



FKG

swiss endo



EN

Catalogue

► Foreword

Dear customers,

I am pleased to present the new FKG Dentaire catalogue featuring each of our products in the same order that they would be used during an endodontic treatment. In keeping with our strategy to innovate, we have recently added several new products to our range, which you can learn to handle in ultra-modern training centers in La Chaux-de-Fonds, Oslo and Dubai.

Our worldwide revolution is called the **XP-endo® Shaper**, the latest arrival to the 3D XP-endo® instrumentation range. Thanks to its expansion capacity and booster tip featuring six sharp edges, it revolutionises the concept of canal shaping with a unique instrument.

The same range contains the **XP-endo® Finisher** cleaning file, which exploits the shape memory properties of NiTi to reach into the smallest corners of complex canals, while respecting the canal morphology and preserving the dentine. Slightly stiffer, the **XP-endo® Finisher R** is designed for removing the filling material.

A perfect obturation of the tooth is guaranteed by the **TotalFill® BC Sealer™**, a bioceramic material dispensed in a ready-to-use syringe. Among the main advantages it offers compared to traditional obturation methods are a high PH value during the setting phase, biocompatibility and stability.

In our quest to offer you the best solutions, we at FKG are always eager to listen to our customers. I look forward to meeting you soon in one of our training centers or at a trade fair.

Yours sincerely,



Thierry Rouiller
CEO

► FKG Dentaire,



Founded in Switzerland in 1931, FKG Dentaire SA gained new momentum in 1994, the year Jean-Claude Rouiller took over the reins of the company. He propelled FKG to the forefront in the development, manufacturing and distribution of products destined for dentists, endodontists and laboratories. Flexible, quick to react and above all, innovative, FKG remains close to its markets and plays in the big leagues. Always able to anticipate and respond to the needs of end users, the company has built partnerships with the best universities in the world. In 2012 the son of Jean-Claude Rouiller, Thierry, succeeded to the head of the company.

As part of its belief in transferring knowledge on the optimal use of its ultra-sophisticated tools, FKG offers not only demonstrations but also training for dentists, notably at the training centers in La Chaux-de-Fonds (opened in 2014), Oslo and Dubai (opened in 2013).

Through its network of distributors, which are carefully selected on the basis of their structure and compatibility with its own strategies, FKG makes its instruments available around the world.

Equipped with a clean room since 2013, FKG Dentaire is now developing a range of sterile products that will ensure even greater safety and ease of use. The company is certified according to international industry norms and regulations.

🕒 **For more information, please visit www.fkg.ch and/or watch the company's presentation video by scanning the QR code above.**



Swiss Endo Academy - Training center in La Chaux-de-Fonds

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*All the documents on FKG products on www.fkg.ch
Products references: www.fkg.ch/en/media-center*

A. The benefits of innovation

The latest products bearing the FKG label are in keeping with the company's strategy of offering a complete range of high-performance ergonomic instruments that maximize the patient's level of comfort and safety during endodontic treatment.

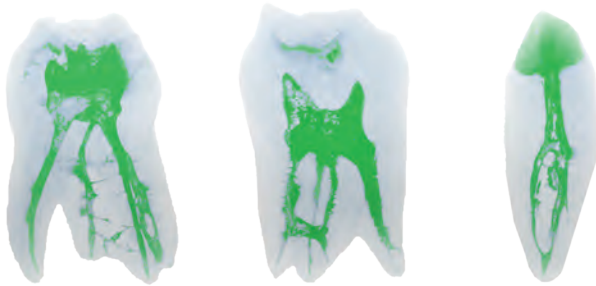
In recent years, our engineers and product developers have been preoccupied with a biocompatible obturation material and devising new sterile instruments for practitioners that are even more effective at treating complex root canals.

Developments / trends

In the last decades, the field of endodontics has seen a large number of developments. Driven by new technologies, the biologic aims of endodontics are more achievable.

Today, greater emphasis is placed on less invasive treatments, and on a better appreciation of the need to clean the canal in a 3D fashion, rather than according to the misleading 2D view seen in the typical periapical radiograph. However, treatment still too often fails, either because of traditional problems like canal transportation, over-instrumentation, extrusion or compaction of debris, micro-cracks or excessive dentine removal.

The use of Nickel-Titanium rotary instruments — narrower, more flexible and less aggressive — has become a necessity, as they facilitate the handling and reduce treatment time whilst preserving the root structure. Reducing the number of instruments per sequence is another factor in achieving these objectives.



*3D representations illustrating
the complexity of the root structure.*

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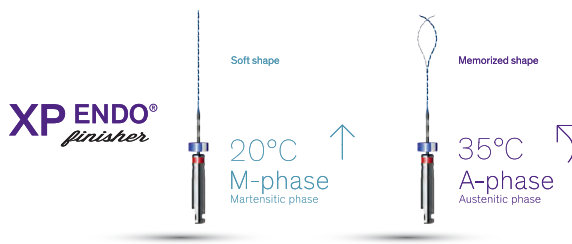
Technologies



MaxWire®. Through a constant process of innovation and improvements, FKG has been working to ensure it can offer practitioners instruments capable of meeting all these requirements.

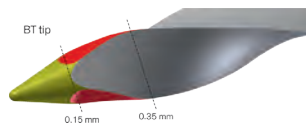
With the creation of the exclusive MaxWire® alloy, FKG is bringing two fundamental properties to the forefront: superelasticity and shape memory, with the aim of creating a completely new generation of instruments.

Unlike other instruments, these are able to react to variations in temperature and to take on a predetermined shape inside the root canal, at body temperature.



Their specific preset shape and their extreme flexibility enables these instruments to contract and expand within the canal itself, and to reach areas which conventional instruments simply cannot access. Furthermore, their small ISO diameter and their narrow taper give them extreme resistance to cyclic fatigue.

These factors enable this new technology to provide treatment for extremely complex root canal morphology, simply and efficiently, whilst being able to preserve the canal structure to a remarkable extent.



The BT-Tip. With its unique geometry featuring six sharp edges, the BT-Tip (Booster Tip) respects the trajectory of the canal, whilst removing more material with each pass. It enables to start shaping an ISO diameter smaller than the one of the instrument. For example, an ISO 35 instrument with BT-Tip already works at a diameter of 0.15 mm.

01. XP-endo® Shaper



One File Shaper

The XP-endo Shaper is the latest addition to the XP-endo® range. It is a truly innovative shaping instrument which can be used to radically simplify endodontic sequences.

It results from the combination of two cutting-edge technologies:

- ▶ Made with MaxWire® alloy, like the XP-endo Finisher, it offers remarkable flexibility and fatigue resistance, and the ability to progress within the canals with ease and agility, expanding or contracting according to the canal morphology.

