FKG

swiss endo

EN

# Catalogue

2015 - 2016

# 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, plus step-by-step instructions for their optimal usage. In keeping with our strategy to innovate, we have recently added three 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 revolutionary product of the year is the XP-endo Finisher, a finishing file that exploits the shape-memory properties of the NiTi alloy to clean even the hardest-to-reach corners of complex canal systems, all while respecting their morphology and preserving the dentine.

Already on the market for some time, the BT-Race sequence allows practitioners to treat the vast majority of root canals using only three instruments. With the addition of a Booster Tip patented by FKG, this single-use, sterile sequence facilitates a quicker and safer canal preparation while also reducing the impact on the dentine.

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

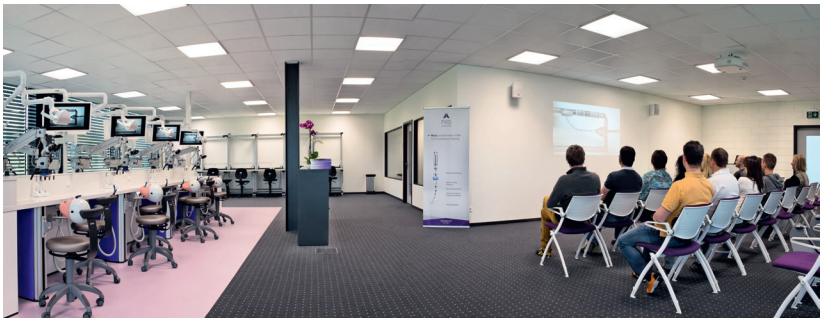
# **FKG Dentaire,**
## 20 years of innovation

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, Dubai (opened in 2013) and Mexico City (opened in 2015).

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.



*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*

**Pictogrammes**

Ⓡ The «Race» Family (Section F)

Ⓟ Instruction for use (Section E)

Ⓑ Patented

# A. **The fruits of innovation**
## The newest offers from FKG

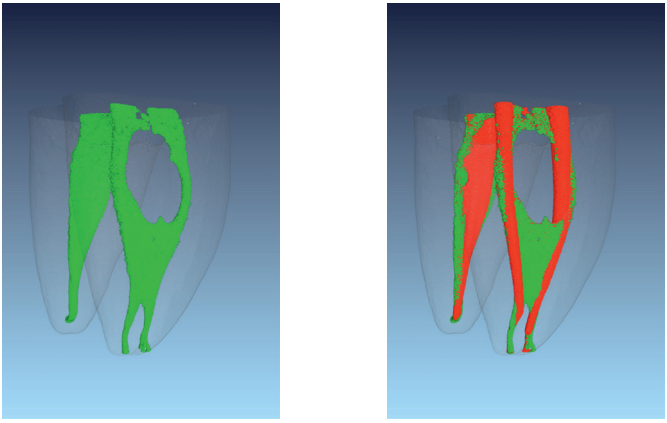
The latest products bearing the FKG label are in keeping with the company's strategy of offering a complete range of high-performance ergonomic instruments that maximize the patient's level of comfort and safety during endodontic treatment.

Over the last two 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.

# 01. 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.



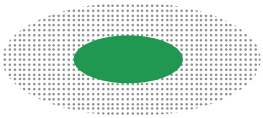
*3D Micro CT : Canal morphology before instrumentation (green); canal walls touched using a standard NiTi file (red).*

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

## The solution: XP-endo Finisher

### Original canal anatomy

Dentine
The canal (area to be cleaned)
Area cleaned



### ► Root canal preparation with standard NiTi files

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

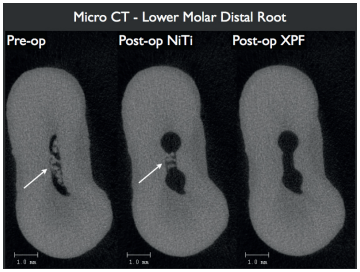
### ► Root canal preparation with standard NiTi files + XP-endo Finisher

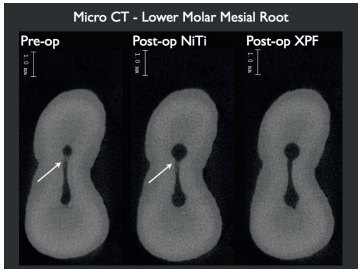
*XP-endo Finisher idealy used following any root canal preparation to achieve an improved cleaning of the root canal while preserving dentine.*

**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.**

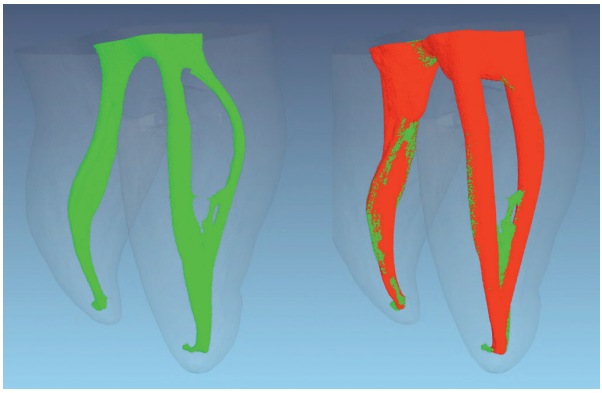
## Clinical case

Micro CT of the Distal and Mesial roots of a lower molar instrumented to 35/.04 with round NiTi files and then after final cleaning with the XP-endo Finisher.




