Instructions for use:

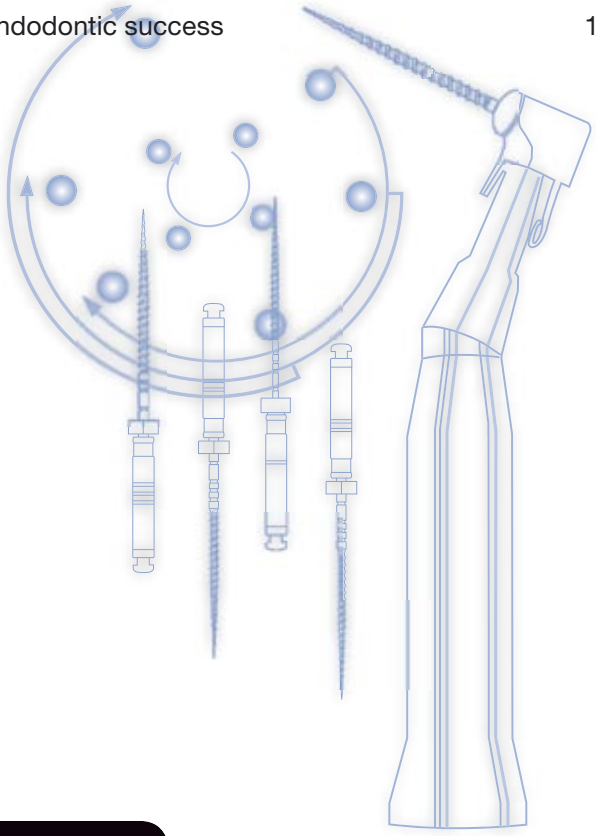
FlexMaster®

the rotary NiTi-System
for every case

VDW®
ENDODONTIC SYNERGY

Endo
Easy
Efficient®

Content



1. Why change to the FlexMaster® system

- It takes half the time needed for preparation by hand.
- The quality of your root canal preparation will be excellent and reproducible with significantly less effort.
- You will achieve a uniform conical canal shape without any clinically significant transportation of the canal axis.
- You do not need to use pressure as you will be working with a motor.
- You will use simple and tested file sequences with only a few instrument changes.
- You will significantly reduce the number of instruments you use.

2. Why nickel-titanium?

Nickel-titanium (NiTi) is highly flexible. Try bending a NiTi file to a 40° to 60° angle. You will immediately notice the difference in flexibility. This tremendous flexibility of the material is just as important as its memory effect: If you release the bent NiTi file it will, contrary to a steel instrument, immediately resume its original position.

The combination of these two important factors makes nickel-titanium alloy the best material presently available in endodontics for rotary instrumentation.

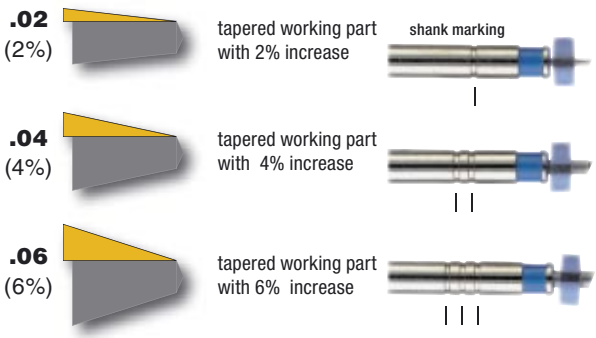
3. Taper – what does it mean?

Taper means gradual increase in diameter over the length (conical shape).

Traditional steel files have a 2 % taper in compliance with ISO no. 3630, i.e. taper .02.

The increase in cross-section diameter from the tip towards the end of the working part is 2 %, or 2/100 mm per 1 mm. A file of ISO size 20 with a 16 mm working part measures 20/100 mm at the tip and 52/100 mm at the end of the working part: (20 / 100) + (16 x 2%) = 0.52.

Taper .04 has a cross-section diameter increase of 4 %, i.e. a strongly tapered instrument
Taper .06 means an increase of 6 % etc.



	diameter (mm) at distance D_x from instrument tip			
	D_1	D_5	D_{10}	D_{16}
.02/30	0,30	0,40	0,50	0,62
.04/30	0,30	0,50	0,70	0,94
.06.30	0,30	0,60	0,90	1,26

4. Why do I need instruments in different tapers?

The goal of root canal preparation is to create optimal conditions for a tightly sealed and long-lasting root filling, which includes a uniformly tapered canal shape. A fast and safe way to achieve this goal is with intelligently coordinated instrument sequences of different tapers:

- large taper in the straight canal section
- medium taper in the curved canal section
- small taper for apical enlargement

Large and medium tapers allow speedy dentin removal. The number of instrument changes is reduced to a minimum. Small tapered files are used for better apical shaping and preservation of the original canal axis (centre line).