With an initial taper of .01, the XP-endo Shaper expands once inside the canal, achieving a taper of at least .04.

- ▶ Thanks to the Booster Tip (BT), the XP-endo Shaper benefits from a unique geometry, featuring six sharp edges at the tip. The BT tip respects the trajectory of the canal, whilst removing more material with each pass. It enables to start shaping an ISO diameter smaller than the one of the instrument.

In the case of the XP-endo Shaper, the BT enables it to start shaping after a glide path of at least ISO 15, and to gradually increase its working field to achieve an ISO 30.

Simplified handling

Thanks to this unique instrument, treatment is easier to perform, treatment time is shorter, the risk of errors and incidents are radically reduced and the root structure is preserved.

Shaping becomes a simple, safe and quick process.

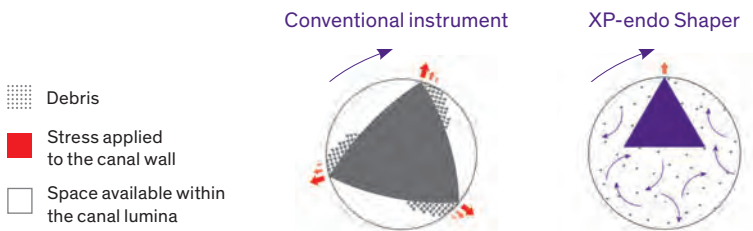
Minimal torque

The torque is a highly important parameter to take into consideration. Higher torque means the instrument is subject to greater levels of stress, thereby increasing the risk of fracture.

Due to its characteristics, the XP-endo Shaper enables the stress applied on the instrument and the canal walls to be restricted. This allows it to limit instrument breakage and micro-cracks and to significantly reduce the stress applied on the tooth during treatment.

Excellent debris removal and improved disinfection

The XP-endo Shaper has a smaller core than conventional instruments reaching the same final dimensions. This facilitates debris removal, making it more efficient without occluding the dentinal tubules.



This gained space enables a large amount of debris to be removed, and prevents it from being compacted into canal irregularities and extruded beyond the apex.

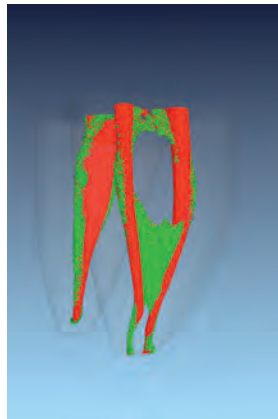
➊ For more information, please consult the XP-endo Shaper brochure and/or watch the video by scanning the QR code on page 7 (also available on www.fkg.ch).

02. XP-endo® Finisher



Problem: the complexity of the root canal and the success rate of an Endo treatment

The root canal system is highly complex: it can be oval or C-shaped; the canals sometimes divide; or an isthmus may connect the canals (Dye and Micro CT 3D studies). In the face of such complexity, standard NiTi files are not always up to the task. Despite their flexibility, the files make round shapes only and thus cannot reach certain parts of the canal during treatment. Several studies involving micro CT technologies have shown that, on the whole, when standard NiTi files are used to prepare the root canal, only 45-55 per cent of canal walls are actually touched.






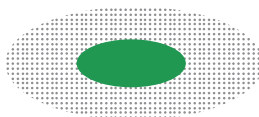
3D Micro CT : Canal morphology before instrumentation (green); canal walls touched using a standard NiTi file (red).

**Courtesy of Dr. Frank Paqué (Switzerland)*

The solution: XP-endo Finisher

Original canal anatomy

-  Dentine
-  The canal (area to be cleaned)
-  Area cleaned

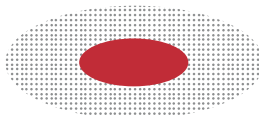


► Canal shaping with standard NiTi files



Canal partially cleaned. Microbes and dental debris accumulate in the untouched areas.

► Canal shaping with standard NiTi files + XP-endo Finisher



XP-endo Finisher ideally used following any root canal preparation to achieve an improved cleaning of the root canal while preserving dentine.

XP-endo Finisher is incredibly flexible and can expand its reach 6mm in diameter or 100-fold of an equivalent sized file. This is why XP-endo Finisher allows mechanical cleaning of the canal in areas previously impossible to reach.

-
- For more information, please consult the XP-endo Finisher brochure and/or watch the video by scanning the QR code on page 9 (also available on www.fkg.ch).
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03. XP-endo® Finisher R



As we now know, it is very difficult to fully eliminate the filling material during retreatment. Regardless of the technique used, there is some debris left behind after canal cleaning - in particular in curved or oval canals.

► **Illustrations demonstrating the presence of filling material residue in the canal after retreatment using standard rotary instruments.**

After obturation procedure



After retreatment procedure



*Representative micro-CT 3D reconstructions of a maxillary canine with oval-shaped canal after obturation.
© Dr Marco Versiani and Dr Ali Keleş, All Rights Reserved*

The XP-endo Finisher R has a core diameter larger than the XP-endo Finisher, making it slightly stiffer and also more efficient in removing root filling materials adhering to the canal walls. Thanks to its expansion capacity, the XP-endo Finisher R can reach areas of the canal wall which conventional files cannot reach, thereby considerably improving canal cleaning.

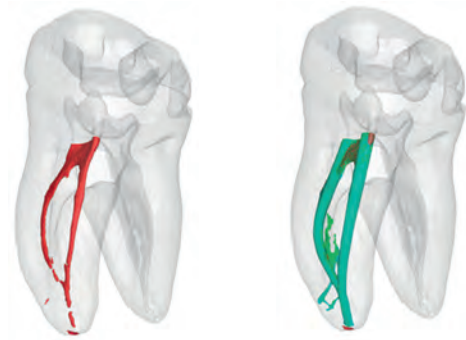
● **For more information, please consult the XP-endo Finisher brochure and/or watch the video by scanning the QR code on page 9 (also available on www.fkg.ch).**

04. TotalFill®

Premixed Bioceramic Endodontic Materials

TotalFill® is available for two types of usage :

- 3D obturation
- Root repair needs and retrograde fills



3D obturation

Endodontic obturation has met its match: the TotalFill® BC Sealer™, a pre-mixed cement dispensed in a syringe.

Unlike conventional base/catalyst sealers, TotalFill® BC Sealer™ utilizes the moisture naturally present in the dentinal tubules to initiate its setting reaction. This highly radiopaque and hydrophilic sealer forms hydroxyapatite upon setting and chemically bonds to both dentine and to our bioceramic points (TotalFill® BC Points™). BC Sealer is anti-bacterial during setting due to its highly alkaline pH and unlike traditional sealers, BC Sealer exhibits absolutely zero shrinkage!