*Pre-op and Post-op NiTi pictures: show debris in the canal and in the isthmus areas. Post-op XPF pictures: after final cleaning with the XP-endo Finisher, no debris is seen.*

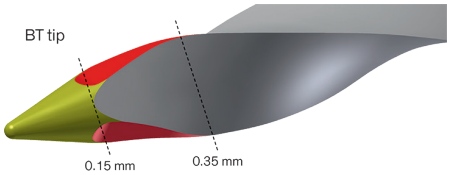


*3D Micro CT : Canal morphology before instrumentation (green); canal walls touched using a standard NiTi file + XP-endo Finisher (red).*

**Courtesy of Dr. Gilberto Debelian (Norway) and Dr. Frank Paqué(Switzerland)*

# 02. The BT-Tip

With its unique geometry featuring six sharp edges, the BT-Tip (Booster Tip/ Biological Treatment) respects the canal trajectory even as it removes more debris at each go. By cutting at smaller diameters, the tip reduces the number of instruments needed, leading to greater efficiency. For example, an ISO 35 instrument with BT-Tip already works at a diameter of 0.15mm.




### A case example: The BT-Race sequence

The BT-Race sequence, which comes in single-use, sterile packs, consists of three instruments to be used in biological and conservative canal preparation. Like all the other instruments in the Race family, it features an anti screw-in design to prevent file breakage, an electro-chemical polish that improves its resistance, and unparalleled cutting efficacy. BT-Race also comes with a Booster Tip (BT-Tip) that facilitates the work of several files without putting stress on the dentine.

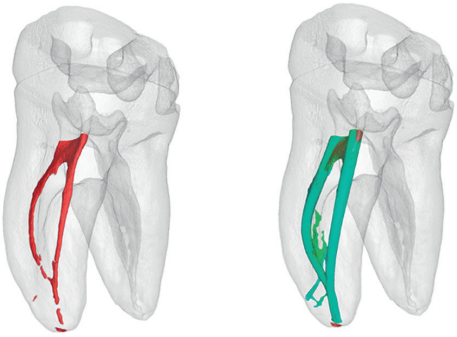
For the treatment of large or extra-large canals, two complementary instruments known as the BT-Race XL ensure finishes of ISO 40 and 50 in diameter.

- Biological and conservative root canal preparation.
- Optimal apex preparation without weakening the coronal third.
- Sterile product, ready to use.
- BT tip (Booster Tip).
- Easy-to-follow protocol thanks to the limited number of instruments.
- Single use to minimize the stress on the files.

# 03. 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 (syringable 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-syringable Paste, Putty consistency or premixed-syringable 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)

# 04. Sterile instruments

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 demand, FKG has installed a clean room, thus becoming one of the few players in the industry worldwide to have a facility for manufacturing 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.

# B. **Endodontics**
## What is endodontics?

Endodontics is the branch of dentistry that treats diseases of the endodontium, the interior part of the tooth. Its main aim is to save natural teeth so that they keep all their masticatory functions and appearance of a healthy tooth. To remove all infected tissues and bacteria, chemical and mechanical treatment of the canal system is required, and this is where FKG stands out with its range of instruments.

Root treatment takes place in four stages: opening and accessing the canals, glide path, preparation and root filling. 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.

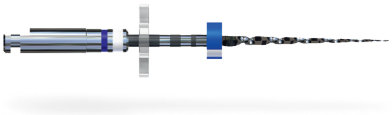
# 01

# New finish for rotary instruments

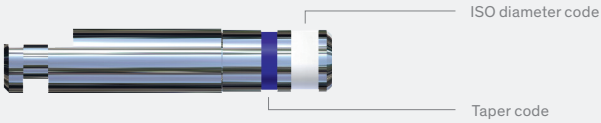
A new finish for metal handles (for contra-angles) and depth marks have been introduced gradually, especially in the Race range of instruments.

### 1.1 CI metal handles 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)

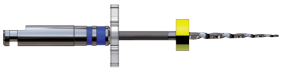
| .02 | .04 | .06 | .08 | .10 |
|---|---|---|---|---|

- Available only in some countries, depending on regulatory approvals.
- The SMD discs are transparent for all the Race range.

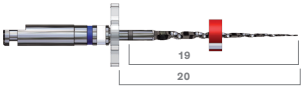
**1.1.2 Depth marks.** The depth marks are used to recognise the position of the working length (WL) in the tooth and are additional to the rubber stop. The depth marks are applied on all instruments of a length greater than or equal to 21 mm in the Race range.

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

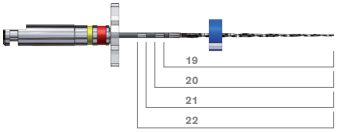

Examples of instruments with the new finish:



- 19 mm instruments, no mark.