FlexMaster®: taper .02, .04, .06 and .11

- .11 for the IntroFile, for conical enlargement of root canal orifice, replaces 2 - 3 Gates enlargers
- .04 and .06 used for crown-down phase
- .02 for safe apical enlargement

Colour coding for ISO size

Working length can be marked with the silicone stopper.

The taper of every **FlexMaster®** instrument is identified by ring markings on the shank:

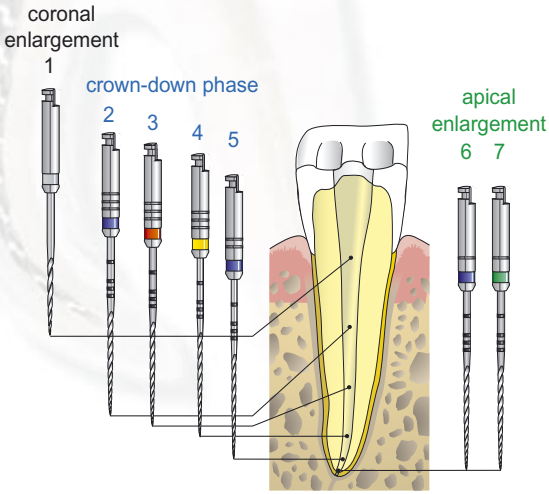
- One ring – taper .02
- Two rings – taper .04
- Three rings – taper .06

Depth markings on the working part allow determination of the exact position of the file on x-ray.

5. What is crown-down pressureless?

It means preparing a root canal with instruments in decreasing sizes step-by-step toward the apex without using pressure. To begin with, it is necessary to determine the approximate canal length with an initial x-ray. The exact working length will be determined just before reaching the apex. We recommend using one of the new electronic length determination devices, e.g. **Raypex® 4.**

After this, the apex is enlarged with instruments in increasing sizes (each instrument to the full working length).
The crown-down method for rotary root canal preparation has been widely tried and tested.



6. Why do I need a special motor for NiTi instruments?

At overload, steel files unwind before they break. Files can be checked prior to sterilization and damaged files discarded. Due to nickel-titanium's memory effect, NiTi files do not deform, they can break without warning when submitted to excess stress or material fatigue. In order to take full advantage of the nickel-titanium material and effectiveness of the instrument design and in order to avoid the unpleasant consequences of instrument fracture, the file must be used in the canal with:

- a constant rotation of approximately 300 rpm and
- controlled force (torque) according to the size of the file

For these reasons, you need an intelligently programmed motor with torque and speed control, which monitors the speed and torque of each instrument precisely and safely according to its specific mechanical data. Additional functions such as Auto Stop Reverse (ASR) which automatically frees instruments blocked in the canal increase safety and reduce stress for the practitioner. On page 15 you will find an overview of motors recommended by VDW.

7. How often can I use a FlexMaster® NiTi file?

Steel instruments will deform when they undergo too much stress, so they can be identified before they fracture. NiTi files, however, do not bend or unwind, they fracture without warning. In severely curved canals taper .02 instruments show a better resistance to stress than files with a greater taper (.04, .06 etc.) In order to reduce the risk of fracture, it is recommended to use NiTi files with a low torque and torque control drive system.

FlexMaster® NiTi files can be used repeatedly. The special autoclavable labels for the lid of the **FlexMaster®** System Box allow you to record frequency of use with a permanent marker. At the latest after 8 markings each instrument should be replaced by a new one as the risk of fracture increases with instrument wear.

Removing dentinal debris in full rotation - the mechanical load increases with the angle of the canal curvature

A practical tip:

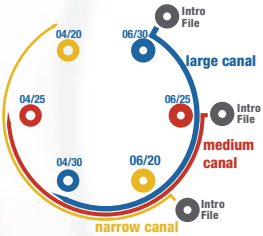
Depending to the stress exerted on the instrument record instrument usage for each canal on the control label as follows:

- • 1 cross for front teeth (wide, almost straight canals)
- •• 2 crosses for premolars (small to medium curvature)
- ••• 3 crosses for molars (narrow, strongly curved canals)

and replace the instrument when all 8 boxes have been filled.

FlexMaster® is economical because few instruments are needed per treatment. In most cases, 4 instrument sizes will suffice to reach the apex, and apical enlargement can be made with 2 to 4 instrument sizes.

