

# NTEA ENDO FAX

Compliments of North Texas Endodontic Associates

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## Fundamentals for Choosing a Rotary File

Introduction of nickel titanium rotary instruments has resulted in easier and more successful endodontic therapy. These instruments were introduced in the early 1990s and quickly became the instrument of choice for many practitioners. The shift to a rotary technique has resulted in a predictability of shaping not seen with hand instrumentation and a dramatic decrease in postoperative sensitivity when used in a crown down technique. As nickel-titanium rotary instruments made it possible to successfully treat severely curved and calcified canals, it became apparent that rotary instrumentation was not a panacea for every case. Clinicians began to develop hybrid preparation techniques that combined different systems. Recently, several series of new rotary files were introduced to the marketplace. In an effort to produce files that will perform more efficiently and safely, manufacturers are incorporating new material and design features such as **cutting and noncutting tips, radial lands, and rake angles** to accommodate various canal morphologies.

Most practitioners feel safer using file with a noncutting tip. The cutting tip has the ability to enter narrow, calcified canals, but this tip also has the ability to transport canals and cause perforations. Due to these concerns, radial lands were created to ensure the instrument remains centered in the canal. The combination of a noncutting tip and radial lands has been a successful file design for preventing canal transportation.

With regard to radial lands, there are two primary designs, a full land or a recessed land. Advocates of the full land feel this design keeps the file centered in the canal. Proponents of a recessed land feel that the design allows for reduced frictional resistance.

The rake angle is another important feature that affects the cutting performance of a rotary file. Positive rake angles will cut more efficiently than neutral rake angle, which plane the inside of the canal.

Which design is best depends on personal preference for either an aggressive cutting file or a noncutting design. The cutting features of an aggressive file such as the ProTaper (Dentsply, Tulsa) enhance the ability to shape canals. The use of an aggressive file, however, may present some limitations and potential complications. On the other hand, if efficiency and safety is more of an issue, a file such as the K-3 (Analytic Endodontics) will provide consistent and predictable results. The K-3 combines a noncutting tip with a positive rake angle and radial lands to keep the file centered in the canal system.

Prior to choosing a rotary file system, a preliminary understanding of the fundamentals of file design combined with a preclinical trial on extracted teeth, will facilitate the clinician's choice in rotary files.

*Endo Fax is produced by North Texas Endodontic Associates, Dr. David Witherspoon, Dr. Ron Wright, Dr. Gary Harris, and Dr. Joel Small, and is intended to aid the practitioner in the management of endodontic conditions. Practitioners must always use their own best professional judgment. We neither expressly or implicitly warrant any positive results associated with this material.*