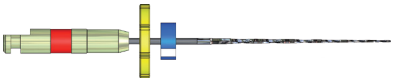

- 21 mm instruments, marks at 19 and 20 mm.




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

### 1.2 CM metal handles for contra-angle

The colour ring on the handle indicates the ISO diameter and the SafetyMemoDiscs (SMD) specify the taper of the instruments.



Ø ISO (Ring)


Taper (SMD)


### 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.

# 02

# Motor

## 2.1 Rooter

The Rooter offers an impressive range of technical innovations, all designed to enable work in the most comfortable of conditions – even during complex operations.

- Enhanced visibility due to its white LED.
- Continuous rotation with a wide range of speeds: 250-1200 rpm.
- 9 torque settings (from 0.5 to 3.5 Ncm).
- Auto-reverse disengage mode.
- 10 programmable torque/speed memories.
- Thoughtfully designed ergonomics and lightness.
- Freedom of movement (cordless), while its Lithium-Ion battery guarantees a stable rotation speed.
- Battery life for the treatment of around 30 patients.

Contra-angle, LED, charging station and transformer are available separately.

- Option available separately: oscillating contra-angle with amplitude of 80° (40°/40°).

# 03

## 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. Once the straight line access is free, you will find all the necessary instruments in the FKG range to carry out root canal treatment.

## 3.1 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.

3.1.1 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**

3.1.2 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**

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


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

## 3.2 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.

3.2.1 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.


- **Ø ISO 30/.06, 40/.06 (NiTi), 35/.08, 40/.10 (NiTi/Sst)**
- **Length: 19 mm**
- **Recommended speed: 600 rpm**

# 04

## 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.

- To determine and confirm the working length (WL), use x-rays and an apex locator.

## 4.1 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.

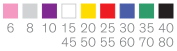

The hand files are also available with the Ergoflex handle. Its particular ergonomic features, rounded section followed by a flat section, facilitate gripping when filing and prevent rotation above 180°.

- Stainless steel hand files, ISO 6, 8 and 10 are for single use only.
- Stainless steel hand files, ISO 6 to 40 are also available in "Flex" version for an improved flexibility.


4.1.1 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.

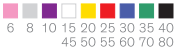

- **Ø ISO 6, 8, 10, 15, 20, 25, 30, 35, 40 (NiTi/Sst)**
- **Ø ISO 45, 50, 55, 60, 70, 80 (Sst)**
- **Lengths: 21, 25, 31 mm**
- **Taper: 2%**


4.1.2 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 (NiTi/Sst/Sst Flex)**
- **Ø ISO 45, 50, 55, 60, 70, 80 (Sst)**
- **Lengths: 21, 25, 31 mm**
- **Taper: 2%**


4.1.3 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.



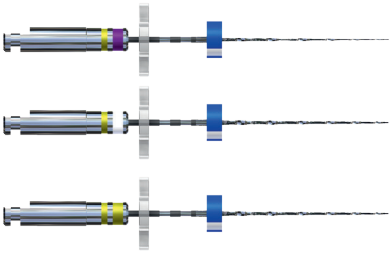

- **Ø ISO 6, 8, 10, 15, 20, 25, 30, 35, 40 (NiTi/Sst/Sst Flex)**
- **Ø ISO 45, 50, 55, 60, 70, 80 (Sst)**
- **Lengths: 21, 25, 31 mm**
- **Taper: 2%**

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


- **Ø ISO 25, 30, 35, 40, 50, 60**
- **Length: 20 mm**

## 4.2 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.



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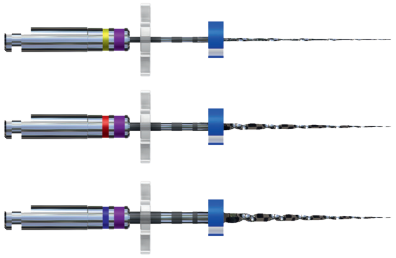
4.2.1 ScoutRace. Used for the mechanized scouting of high curvature or S-shaped canals, ScoutRace is a sequence of three Race instruments with a taper of .02 and ISO diameters 10, 15 and 20. At first passage instruments, they are used after the working length (WL) has been determined using hand K-Files or an apex locator. Root canal preparation is completed using BT-Race, iRace or BioRace sequences.

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

- **3 instruments: ISO 10/.02,15/.02 and 20/.02**
- **Lengths: 21, 25, 31 mm**
- **Recommended speed: 800 rpm (min. speed: 600 rpm)**
- **Torque: 1 Ncm**



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4.2.2 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. Root canal preparation is completed using BT-Race, iRace or BioRace sequences.

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

- **3 instruments: ISO 10/.02,10/.04 and 10/.06**
- **Lengths: 21, 25, 31 mm**
- **Recommended speed: 800 rpm (min. speed: 600 rpm)**
- **Torque: 1 Ncm**

B

4.2.3 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.