8. How to use FlexMaster®

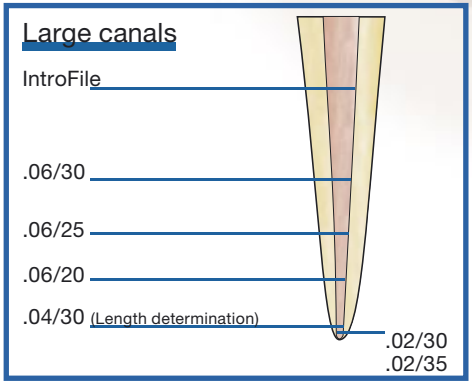


1. Take an initial diagnostic x-ray to estimate working length
2. Introduce a VDW 'C'-file (or a fine K-file) to determine the size of the canal (large, medium, narrow) and select the instrument sequence (diagram p. 8)
3. Create straight coronal access with the IntroFile and enlarge conically.
4. Crown-down phase
   From the beginning of the preparation use a lubricant (FileCare® EDTA) and rinse regularly and thoroughly with NaOCl. Mark the estimated working length (WL) minus 2-3 mm with a silicone stopper.
   - At constant speed, between 150 and 300 rpm, introduce the first **FlexMaster®** file of the selected sequence
   - Use light pumping movements for approx. 5-10 sec. until the file's progress becomes more difficult. Do not exert any pressure.
   - Change to the next smaller instrument size and continue preparing step-by-step until you have reached WL minus 2-3 mm.
5. Length determination: Determination of the exact WL, e.g. with Raypex® 4 or x-ray.
6. Apical enlargement: Use **FlexMaster®** files .02 (green circle) in increasing sizes, depending on the root canal anatomy, up to max. ISO 070 until full WL is reached.

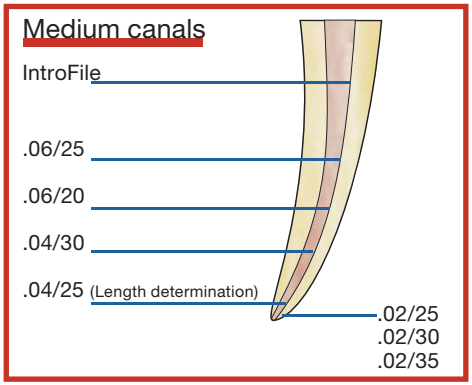
9. The advantages of the sequences:

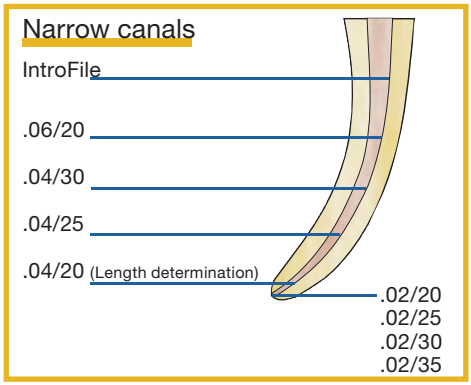
- They have been developed and clinically tested by experienced endodontists
- They achieve best results in the shortest time
- The instrument sequences are easy to remember
- The sequences are printed on the BasicKit and on the System Box
- The sequences are pre-programmed in the VDW endo motors

Depending on the canal size three different sequences are available:



FlexMaster® system box





10. Instructions for Use

For safe and efficient operation of the **FlexMaster®** NiTi files the following instructions must be observed:

360°

Always use the files in a rotating low-torque contra-angle. We recommend a torque controlled motor. Endo IT professional and E-Master™ are endo motors programmed for **FlexMaster®** instruments (page 11).

150-300 UPM

Maintain a constant rotation between 150 and 300 rpm, from insertion of the file into the canal until removal. Do not start or stop instrument within the canal.

Clean and check the instrument for signs of damage before every use.

00:10 SEC

Exert only light pressure on the contra-angle. Allow the instrument to work with a filing action. Allow the instrument to work in the canal with 5-8 light up-and-down pumping motions for maximum 10 seconds.

Use a chelator and rinse the canal between instrument changes. The chelator (e.g. FileCare® EDTA) removes smear layer and improves the instrument's efficiency. Due to the foaming effect of FileCare® EDTA after contact with sodium hypochlorite, pulp tissue and dentin are actively flushed out of the canal.