Unlike traditional points, TotalFill® BC Points™ are subjected to a patented process of impregnating and coating each cone with bioceramic nanoparticles. The bioceramic particles found in TotalFill® BC Sealer™ bond with the bioceramic particles in TotalFill® BC Points™ to form a true gap-free seal.

-
- ▶ Biocompatible and Osteogenic
 - ▶ User Friendly (Premixed Syringeable Sealer)
 - ▶ Zero shrinkage of Sealer and Filling Material
 - ▶ Chemical Bond of Sealer to Dentine
 - ▶ Chemical Bond of Sealer to Filling Material
 - ▶ Cost Effective (Considerably Less Expensive Than Carriers)
 - ▶ Highly Anti-bacterial (+12 pH upon setting)
 - ▶ Highly Radiopaque
 - ▶ Hydrophilic
 - ▶ Hydroxyapatite Producing
 - ▶ Ideal Working and Setting Time
 - ▶ 3-D Bonded Obturation at Room Temperature
-

Root repair needs and retrograde fills

TotalFill® Root Repair Material (RRM™) is available in 3 specifically formulated consistencies (syringeable Paste, condensable Putty or Fast Set Putty) and contains many of the same characteristics as TotalFill® BC Sealer™. The favorable handling properties, increased strength and shortened set time make TotalFill® RRM™ highly resistant to washout and ideal for all root repair and pulp capping procedures. Research and countless cases confirm that TotalFill® RRM™ is highly biocompatible and osteogenic.

Superior Handling

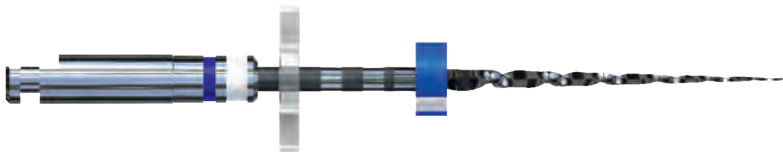
- ▶ Premixed-syringeable Paste, Putty consistency or premixed-syringeable Fast Set Putty
- ▶ Shortened Set Time (only 20 min for the Fast Set Putty)
- ▶ Highly Resistant to Washout

Excellent Healing

- ▶ Highly Biocompatible
- ▶ Osteogenic
- ▶ Anti-bacterial (+12 pH)



B. Product specifications and packaging



01

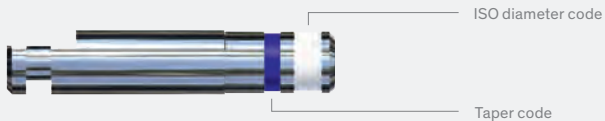
Specifications

FKG rotary instruments are equipped with a CI metal handle, depth marks and a silicon endo stop.

1.1 CI metal handle for contra-angle

The aim is to provide easy identification of the ISO diameter (wide ring) and taper (narrow ring). The information remains visible when the instrument is inserted in the head of the contra-angle.

- ▶ Handle length 12 mm, stainless coating, paint marking of ISO and taper codes



1.1.1 Color codes

Ø ISO (Wide ring)

												
10	15	20	25	30	35	40	45	50	55	60	70	80

Taper (Narrow ring)

				
.02	.04	.06	.08	.10

1.2 Depth marks

The depth marks are used to recognise the position of the working length (WL) in the tooth and are additional to the endo stop. The depth marks are applied on all instruments in the XP-endo and Race ranges.

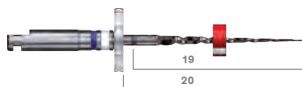
- ▶ Depth marks applied on instruments of length 21 mm/25 mm/31 mm



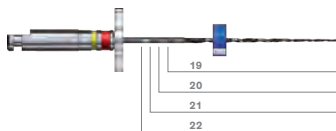
Examples of instruments with depth marks :



- ▶ 19 mm instruments, no mark.



- ▶ 21 mm instruments, marks at 19 and 20 mm.



- ▶ 25 mm and 31 mm instruments, marks at 19, 20, 21 and 22 mm.

➡ For certain references, CM handles are still available (while stocks last).

1.3 Silicone endo stop

The endo stop is used to mark the working length, it is radiopaque

- ▶ The stroke identifies the original tip direction in the root canal (SSt instruments).
- ▶ ISO Colours indicate the file length.



19 mm



21 mm



25 mm



31 mm

02

Packaging

The risks of cross-contamination are a real concern for practitioners. Over time the need for sterile instruments has become more urgent, with their use even being made mandatory in some countries. To meet this expectation, FKG has set up a clean room, making it possible to produce blister-packed sterile instruments.

In addition to guaranteeing perfect hygiene (by eliminating the risks of cross-contamination during root canal treatment), the greatest advantage that sterile instruments offer to practitioners is the notable amount of time saved, coupled with a simplicity of use, as the instruments come ready-to-use – so there is no need to handle, disinfect and sterilize the tools at the dental office.

-
- ▶ The practitioner can start treatment right away, as the instruments come ready-to-use.
 - ▶ The costs associated with usage are reduced (no more disinfecting or sterilizing onsite) and storage is simplified.
 - ▶ Only the instrument needed for treatment is removed from the sterile pack, so the other instruments remain stored in a protective environment.
 - ▶ Use of the instrument is completely hygienic.
-



C. Endodontics

Root treatment takes place in four stages : opening and accessing the canals, glide path, canal shaping and cleaning, and obturation. Retreatment may also be necessary if a previous treatment has to be corrected or improved. We will review these different stages below, as we present the solutions offered by FKG Dentaire.



01

Endodontic motor and apex locator

Rooter® S - Compact, cordless endodontic motor
S-Apex™ - Design meets precision





1.1 Rooter S. The refined, compact design of Rooter S' head and body is very small and lightweight. With this motor, the dentist can experience the same tactile feedback as manual filing while various automatic controls reduce the risk of file jamming and breakage. When connected to the apex locator S-Apex from FKG Dentaire, the position of the file tip is monitored during the procedure, and many automatic functions such as Auto Apical Reverse can be activated.

Small head for excellent visibility

Head is only 9 mm in diameter. In addition, a file electrode is directly integrated into the head.

Compact and lightweight

The compact and lightweight design of Rooter S provides excellent access and tactile feedback.