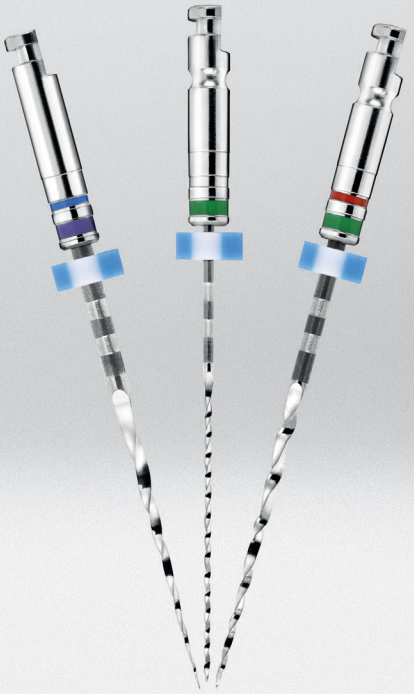
With its BT-Tip, the BT-Apisafe is effective even at diameters smaller than its nominal diameter; for example, the ISO 30 instrument already works at a diameter of 0.15mm.

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.
- Root canal preparation is completed using BT-Race, iRace or BioRace sequences.
- The size of the first shaping instrument should be smaller than that of the last BT-Apisafe used.

25 30 40 50 60

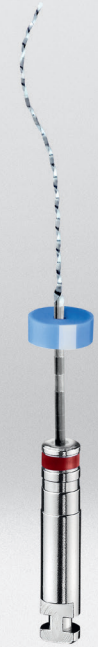
- **Ø ISO 25, 30, 40 , 50, 60**
- **Taper: 0%**
- **Length: 25 mm**
- **Recommended speed: 800 rpm (min. speed: 600 rpm)**
- **Torque: 1 Ncm**



# 05

# Root Canal preparation, retreatment and final preparation

Canal shaping is achieved by removing the maximum amount of organic and mineral substance. It should allow irrigation solutions to reach the apical part of the canal for removal of micro-organisms and pulp debris. This should also favour the obturation and water-tight sealing of the root canal.



## 5.1 Root canal preparation

5.1.1 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 packs.

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

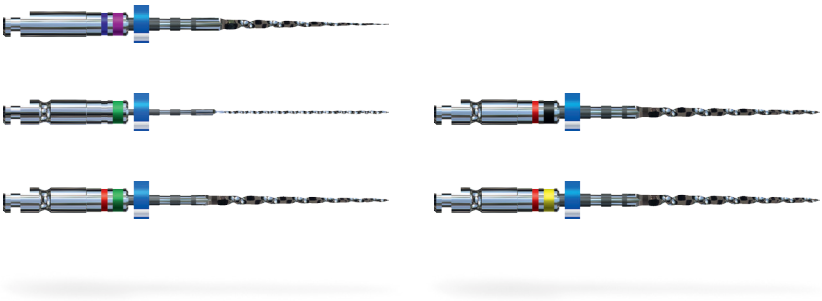
| Taper (narrow ring) | | Ø ISO (wide ring) 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 70 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Race 21/25/31 mm | .02 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | .04 | ● | ● | ● | ● | ● | ● | ● | | ● | | | | |
| | .06 | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| Race + BT-Tip 21/25/31 mm | .04 | | | | | | | ● | | ● | | | | |

### Race sequences for canal preparation

**BT-Race**, three instruments, sterile and single-use, for a biological and conservative preparation.
**iRace**, three instruments for a rapid and efficient preparation.
**BioRace**, six instruments for a completely safe biological preparation.

### Race sequences for retreatment

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



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5.1.2 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.

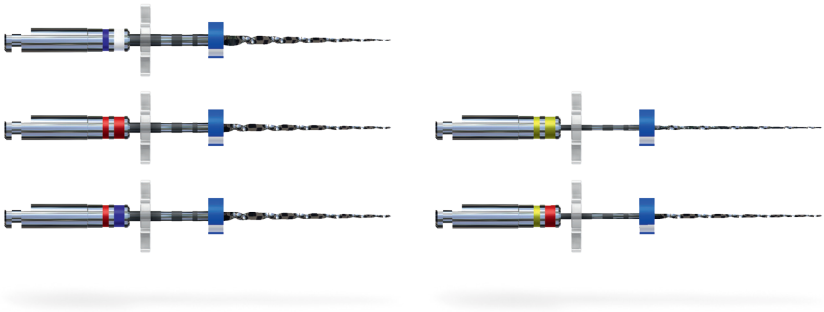
10/.06 BT1
35/.00 BT2
35/.04 BT3

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

Complementary BT-Race XL Kit. 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**
- **Recommended speed: 800 rpm (minimum 600 rpm)**
- **Torque: 1.5 Ncm**
- **Delivered in a sterile blister. Single use**



5.1.3 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.