135°C 275°F

180°C 356°F

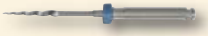
FlexMaster® nickel-titanium instruments, just like every high quality instrument, can be sterilized in autoclave or hot air sterilizer. Repeated sterilization does not affect the cutting efficiency or the physical properties of the instruments. The **FlexMaster®** System Box with perforated bottom is ideal for use in autoclave.

Prior to sterilization we recommend recording the use of each instrument according to the degree of canal curvature on the **FlexMaster®** Control Sticker. Use a permanent marker. In the case of complicated canal anatomy use a new instrument.

As with every new technique, practice with the **FlexMaster®** instruments in plastic blocks and extracted teeth to become familiar with them before using them on a patient.

The **FlexMaster®** technique allows root canal preparation in a very short time. The depth markings on the instrument shaft show the position of the instrument clearly on the x-ray, and you are able to identify the working length of the canal throughout the treatment.

11. All you need for your endodontic success



sterile packed in blister cards of 6 pieces

Ref. 357 **FlexMaster® IntroFile** 19 mm, taper .11, ISO 22

Ref. 341 **FlexMaster® .02** instruments
ISO 15 (21 + 25mm), lengths 21, 25 + 31 mm:
ISO 20, 25, 30, 35, 40, 45, 50, 60, 70
Single sizes and assorted (ISO 25-45 only)

sterile packed in blister cards of 6 pieces

Ref. 342 **FlexMaster® .04** instruments
ISO 15 (21 + 25mm),
ISO 20, 25, 30, (21, 25 + 31mm), single sizes
ISO 35 + 40, (21 + 25mm), single sizes

Ref. 343 **FlexMaster® .06** instruments
ISO 15, 20, 25, 30, 35, 40 (21 + 25mm),
single sizes

Ref. 344 **FlexMaster® .04 + .06** instruments
21 + 25 mm, ISO 20, 25, 30
1 piece each .04 + .06 assorted

Ref. 346 **BasicKit**
FlexMaster® instrument set 21 or 25 mm
+ IntroFile + fine K-file for probing

Ref. 340 **FlexMaster® System Box**
for standard sequences

Ref. 345 **FlexMaster® Accessory Box**
for additional instrument sizes

Ref. 445 **FlexMaster® Combi Box**
ideal for standard sequences and
additional instrument sizes

Ref. 489 **FlexMaster® Control Sticker** for System Box

Ref. 490 **FlexMaster® Control Sticker** for Accessory Box

Ref. 479 **LavEndo® Washbox**
for convenient disinfection of the
FlexMaster® instruments

Ref. 1040 **FlexMaster® Starter Kit**
each1 BasicKit 21 + 25 mm,
1 System Box, 2 x 3 ml FileCare® EDTA,
3 plastic training blocks

Ref. 1010 **FileCare® EDTA**
1010 000 002 pack with 2 x 3ml
1010 000 005 pack with 5 x 3ml

Ref. 1000 **Endo IT professional**
Endo IT professional is programmed for all major NiTi systems, has ASR and many professional functions, including programming of personal sequences.
There are two levels for **FlexMaster®**: for new NiTi users and for experienced NiTi users.
ISO "E" connection for 4:1 contra-angle (contra-angle not included in delivery).

Ref. 1070 000 077
4:1 W&H Contra-Angle

Ref. 1060 **E-Master™**
This high-tech, pocket-sized endo motor is programmed for **Flex-Master®** and Gates and has ASR. The control unit is the size and weight of a remote control and the **FlexMaster®** sequences are represented one-to-one on the console.
ISO "E" connection for 1:1 contra-angle (contra-angle not included in delivery). Upgradeable for E-Fill module for warm guttapercha condensation.
Access to rotary preparation cannot be easier!

Ref. 1070 000 078

1:1 W&H Contra-Angle

Ref. 1060 000 500

E-Master™ Starter Kit

- E-Master™ - **FlexMaster®** BasicKit 25mm
- **FlexMaster®** Systembox, FileCare® EDTA (2 x 3ml)
- 3 plastic training blocks

Ref. 1075 **SIRONiTi**

The VDW SIRONiTi is an endodontic contra-angle with 5 torque levels. Thea are easily set directly on the contra-angle by turning the preselect ring. Retro-rotation by magnet coupling prevents the file becoming jammed if excessive torque is used.

Information request

- ☐ Info Endo IT professional
- ☐ Info E-Master™
- ☐ Info FileCare® EDTA

VDW GmbH
P.O. Box 830954 • D-81709 München
info@vdw-dental.com
www.vdw-dental.com

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VDW® ENDODONTIC SYNERGY

Place your stamp here and send by **fax to +49 89 62734190**