Automatic controls and settings

Rotation Direction: forward and reverse

Torque Reverse: eleven torque reverse settings

Auto Controls: Auto Torque Reverse / Auto Torque Slow-down

Wide speed range

Eleven speed settings: 50, 100, 150, 200, 250, 300, 400, 500, 600, 800, and 1,000 rpm. This is extremely convenient for different types of files and varying treatment needs.

Backlight color identifies current conditions

The backlight changes color to alert the dentist when torque reaches its set limit, and if Rooter S is connected to S-Apex, when the file tip goes beyond the apical limit.

Programmable settings

Various setting combinations can easily be programmed and selected.

Module system

When connected to the S-Apex with the transmission cable (both sold separately), the automatic controls are available for more efficient canal preparation.

Easy to read LCD display

Graphics, numbers, and letters are easy to read. The display may also be reversed for left-handed dentists.



Display for right-handed user

Display for left-handed user



1.2 S-Apex. Built on the highest industry standard technology, S-Apex measures in both wet or dry canal conditions with class-leading accuracy. S-Apex is compact, lightweight and designed to fit the hand. It can be placed on a tray, the patient's apron, or any other convenient place.

Accurate measurement

Utilizing the ratio technique, S-Apex provides a highly accurate indication of the file's location. The accuracy of the measurement is not affected by the presence or absence of blood, other discharges, electrolytes, saline, tap water, or hydrogen peroxide.

No zero adjustment

It is not necessary to set the device on zero before measuring each individual canal.

Automatic calibration

Automatic calibration ensures accuracy and eliminates the effect of changes in temperature, moisture, etc. inside the canal, even during the treatment.

Color liquid crystal display

The color liquid crystal display is easy to read, providing a clear progressive display and high contrast.

02

Opening and accessing the canals

Opening up the tooth is a key step of the procedure and should be minimally invasive to spare dental tissue and avoid weakening the crown. The occlusal part must be hollowed out and, working progressively downward, the entire pulp tissue must be removed to clear entrance to the canals.



2.1 Burs



2.1.1 Access cavity opening

- ▶ **Round diamond bur 016.** Designed for the initial preparation.
- ▶ **Round carbide bur 012.** Recommended for penetrating metal restorations.
- ▶ **Cylinder carbide bur 012.** Enables you to cut through amalgam or to section metal crowns.



2.1.2 Pulp chamber preparation

- ▶ **Tapered diamond burs 012/017.** Used to flatten the internal walls and finish the preparation. They both offer the safety of a "blunt", non-cutting end (Safe end) and a depth marker, thereby preventing risks of perforations.



2.1.3 Cavity Access Kit. This set comprises the 5 burs above and makes the ideal companion for preparing the endodontic access cavity.

▶ Recommended speed: 60'000 - 120'000 rpm

2.2 Gates and Peeso

Gates and Peeso instruments are reamers used to widen and straighten the coronary part of the canals, allowing better access for shaping instruments. Their use is strictly limited to the straight portion of the canals.

- The risk of perforation is significant if these instruments are used in a curved canal or when cutting laterally.



2.2.1 Gates. Gates instruments are oval shaped, with a guiding rounded safety tip and sharp cutting edges.

50	70	90	110	130	150
n° 1	2	3	4	5	6

- **Ø ISO 50, 70, 90, 110, 130, 150**
- **Length : 19 mm**
- **Recommended speed : 1200 rpm**



2.2.2 Ultrashort Gates XS. Thanks to their compact size, the ultra-short Gates XS instruments allow better access to posterior teeth. Their short handle (10 mm) is particularly well adapted to small-headed contra-angles.

50	70	90	110	130	150
n° 1	2	3	4	5	6

- **Ø ISO 50, 70, 90, 110, 130, 150**
- **Length : 15 mm**
- **Recommended speed : 1200 rpm**



2.2.3 Peeso. With parallel cutting edges and a guiding rounded safety tip, Peeso reamers are more rigid and aggressive than the Gates.

n°	1	2	3	4	5	6
	50	70	90	110	130	150

- **Ø ISO 70, 90, 110, 130, 150, 170**
- **Length : 19 mm**
- **Recommended speed : 1200 rpm**

2.3 PreRace

The PreRace files ensure the same operation as the Gates and Peeso but more safely thanks to their anti-screwing in design, rounded in greater safety tip and larger taper.



2.3.1 PreRace. Available in steel or NiTi, the PreRace files allow a side-to-side milling motion without being too invasive or risking perforation. They are used in the coronary and straight part of the canal to remove interferences and facilitate access to the canal.

■	30/.06
■	35/.08
■	40/.06
■	40/.10

- **Ø ISO 30/.06, 40/.06 (NiTi), 35/.08, 40/.10 (NiTi/Sst)**
- **Length : 19 mm**
- **Optimal speed : 600 rpm (minimum 400 rpm)**
- **Torque : 1.5 Ncm**

03

Glide Path

After opening the cavity access, localizing and widening the canal entrance, the canal can be penetrated with manual or rotary files made of steel or Niti to allow probing and debridement of the canal. Depending on the canal morphology, this step of the procedure is undertaken using one or several of the following instruments.



3.1 Hand files



The hand endodontic files made of steel or NiTi in standard ISO sizes 6 to 40 have a rounded safety tip, which is an exclusive FKG feature, plus and also have an ergonomic handle, the SafetyMemoGrip (SMG). Thanks to its larger rear diameter, the ergonomic handle offers a better grip. Situated on the end of the handle is an 8-segmented “use” indicator. After each treatment, a segment is scratched, thus preserving information on the number of cycles of use and sterilization. When all segments are scratched, the instrument is discarded.



There are also so-called "Flex" manual steel files, which provide better flexibility. They are recognisable thanks to the small "F" affixed on their handle, just like the manual NiTi files.

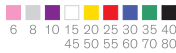


The hand files are also available with the Ergoflex handle. Its particular ergonomic features, rounded section followed by a flat section, facilitate gripping when filing and prevent rotation above 180°.

-
- Stainless steel hand files, ISO 6, 8 and 10 are for single use only.
-



3.1.1 K (Kerr) files. K-Files are particularly well adapted for probing and permeabilization during canal preparation. Made of stainless steel or NiTi, K-Files are more rigid instruments than reamers and thus more effective at penetration.



- Ø ISO 6, 8, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80 (Sst)
- Ø ISO 15, 20, 25, 30, 35, 40 (NiTi)
- Lengths : 21, 25, 31 mm
- Taper : 2%

To find out the exact availability, please look up the catalogue appendix (www.fkg.ch).



3.1.2 H (Hedström) files. Sharp edged, H-Files are used for probing, permeabilization or extraction of debris. Made of stainless steel or NiTi, these files can only be used in traction because of their profile. Consequently, their use is essentially for widening after passage of the K-File of the same number and for evacuating debris and organic tissue.

