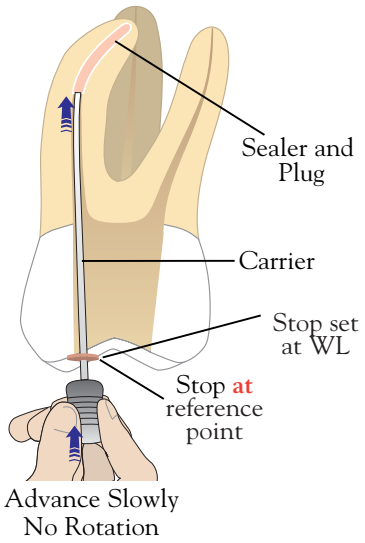
SimpliFill®

PRIOR TO USING SIMPLIFILL be sure that: (1) the apical preparation was done correctly (pages 3 & 4) (2) the canal is dry and free of debris (3) the size of the SimpliFill Plug is the same as the FAS size. When first learning SimpliFill, it is a good idea to trial fit the Plug prior to Step 1 (see page 7).

Step 1

Place SimpliFill Plug™ to WL

Select a SimpliFill Plug (the same size as the FAS) and set its rubber stop to WL. Coat the apical walls of the canal and the Plug with sealer*. Enter the canal and **slowly** advance the SimpliFill until the rubber stop is **at** the reference point (tip of Plug is at WL). Placing the Plug to WL should require a **firm push**.

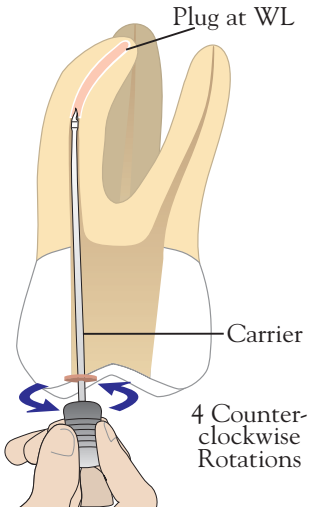


*When using SimpliFill® with Resilon, be sure to apply Primer before adding sealer.

Step 2

Release Plug from Carrier

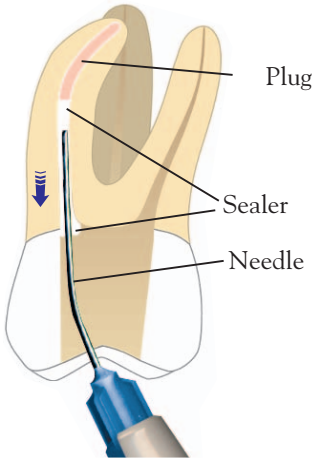
When the Plug is at WL (not before), turn the handle at least 4 complete counter-clockwise rotations to release the Plug from the Carrier. Obturation is now complete if a post will be used. **Note:** If Plug does not release from Carrier, the Plug is too small to adequately seal the canal. Use the next larger size Plug.



Step 3

Fill Remainder of Canal with Sealer

Advance the syringe needle in the canal until it binds in the canal or contacts the Plug. **Slowly** express the sealer until visible at the orifice. Continue expressing the sealer while withdrawing the needle from the canal.

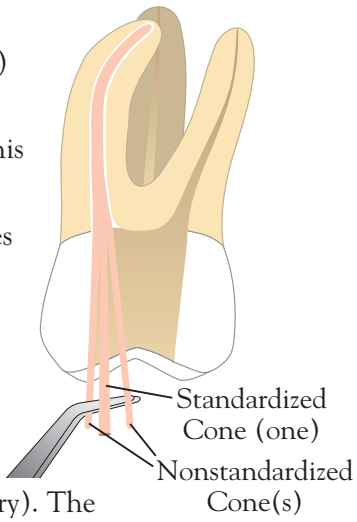


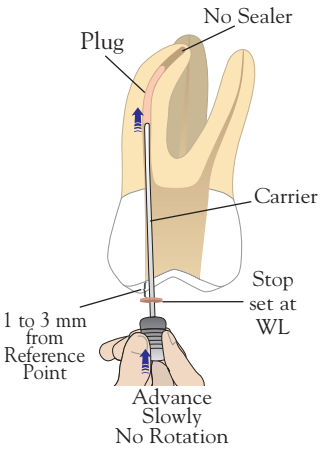
Step 4

Place Backfill Cone(s)