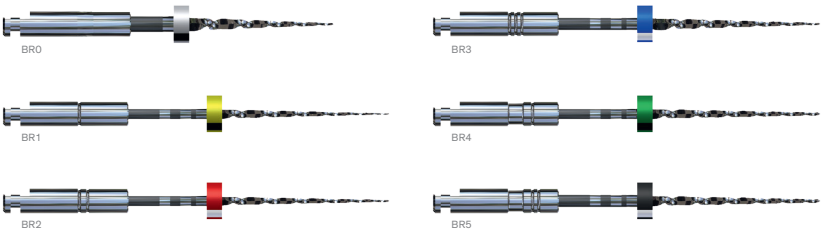
15/.06 R1
25/.04 R2
30/.04 R3

- **3 instruments: R1 15/.06, R2 25/.04 and R3 30/.04**
- **Lengths: 21, 25, 31 mm**
- **Recommended speed: 600 rpm**
- **Torque: 1.5 Ncm**

Complementary iRace Plus kit. 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).

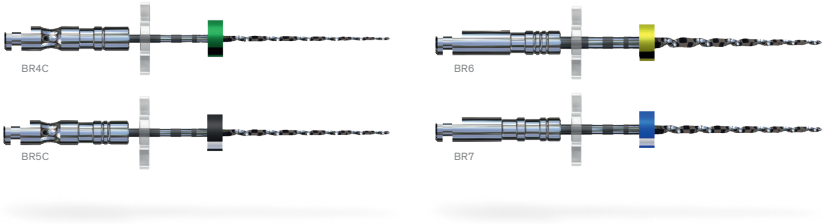
20/.02 R1a
25/.02 R1b

- **2 instruments: R1a 20/.02 and R1b 25/.02**
- **Lengths: 21, 25, 31 mm**
- **Recommended speed: 600 rpm**
- **Torque: 1.5 Ncm**




5.1.4 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 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 Ncm**

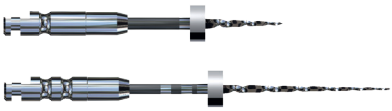
For the most complicated cases, BT-Apisafe, ScoutRace or FKG manual files can be added.

### b. Large canals

- **2 instruments: BR6 50/.04 and BR7 60/.02**
- **Lengths: 21, 25, 31 mm**
- **Recommended speed: 600 rpm**
- **Torque: 1 Ncm**

## 5.2 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.



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5.2.1 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. The final shape is achieved using the BT-Race, iRace or BioRace sequences.

30/.10 DR1
25/.04 DR2

- **2 instruments: DR1 30/.10, DR2 25/.04**
- **Lengths: DR1 15 mm, DR2 25 mm**
- **Speed: DR1 1000 rpm, DR2 600 rpm**
- **Torque: 1.5 Ncm**
- **DR2: single use**

## 5.3 Final preparation

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.

P
B

5.3.1 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%**
- **Length: 21, 25 mm**
- **Recommended speed: 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 Obturation Kit. This set features a TotalFill BC Sealer syringe (1.5 g), an assortment of TotalFill BC Points / paper points (Ø 4-6) and 15 TotalFill Tips. 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! Each component is also available separately.

6.1.2 TotalFill Material for root repair (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

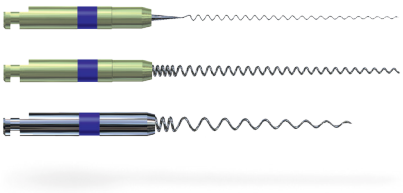
Paper points are used to dry the canals and allow better adhesion of the sealing and obturation materials. Gutta Percha is a product obtained from natural latex. The chemical composition of Gutta Percha points is enhanced in particular with the addition of zinc oxide or resins.

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 packs.

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 packs.

## 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:

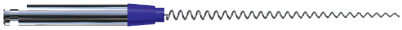
Lentulo paste filler
Spring paste filler

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.

15 20 25 30 35 40

- **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

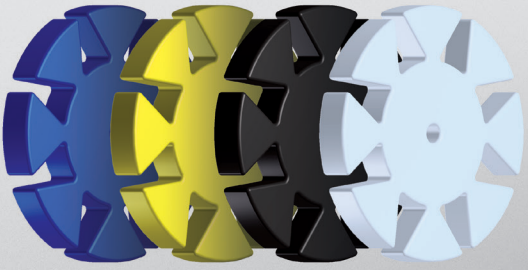
6.5.1 Pluggers. Pluggers are manual instruments with a flat tip used for vertical filling. They are available in steel or NiTi.

15 20 25 30 35 40

- **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 Race files and are available separately for manual instruments. 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.

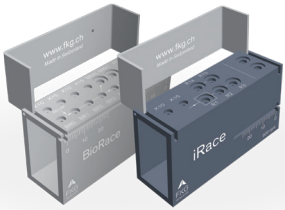
7.1.1 Manuel instruments. For manual instruments, the SMD records the number of uses or how often they have been sterilized.

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 Endo stands keep all instruments for canal treatment at hand in the correct order of use. Endo stands are robust.




7.2.1 Dedicated Endo stands. There is an Endo stand adapted for each iRace and BioRace working sequence.


7.2.2 Endo stand Freestyle. Adapted to individual working methods, the Freestyle Endo stand facilitates the completion of basic sequences with the use of additional instruments of different ISO sizes, based on the anatomy of the canal.

Fourteen positions are available for organizing instruments in a personalized way.