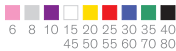


- Ø ISO 8, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80 (Sst)
- Ø ISO 10, 15, 20, 25, 30, 35, 40 (NiTi)
- Lengths : 21, 25, 31 mm
- Taper : 2%

To find out the exact availability, please look up the catalogue appendix (www.fkg.ch).



3.1.3 Reamers. Made of stainless steel or NiTi, the reamers are used for probing and permeabilization during filing and for removal of organic and mineral waste during the final phases of preparation.



- Ø ISO 6, 8, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80 (Sst)
- Ø ISO 15, 20, 25, 30, 35, 40 (NiTi)
- Lengths : 21, 25, 31 mm
- Taper : 2%

To find out the exact availability, please look up the catalogue appendix (www.fkg.ch).



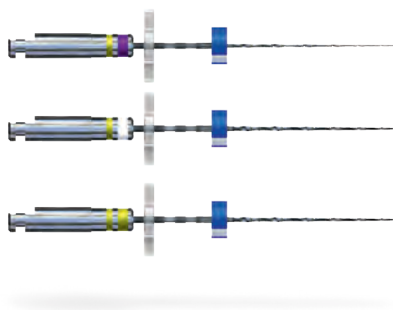
3.1.4 Barbed broaches. Used to remove pulp tissue during root canal treatment.



- Ø ISO 25, 30, 35, 40, 50, 60 (Sst)
- Length : 20 mm

3.2 Rotary NiTi instruments for mechanized scouting

NiTi rotary instruments allow a quicker and more reliable passage preparation than hand instruments. Greater respect of the anatomy of the middle and apical thirds is observed without transport or formation of a stop. Due to their slight taper and extreme flexibility, NiTi rotary instruments follow perfectly the anatomy of the canal and are used without pressure up to the working length (WL), thus allowing better shaping of the canal.



3.2.1 ScoutRace. Used for the mechanized scouting of high curvature or S-shaped canals, ScoutRace is a sequence of three Race instruments with a taper of .02 and ISO diameters 10, 15 and 20. At first passage instruments, they are used after the working length (WL) has been determined using hand K-Files or an apex locator. Canal preparation will be completed using the instruments presented in the "Canal shaping and cleaning" chapter.

- 10/.02
- 15/.02
- 20/.02

-
- ▶ **3 instruments : ISO 10/.02, 15/.02 and 20/.02**
 - ▶ **Lengths : 21, 25, 31 mm**
 - ▶ **Optimal speed : 800 rpm (minimum 600 rpm)**
 - ▶ **Torque : 1.5 Ncm**
-



3.2.2 Race ISO 10. Three instruments make up the Race ISO 10 range, all with a size of ISO 10 and with .02, .04 and .06 taper. They are intended for reaching the WL when hand ISO 6 or 8 K-Files can no-longer advance in calcified or very narrow canals. Canal preparation will be completed using the instruments presented in the "Canal shaping and cleaning" chapter.

-  10/.02
-  10/.04
-  10/.06

-
- ▶ **3 instruments : ISO 10/.02,10/.04 and 10/.06**
 - ▶ **Lengths : 21, 25, 31 mm**
 - ▶ **Optimal speed : 800 rpm (minimum 600 rpm)**
 - ▶ **Torque : 1.5 Ncm**
-



3.2.3 BT-Apisafe. A rotating NiTi instrument with zero taper and the ideal complement to any Endo sequence, it guarantees greater safety when working inside severely curved, narrow or sclerotic canals. BT-Apisafe shapes the apex to the desired dimension while preserving the coronary third.

With its BT-Tip, the BT-Apisafe is effective even at diameters smaller than its nominal diameter; for example, the ISO 30 instrument already works at a diameter of 0.15mm.

It facilitates penetration of irrigation and disinfectant solutions up to the apex, even in curved and narrow canals. Finally, it creates an “apical stop”, permitting effective and reliable obturation.

-
- ▶ Start the procedure with a K-File ISO 15.
 - ▶ Continue with one or several BT-Apisafe files at working length, until the desired size for the final preparation of the apex is reached.
 - ▶ Complete the root canal preparation using the instruments presented in the "Canal shaping and cleaning" chapter.
 - ▶ The size of the first shaping instrument should be smaller than that of the last BT-Apisafe used.
-

25 30 40 50 60

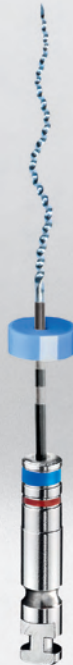
-
- ▶ **Ø ISO 25, 30, 40 , 50, 60**
 - ▶ **Taper : 0%**
 - ▶ **Length : 25 mm**
 - ▶ **Optimal speed : 800 rpm (minum 600 rpm)**
 - ▶ **Torque : 1 Ncm**
-



04

Canal shaping and cleaning

Canal shaping and cleaning are achieved by removing the maximum amount of organic and mineral substance. This allows irrigation solutions to reach the apical part of the canal for removal of micro-organisms and pulp debris favouring obturation and water-tight sealing of the root canal.



4.1 3D canal shaping

The need for 3D canal cleaning and the emphasis placed on less invasive treatments have increased in recent years. FKG is meeting this demand with the creation and release of the XP-endo Shaper.



4.1.1 XP-endo® Shaper. The MaxWire® and Booster Tip technologies combine to make the XP-endo Shaper a « One File Shaper ».

It has the ability to start shaping at ISO diameter 15 and to achieve ISO diameter 30, but also to increase the taper from .01 to at least .04. It allows to reach a canal shaping of minimum 30/.04 and this with only one instrument.

The XP-endo Shaper is the instrument of choice for the treatment of the vast majority of canals.

30/.04

- **Ø ISO 30**
- **Taper : 4%**
- **Lengths : 21, 25, 31 mm**
- **Optimal speed : 1'000 rpm (minimum 800 rpm)**
- **Torque : 1 Ncm**
- **Delivered in a sterile blister. Single use**

XP-endo® Shaper sequences

XP-endo® Shaper sequence, 3 instruments for one glide path using K-Files, and shaping thanks to the XP-endo Shaper. (K-File 10 + K-File 15 + XP-S)

XP-endo® Shaper Plus sequence, 4 instruments for comprehensive treatment, from glide path to canal cleaning, as well as excellent shaping. (K-File 10 + K-File 15 + XP-S + XP-F)

4.2 Conventional canal shaping

4.2.1 Race. Race instruments can be used in ad-hoc sequences according to the practitioner's needs and are also available in specific sequences. They come in both sterile and non-sterile packaging.