Push a Standardized (.02 taper) Cone through the sealer until it **contacts** the Apical Plug. This cone should be the **same size** as the Apical Plug. More cones (Nonstandardized) can be added if space permits.

Note: If a resin based sealer is used, lateral or vertical condensation of Backfill Cones is optional (not necessary). The sealer's low viscosity allows it to flow three-dimensionally.





Trial Fitting

Purpose

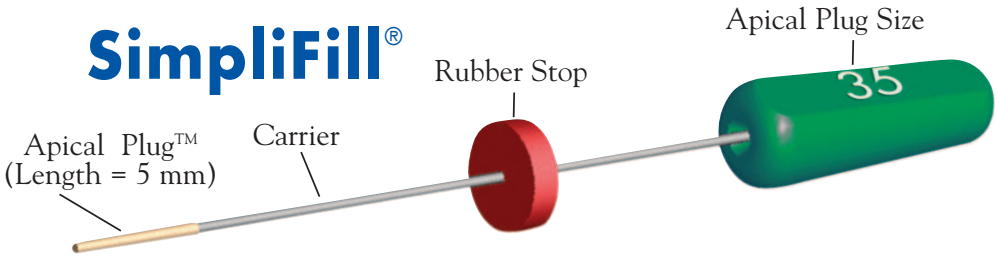
The purpose of trial fitting is to check that the SimpliFill Plug will fit the apical preparation correctly. Set the stop at WL and trial fit a Plug (the same size as the FAS). Do not use sealer. Enter the canal and without rotation **slowly** and **gently** advance the Carrier. **Stop** advancing **immediately** when feeling a **slight** snugness of the Plug.

Note how far the rubber stop is from the reference point. If the stop is 1 to 3 mm short of the reference point (WL), the fit is correct. If the stop is less than 1 mm refer to A below. If the stop is more than 3 mm from the reference point, refer to B below.

A. If the stop is less than 1 mm from the reference point, it means the Plug is too small for the preparation. Try the next **larger** size SimpliFill.

B. If the stop is more than 3 mm from the reference point, it means the Plug is too large for the preparation. Try the next **smaller** size Plug.

Caution: Advancing beyond a slight snugness or rotating the Carrier may leave the Plug prematurely in the canal (Plug is easily removed with a Hedstrom file or the LSX FAS).



Do

Do instrument canals using the LightSpeed technique described in this Technique Guide

Do sterilize the Apical Plug by submerging the Carrier and Plug in sodium hypochlorite for at least one minute

Do insert the syringe needle as far as possible into the canal when placing backfill sealer. This helps eliminate air bubbles

Do use a Backfill Cone(s) to provide an easy path for retreatment. The first Backfill Cone (Standardized .02 taper) must contact the top of the Apical Plug

Do use SimpliFill Plugs, Carriers and Needles only once. Discard Carriers and Needles properly in a Sharps' type container

Do advance the Plug to WL slowly and without rotation

Do Not

Do not advance the SimpliFill Plug beyond the point of a slight snugness when trial fitting. Doing so may leave it in the canal prematurely

Do not use SimpliFill if the canal is not properly prepared for it. See pages 2 through 5

Do not sterilize the Plug and Carrier with heat

Do not rotate the Carrier handle before the Plug has reached WL. After reaching WL rotate the Carrier counter-clockwise to release the Plug

Do not twist the syringe needle (may loosen in hub). However, the needle may be curved

Do not use SimpliFill without rubber dam

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