# C. Reconstruction and laboratory

# 01

# Reconstruction

### 1.1 Matrixes

Matrixes are compatible with all types of reconstruction material. FKG offers matrixes of different width and thickness as well as perforated matrixes and 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 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**

### 1.4 Root posts

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

### 1.5 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.

### 1.6 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.

# D. Quality assurance

### Aims of our quality policy

To guarantee the safety of our medical devices in order to minimize the risks to the patient. To make every effort to offer our customers high-quality, innovative and efficient products. To meet all standards and requirements and constantly improve the effectiveness of the quality management system.

### International certification

All FKG products bear the CE mark. FKG Dentaire is certified according to the current versions of ISO 13485 and ISO 9001 norms.

### Sterilization procedure for reusable medical devices

The cleaning and sterilization procedures for medical devices are available in full at www.fkg.ch.

### General information

- NiTi instruments contain nickel and should not be used on patients with known allergic sensitivity to this metal.
- “Single patient” use of instruments is recommended to avoid the risk of cross-contamination.
- FKG Dentaire has not validated sterilization using chemical sterilizers or a hot-air oven. Please refer to the manufacturer’s instructions for the duration of the cycle. Our instruments nevertheless tolerate these methods and a maximum temperature of 200°C.

# E. Instructions for use

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## Sterilization protocol for reusable medical devices

### First use

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Cleaning and Sterilization

Non sterile products

1. Manual cleaning with or without Ultrasonic assistance. Thorough cleaning allows efficient disinfection & sterilization.
2. Rinse under distilled/demineralized water at least 1 min. Then dry the instruments.
3. Inspection - Check: sort out damaged or worn out instruments.
4. Packing: Place the instruments in a suitable support/container and pack the devices in sterilisation pouches ISO 11607-1.
5. Sterilization: according EN/ISO 17664 protocol. Autoclave: 134°C/273°F, 2.2 bar during 18 min.
6. Storage: keep devices in sterilization wrap/pouch in a dry and clean environment.

## Second and following uses

**7** Pre-disinfection: plunge instruments after use in detergent solution and eventually brush them manually.
**8** Rinse: under running water at least 1 min. Then dry the instruments.
**9** Follow steps 1 - 6 above.

### Pre-/Disinfection

DO NOT USE solutions containing:

- phenol (corrosion)
- aldehyde (blood fixation)
- di-/triethanolamines (corrosion)

**Sterilization with chemiclav or dry air devices** have not been validated by FKG Dentaire.

Always refer to manufacturer's instructions for cycle & duration. Nevertheless our instruments withstand such methods.

### Caution

This product contains nickel and should not be used for individuals with known allergic sensitivity to this metal.

Complete operating protocol and warnings on www.fkg.ch.

**A single patient use is recommended to avoid cross-contamination.**

## ScoutRace and Race ISO 10

### Golden Rules

**Speed: 600-800 rpm – Torque: 1.5 Ncm**

- Long back and forth gentle strokes.
- Light touch, let the instrument work.
- Work 3-4 seconds in a row, get out, clean the blade and irrigate the canal.

### ScoutRace

For canals with a severe apical curvature or S-shape.

Manual scouting with ISO 06-08 SSt files up to estimated working length (WL); confirm WL with an apex locator.

1. Introduce ScoutRace (SR) 10/.02 in rotation and reach WL.
2. Continue with SR 15/.02 up to WL.
3. Finish glide path with SR 20/.02 up to WL.
4. Final shaping with the main NiTi sequence (e.g. BT-Race, iRace or BioRace).

### Race ISO 10

For narrow and/or calcified canals.

Manual scouting with ISO 06-08 SSt files up to estimated working length (WL); confirm WL with an apex locator.

1. Introduce Race 10/.02 in rotation and reach WL.
2. Continue with Race 10/.04 up to WL.
3. Finish glide path with Race 10/.06 up to WL.
4. Final shaping with the main NiTi sequence (e.g. BT-Race, iRace or BioRace).

## P BT-Race and BT-Race XL

### Golden Rules

**Recommended speed : 800 rpm – Torque: 1.5 Ncm**

- Glide path should be established before using BT-Race sequence (min. size ISO 15/.02).
- All files should be used with long and gentle pecking motion (3-4 back and forth gentle strokes).
- Copious irrigation throughout the procedure.

### BT-Race

For most cases – Speed : 800 rpm (600-1000 rpm).

1. After the coronal access is attained, the working length should be obtained with small hand files (ISO 06, 08, 10 or 15) depending the constriction of each canal.
2. A glide path should be performed with small stainless steel or NiTi files up to ISO 15 before using BT-Race sequence.
3. Files of the entire sequence should be used to full WL before changing to the next file in the sequence. Per file, total working time in one canal should not exceed 10 seconds.
4. Use the sterile BT1 with a long and gentle pecking motion (3-4 back and forth strokes). If BT1 does not reach WL, clean the instrument, irrigate and repeat until the WL is achieved.
5. Recapitulate with K-File ISO 15 to remove the debris and keep the glide path open, irrigate.
6. Use sterile BT2 up to WL in the same manner as BT1.
7. Recapitulate with K-File ISO15, irrigate.
8. Use sterile BT3 up to WL in the same way as BT1.