All of the instruments in the Race family feature an exclusive anti screw-in design (alternating cutting edges), an electro-chemical polish that improves resistance to fatigue and corrosion, greater flexibility that allows the user to follow the canal's curvatures, and a rounded safety tip that ensures perfect centering of the instrument inside the canal.

Race instruments on offer

		Ø ISO (широкое кольцо)													
Конусность (узкое кольцо)		10	15	20	25	30	35	40	45	50	55	60	70	80	
Race 21/25/31 mm	.02 	•	•	•	•	•	•	•	•	•	•	•			
	.04 	•	•	•	•	•	•	•		•					
	.06 	•	•	•	•	•	•	•							
Race + BT-Tip 21/25/31 mm	.04 							•		•					

Race sequences for canal shaping

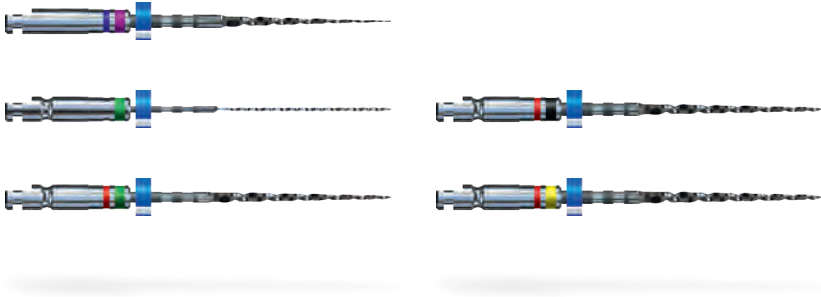
BT-Race, three instruments, sterile and single-use, for a biological and conservative shaping.

iRace, three instruments for a rapid and efficient shaping.

BioRace, six instruments for a completely safe biological shaping.

Race sequences for retreatment

D-Race, two instruments for removing obturation material (Gutta Percha, obturators, and resin-based material).



4.2.2 BT-Race sequence. This sequence enables the treatment of the vast majority of root canals using just three instruments while fully respecting biological standards that have been recognized for years. The sequence of instruments has been designed in such a way that the tip is never fully engaged, thus ensuring maximum safety. For improved efficacy, BT-Race instruments are fitted with a “Booster Tip” (BT-Tip) patented by FKG. Using this sequence with a BT-Tip, practitioners are able to achieve various apical preparations in all types of canal systems with unparalleled ease.

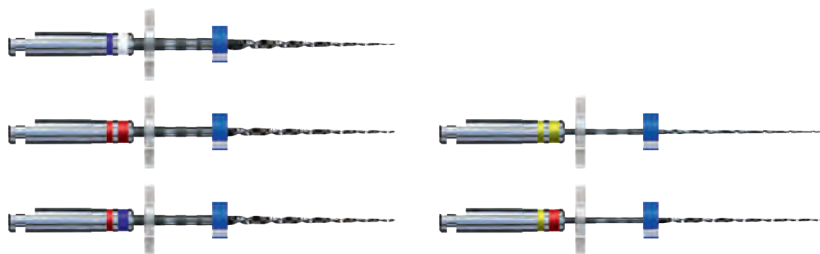
■ 10/06 BT1
■ 35/00 BT2
■ 35/04 BT3

- ▶ **3 instruments : BT1 10/06, BT2 35/00 and BT3 35/04**
- ▶ **Lengths : 21, 25, 31 mm**
- ▶ **Optimal speed : 800 rpm (minimum 600 rpm)**
- ▶ **Torque : 1.5 Ncm**
- ▶ **Delivered in a sterile blister. Single use**

BT-Race XL. As a complement to the basic sequence, two instruments to achieve finishes of ISO 40 and 50 in diameter.

■ 40/04 BT40
■ 50/04 BT50

- ▶ **2 instruments : BT40 40/04 and BT50 50/04**
- ▶ **Lengths : 21, 25, 31 mm**
- ▶ **Optimal speed : 800 rpm (minimum 600 rpm)**
- ▶ **Torque : 1.5 Ncm**
- ▶ **Delivered in a sterile blister. Single use**



4.2.3 iRace sequence. Thanks to their exclusive characteristics, only three iRace NiTi rotary instruments are needed to treat the majority of cases (straight, slightly curved or wide canals). The iRace sequence allows preparation up to a diameter of ISO 30/.04. With its ease of use and manipulation, it results in considerable time savings.

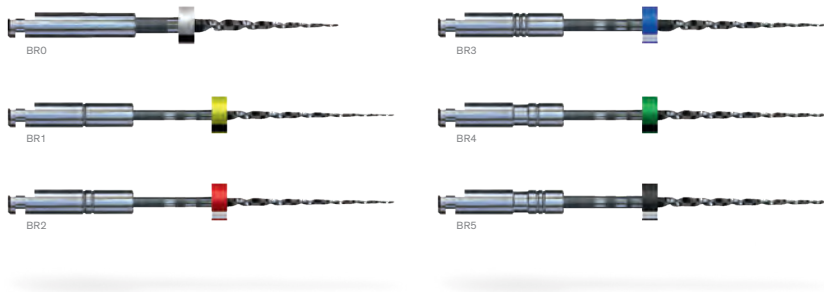
- 15/.06 R1
- 25/.04 R2
- 30/.04 R3

-
- ▶ **3 instruments : R1 15/.06, R2 25/.04 and R3 30/.04**
 - ▶ **Lengths : 21, 25, 31 mm**
 - ▶ **Optimal speed : 600 rpm (minimum 400 rpm)**
 - ▶ **Torque : 1.5 Ncm**
-

iRace Plus. In addition to the basic sequence, two highly flexible instruments (with taper of .02) allow treatment of more difficult cases (highly curved, narrow or calcified canals).

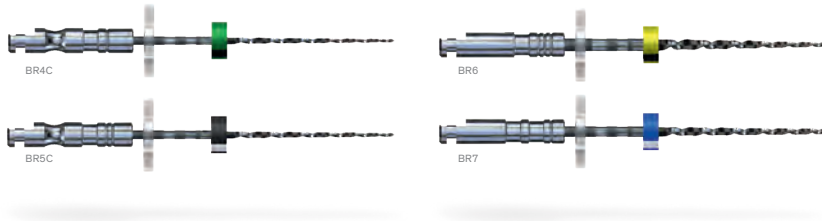
- 20/.02 R1a
- 25/.02 R1b

-
- ▶ **2 instruments : R1a 20/.02 and R1b 25/.02**
 - ▶ **Lengths : 21, 25, 31 mm**
 - ▶ **Optimal speed : 600 rpm (minimum 400 rpm)**
 - ▶ **Torque : 1.5 Ncm**
-



4.2.4 BioRace sequence. BioRace Basic Set is a highly reliable sequence of six instruments. In the majority of cases, it has been found that, to achieve adequate elimination of bacteria from the root canal, the apical third of the canal should be treated with the minimum given sizes, ISO 35 or 40. The BioRace sequence has been specially designed to achieve the required apical size without the need for additional steps or files. By using the BioRace system, the biological aim of the root canal treatment can be attained without compromising efficiency.