### BT-Race XL

For larger apical sizes. – Speed : 800 rpm (600-800 rpm).

BT3 is used for minimal biological apical preparation. For larger apical preparations use BT40 or BT50.

## iRace and iRace Plus

### Golden Rules

**Speed: 600 rpm – Torque: 1.5 Ncm**

- Long back and forth gentle strokes.
- Light touch, let the instrument work.
- Work 3-4 seconds in a row, get out, clean the blade and irrigate the canal.

### iRace

For most cases – straight, slightly curved and/or large.

Prepare glide path first, then

1. Introduce R1 in rotation and reach working length (WL); In case R1 does not reach the WL, do not force and go to step 1 of iRace Plus protocol.
2. Continue shaping with R2 up to WL.
3. Finish the shaping with R3 up to WL.

### iRace Plus

For difficult cases – severely curved, narrow and/or calcified.

Following of iRace protocol step 1

1. Use R1a to reach WL.
2. Continue shaping with R1b up to WL.
3. When WL is reached, continue from step 2 of iRace protocol.

With the Rooter motor, select memory no. 1 for the iRace sequence.

## P BioRace and BioRace Extended

### Golden Rules

**Speed: 600 rpm – Torque: 1 Ncm**

- Max. 3-4 back and forth gentle strokes.
- Light touch, let the instrument work.
- Work 3-4 seconds in a row, get out, clean the blade and irrigate the canal.

### BioRace

Prepare glide path first, then fill the canals and pulp chamber with irrigant.

1. BR0 - only 4 gentle strokes - clean the flutes.
   - Repeat until approximately 4-6mm of coronal part of the canal has been prepared.
   - After use of BR0, repeat irrigation.
   - Recapitulate to full working length (WL) with a manual file #15.
   - Fill the canal and pulp chamber with irrigant.
2. Use BR1 with 4 gentle strokes. If this instrument does not reach the WL, clean the instrument and repeat until the WL is achieved.
3. Use BR2 and BR3 as described for BR1. DO NOT use BR3 to full WL on canals with severe apical curvatures. In this case go to step 1 of BioRace Extended Set protocol.
4. Use BR4 and BR5 as explained for BR1-3. In most cases, the final apical preparation is then achieved.
5. For larger canals, (see anatomical chart on www.fkg.ch), go to step 3 of BioRace Extended Set protocol.

### BioRace Extended

1 **For severe apical curvatures**, instruments BR4C and BR5C should be used to prepare the apical canal. If the instrument does not reach the WL with 4 gentle strokes, DO NOT FORCE the instrument. Irrigate the canals and repeat.
2 **For complicated curvatures** it is recommended to use additional FKG instruments (e.g. S-Apex, ScoutRace or manual SMG files).
3 **For larger canals** the two additional instruments BR6 and BR7 from BioRace Extended Set can be used as explained for BR1-5.

NB. Copious irrigation at all times. Cleaning the files after 4 gentle strokes is essential for safe and efficient use of these instruments.

With the Rooter motor, select memory no. 2 for the BioRace sequence.

## P D-Race

### Golden Rules

**Speed: DR1 1000 rpm, DR2 600 rpm – Torque: 1.5 Ncm**

- Let the instrument work.
- Work 3-4 seconds in a row, get out, clean the blade and irrigate the canal.

**General advice to take into consideration for removal of filling material**

1. Take 2 x-rays from different angles.
2. A precise appreciation of canal anatomy is very important.
3. Find entrance of canal and access the obturation material.
4. Prepare, if needed, a cavity 1-2 mm with DR1 and drop solvent to soften obturation material. If necessary, use a heat plugger or ultrasonics.

**Coronal third preparation**

1. Gently engage DR1 rotating at 1000 rpm (recom. torque 1.5 Ncm) into the obturation material.

   The active tip of DR1 facilitates the initial penetration.

**Median and Apical thirds preparation**

1. Insert DR2 rotating at 600 rpm (1 Ncm).
2. Don't force the way, clean and check the blade regularly.
3. Continue to advance apically as long as filling material is visible on the flute.
4. If needed, drop solvent to help removal of obturation material.
5. Establish final WL and finalise shaping with standard NiTi Race files.

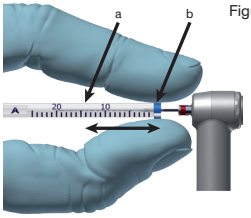
## XP-endo Finisher

### Golden Rules

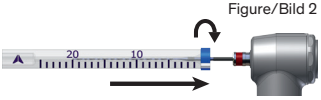
**Recommended speed: 800 rpm – Torque: 1 Ncm**

- XP-endo Finisher should be used only after canal preparation to at least #25.
- In multirooted teeth, start with the largest canal.
- Work along the entire length of the canal for approximately one (1) minute.
- The access cavity should be filled with irrigant only after the XP-endo Finisher is in the canal.

### Protocol



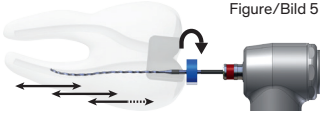
Figure/Bild 1



Figure/Bild 2


Figure/Bild 3


Figure/Bild 4


Figure/Bild 5

1 Use XP-endo Finisher only after canal preparation to at least #25.
2 For multirooted teeth, start with the largest canal. The canal should always contain irrigant. However, avoid filling the access cavity with irrigant before insertion of the file.
3 Remove the XP-endo Finisher from the sterile blister pack and place it in a contra-angle handpiece (use of gloves imperative).

**4** Fix the canal working length by using the plastic tube (a) to adjust the rubber stop (b) (Figure 1).

**5** Cool the XP-endo Finisher down inside the tube using a cold spray.

**6** Put the XP-endo Finisher in rotation mode and remove it from the tube by applying a lateral movement to ensure the XP-endo Finisher remains straight (Figure 2). Turn off the rotation.

6a. The surface of the tube may be touched with the fingers only at its end, on FKG logo, to avoid warming of the file.

6b. If the file is straightened outside the tube use an alcohol soaked gauze for this purpose to avoid contamination and warming of the file.

**7** Insert the XP-endo Finisher into the first canal of the tooth while straight (Figure 3). Once the tip is inside, turn on the rotation and insert file (Figure 4). Add irrigant to the access cavity.

7a. In case of any difficulty inserting the file inside the canal of multirooted teeth, make sure to direct the tip of the file towards the mesial aspect of the canal entrance for MB, ML and DB canals, towards the palatal aspect for palatal canals and toward the buccal/lingual aspect for D canals.

**8** Use the XP-endo Finisher for approximately one (1) minute, using slow and gentle 7-8 mm lengthwise movements to contact the full length of the canal (Figure 5). Make parietal movements during the procedure. Be careful to stay in the canal.

**9** After one minute, remove the XP-endo Finisher from the canal while it's still in rotation.

**10** Irrigate the canal to remove the suspended debris.

To continue treatment inside a narrower canal of the same tooth:

**11** Clean the XP-endo Finisher and place it back inside its tube.

**12** Begin again the procedure at step 4.

When the full cleaning of a tooth is completed:

**13** Dispose of the XP-endo Finisher.

**14** Dry the canals and seal them using a stable core (e.g. Gutta Percha) and sealer (e.g., TotalFill™).

## Endo stands

ALUMINIUM PRODUCT

- **Do not use dish washer.**
- **Do not use ultrasonic bath.**
- **Warning: some desingecting products** are incompatible with aluminium.

The Endo Stand is manufactured from coloured anodised aluminium. The colour can be damaged by the use of some chemical cleaners.

**Do not use** too alkaline or acide substances. PH between 4-8 is safe.

**Do not use** substances containing Soda or Potash.

**Read** manufacturer's instructions prior to use any cleaning products on aluminium devices.

**Caution** : the use of ultrasonic cleaning baths can reslult in the loss of the anodised colour.

**For sterilization** the following processes can be used safely:

- Autoclave
- Chemiclave 134°C (2 bar)
- Dry heat 180°C

Refer to manufacturer's instructions for cycle and time process.

Any Endo Stand damaged due to improper use of cleaning/desinfecting products or ultrasonic baths will not be exchanged.

# B F. **Race**, customer benefits

Unique performance provided by all instruments in the Race range, for enhanced safety of use:

- Unique rounded safety tip for a precise guidance and centring of instruments.
- Patented design of alternated cutting edges to avoid screwing-in effect and to reduce the risk of breakage.
- Sharp cutting edges for an optimal cutting efficiency.
- Exclusive electrochemical polishing to increase resistance to torsion and cyclic fatigue of NiTi.
- SafetyMemoDisc (SMD) reliable monitoring of metal fatigue and number of uses.

### Golden rules for optimal use of Race instruments

- Speed: 600-1000 rpm - torque: 1 to 1.5 Ncm, depending on instruments.
- Broad back and forth movements without using force.
- Light hand, let the instrument do the work.
- Work for 3-4 seconds, remove.
- Clean the blade and irrigate the canal.

### Which motors can instruments of the Race family be used with?

Unit motors, to reach the minimum recommended speed of 600 rpm:
- Air motors 20,000 rpm: use a contra angle 32:1 reducer.
- Electric motors 40,000 rpm: use a contra angle 64:1, 70:1 reducer.

Endodontic motors, corded or cordless like the Rooter:
- Set the speed to 600-1000 rpm and the torque to 1 to 1.5 Ncm.

### As a reminder, how many times can a Race be used?

The following are the instructions for the SafetyMemoDisc:
- 1 petal corresponds to simple cases, that is, straight, slightly curved or wide canals.
- 2 petals correspond to moderately complex cases, that is, more curved or narrow canals.
- 4 petals correspond to complex cases, that is, canals with extreme curvature or S-shaped, very narrow or calcified canals.

Although Race instruments can be sterilised and reused several times, it is recommended to use them according to the “single patient” principle to avoid the risk of cross-contamination.

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