-
- **6 instruments : BR0 25/.08, BR1 15/.05, BR2 25/.04, BR3 25/.06, BR4 35 /.04 and BR5 40/.04**
 - **Lengths : 21, 25, 31 mm**
 - **Recommended speed : 600 rpm**
 - **Torque : 1.5 Ncm**
-



In addition, **BioRace Extended Set** includes two instruments for canals with severe curvature and two for large canals:

a. Canals with severe apical curvature

- ▶ **2 instruments : BR4C 35/.02 and BR5C 40/.02**
- ▶ **Lengths : 21, 25, 31 mm**
- ▶ **Recommended speed : 600 rpm**
- ▶ **Torque : 1.5 Ncm**

- ▶ For the most complicated cases, BT-Apisafe, ScoutRace or FKG manual files can be added.

b. Large canals

- ▶ **2 instruments : BR6 50/.04 and BR7 60/.02**
- ▶ **Lengths : 21, 25, 31 mm**
- ▶ **Recommended speed : 600 rpm**
- ▶ **Torque : 1.5 Ncm**

4.3 3D canal cleaning

Based on the shape-memory principles of the NiTi alloy and thanks to its extraordinary capacity to expand, the XP-endo Finisher file is able to treat root canals with highly complex morphologies, from the narrowest to the largest, and from the straightest to the most severely curved canals.



4.3.1 XP-endo® Finisher. Because of its small core size – ISO 25 in diameter – and its zero taper, XP-endo Finisher benefits from incredible flexibility and shows unparalleled resistance to cyclic fatigue. In addition the file will contact and clean the dentine but NOT change the original shape of the canal. With XP-endo Finisher, get an optimal cleaning of the root canal while preserving dentine. Universal instrument that can be used following any root canal preparation of diameter ISO 25 or more.

■ 25/00

-
- ▶ **Ø ISO 25**
 - ▶ **Taper : 0%**
 - ▶ **Lengths : 21, 25 mm**
 - ▶ **Optimal speed : 1'000 rpm (minimum 800 rpm)**
 - ▶ **Torque : 1 Ncm**
 - ▶ **Delivered in a sterile blister. Single use**
-

05

Retreatment

In some circumstances, the canal must be retreated. As much of the root filling material as possible must therefor be removed before retreatment itself can begin.





5.1 D-Race sequence

D-Race instruments are used to remove most of the old root-filling material, such as Gutta Percha, obturators or resin-based material, from the canals.

The D-Race set consists of two NiTi files – DR1 and DR2. The first instrument, DR1, has an active tip for handling the root-filling material and is used in the first millimetres of the coronal and straight part of the canal.

Once access is cleared with the DR1, the second instrument, DR2, is used to reach the WL. As this work puts a lot of strain on the instrument, it is intended for single use. Shaping will be carried out using dedicated FKG instruments.

■ 30/.10 DR1
■ 25/.04 DR2

-
- **2 instruments : DR1 30/.10, DR2 25/.04**
 - **Lengths : DR1 15 mm, DR2 25 mm**
 - **Optimal speed DR1 : 1'000 rpm (minimum 800 rpm)**
 - **Optimal speed DR2 : 600 rpm (minimum 400 rpm)**
 - **Torque : 1.5 Ncm**
 - **DR2 : single use**
-



5.2 XP-endo® Finisher R

After initial filling material is removed, regardless of the instrumentation technique used, residual material is always present particularly in curved or oval canals.

Like with the XP-endo Finisher the exclusive FKG MaxWire® alloy gives to the instrument the ability to expand and contract so as to contact difficult to reach areas.

With its ISO 30 diameter, the XP-endo Finisher R is slightly stiffer than the XP-endo Finisher enabling it to eliminate Gutta Percha and sealer.

Moreover, the XP-endo Finisher R features unparalleled resistance to cyclic fatigue, due to its small core size and zero taper. The instrument is easy to use and intended for all dentists keen to enhance the long-term success of their retreatment procedures.

■ 30/00

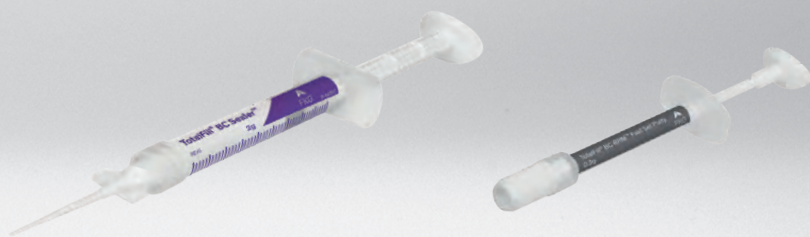
-
- ▶ **Ø ISO 30**
 - ▶ **Taper : 0%**
 - ▶ **Lengths : 21, 25 mm**
 - ▶ **Optimal speed : 1'000 rpm (minimum 800 rpm)**
 - ▶ **Torque : 1 Ncm**
 - ▶ **Delivered in a sterile blister. Single use**
-



06

Obturation

Obturation allows the prevention of any re-contamination, while sealing the canal system three-dimensionally to ensure sustained impermeability. FKG offers state-of-the-art and biological solutions for numerous filling techniques.



6.1 Bioceramic obturation

TotalFill is a pre-mixed bioceramic obturation material. It is dispensed using a syringe in cases of root canal obturation and with either a syringe or as a putty when doing root repair and retrograde fillings.



6.1.1 TotalFill® BC Sealer™. This highly radiopaque and hydrophilic sealer, TotalFill BC Sealer, forms hydroxyapatite upon setting and chemically bonds to both dentine and to our bioceramic points (**TotalFill® BC Points™**). BC Sealer is anti-bacterial during setting due to its highly alkaline pH and unlike traditional sealers, BC Sealer exhibits absolutely zero shrinkage!



6.1.2 TotalFill® BC RRM™. The TotalFill RRM repair material comes in 3 specially formulated consistencies: as a Paste (syringe 1 g), a Putty (jar 2.5 g) or a Fast Set Putty (syringe 0.3 g). The RRM is highly resistant to washout and ideal for all types of root repair and pulp capping treatments. Easy to handle, robust and with a shortened set time (only 20 min for the Fast Set Putty), it is also highly biocompatible and osteogenic.

6.2 Paper points and Gutta Percha

Paper points are used to dry the canals and allow better adhesion of the sealing and obturation materials. Gutta Percha is a product obtained from natural latex. The chemical composition of Gutta Percha points is enhanced in particular with the addition of zinc oxide or resins.



To find out the exact availability,
please look up the catalogue appendix (www.fkg.ch)

6.2.1 Paper points. Rolled without a binding agent, the paper points are highly absorbent, rigid and flexible at the same time. They are available in a wide range of ISO sizes and packaging.

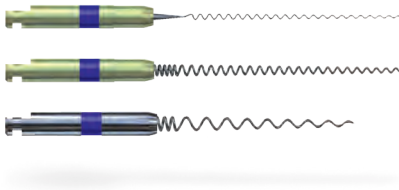


To find out the exact availability,
please look up the catalogue appendix (www.fkg.ch)

6.2.2 Gutta Percha. Rolled precision points produced in accordance with the strictest hygiene standards. Rigid, they do not bend during insertion but remain flexible enough for use in curved canals. Their malleability is also ideal for optimal filling. Our Gutta Percha points are radiopaque (without cadmium) and come in a large variety of ISO diameters and packaging.

6.3 Paste fillers

6.3.1 Standard paste fillers. Paste fillers are used for distribution of the obturation paste and sealing cement into the canal and down to the apex or for the application of calcium hydroxide as a temporary medication.



Different standard paste fillers are available:

Lentulo paste filler

Spring paste filler



25 30 35 40

-
- Ø ISO 25, 30, 35, 40
 - Lengths : 21, 25, 29 mm
-

IC-Filler for reconstruction cements



-
- Ø ISO 70, Lengths 15 and 20 mm
 - Ø ISO 90, Lengths 15 and 20 mm
-



6.3.2 Exclusive paste filler: Sensipast. Sensipast is the only paste filler with an automatic safety clutch that results in stress-free work. Sensipast reacts before the restraints exceed the metal elasticity limits.

When its active part, the automatic clutch reacts before the wires can rupture. The miniature clutch is housed inside the Sensipast handle, a unique design that means it can be used with most contra-angles on the market.

25 30 35 40

-
- **Ø ISO 25, 30, 35, 40**
 - **Lengths : 21, 25, 29 mm**
-



6.4 Lateral condensation

6.4.1 Spreaders. Spreaders are manual instruments with a conical tip used for lateral filling. They are available in steel or NiTi.



- **Taper 2%, Ø ISO 15, 20, 25, 30, 35, 40, Lengths 21 and 25 mm**
- **Taper 4%, Ø ISO 20, Length 21 mm**



6.5 Vertical condensation

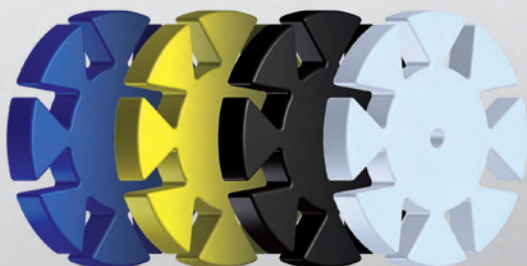
6.5.1 Pluggers. Pluggers are manual instruments with a flat tip used for vertical filling. They are available in steel or NiTi.



- **Ø ISO 15, 20, 25, 30, 35, 40**
- **Taper : 2%**
- **Lengths : 21, 25 mm**

07

Accessories



7.1 SafetyMemoDisc (SMD)

SafetyMemoDiscs (SMD) come fixed to certain instrument ranges. They are available separately, in bags or packed in SMD dispensers for greater ergonomics. When the recommendations, below are followed SMD enables optimal use of the instruments and control over metal fatigue. The SMD can be sterilized and remains attached to the instrument, thus ensuring that all the information on usage is saved.



7.1.1 Manual instruments. For manual instruments, the SMD records the number of uses or how often they have been sterilized.

7.1.2 Rotary instruments. For rotary instruments, between one and four petals are removed from the flange after each treatment. The number of petals remaining indicates which types of treatment are still possible :



- One petal corresponds to simple cases (S), i.e., straight, slightly curved or wide canals.
- Two petals correspond to moderately complex cases (M), i.e., more curved or narrow canals.
- Four petals correspond to difficult cases (D), i.e. canals that are, S-shaped, very narrow, calcified or with extreme curvature.



7.2 Endo stands

FKG robust Endo stands keep all instruments for canal treatment at hand in the correct order of use. Endo stands such as iRace and BioRace are adapted to working sequences, as well as the Freestyle stand tailored to individual working methods.



7.3 Silicone endo stops

Endo stops mark the working length, and are radiopaque. Endo stops dispensers are available, to provide greater ergonomomy.



7.4 Ruler

FKG also has additional accessories for endodontic treatment, such as rulers.

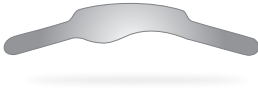




D. Reconstruction and laboratory

01

Reconstruction



1.1 Matrixes

Matrixes are compatible with all types of reconstruction. FKG offers perforated and non-perforated matrixes, of varying geometry and thickness, as well as matrix bands.



1.2 Screw posts

These come in steel or titanium and have a crosshead. Choice of 10 different lengths. A hollow wrench and a screwdriver are included in the proposed kits.



1.3 Root posts

For root anchorage made of steel, with a tapered shape and grooves for better retention.



1.4 Calcinable impression posts

For taking an impression conical shape, opaque or transparent, rapid combustion without waste.

- The calcinable posts have a diameter slightly inferior to that of the stainless steel root posts as a way to compensate for the variations in mass of the materials used in the laboratory.



1.5 Screw reamers

Pilot reamer 32 mm in length, handle 13 mm, in steel.
Four diameters available from 0.7 mm to 1.3 mm.

Calibration drill 33 mm-long, handle 13 mm, in steel.
Four diameters available, from 1.2 mm to 1.9 mm.

	70	90	110	130
n°	1	2	3	4

- **Ø ISO 70, 90, 110, 130**
- **Recommended speed: 1200 rpm**



1.6 Mooser reamer for impression posts

Helical trimming reamer made of steel, with sharp cutting blade for optimal calibration. Inactive tip to avoid the risk of false passage.

	120	140	165	190
n°	1	2	3	4

- **Ø ISO 120, 140, 165, 190**
- **Recommended speed: 1200 rpm**

02

Laboratory

FKG offers specific materials for laboratories, such as ball retaining hooks, mandrels for polishing discs and lingual bars.

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