



Instrumentar der Wurzelbehandlung Wurzelkanalaufbereitung

DR. KÁROLY BARTHA





Wurzelkanalaufbereitung



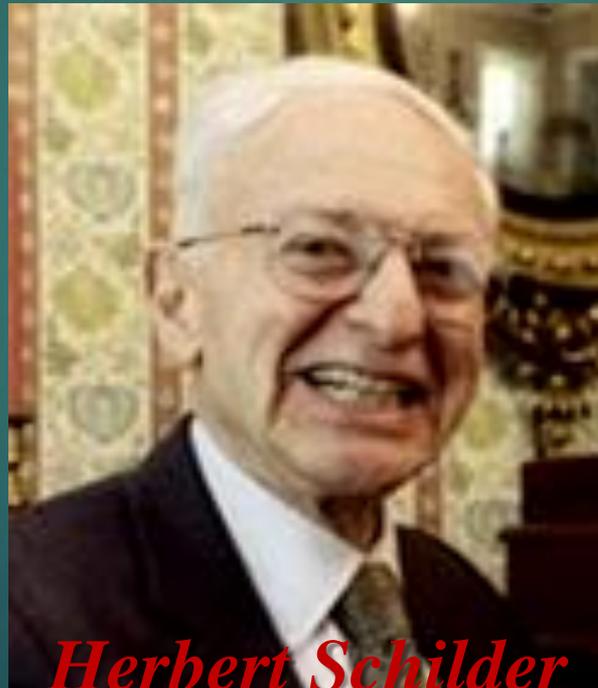
Wurzelkanalaufbereitung

Chemo-mechanische Aufbereitung

- ▶ Mechanisch
 - ▶ Erweiterung
 - ▶ Reinigung
- ▶ Chemisch
 - ▶ Reinigung
 - ▶ Desinfektion

Ziel von Mechanische Aufbereitung

- ▶ Aufbereitung - Konische Form, 3D Füllung
- ▶ Mechanische Reinigung-Desinfizierung





Konische Form

Hängt von Wurzelkanalfüllungs-
methode

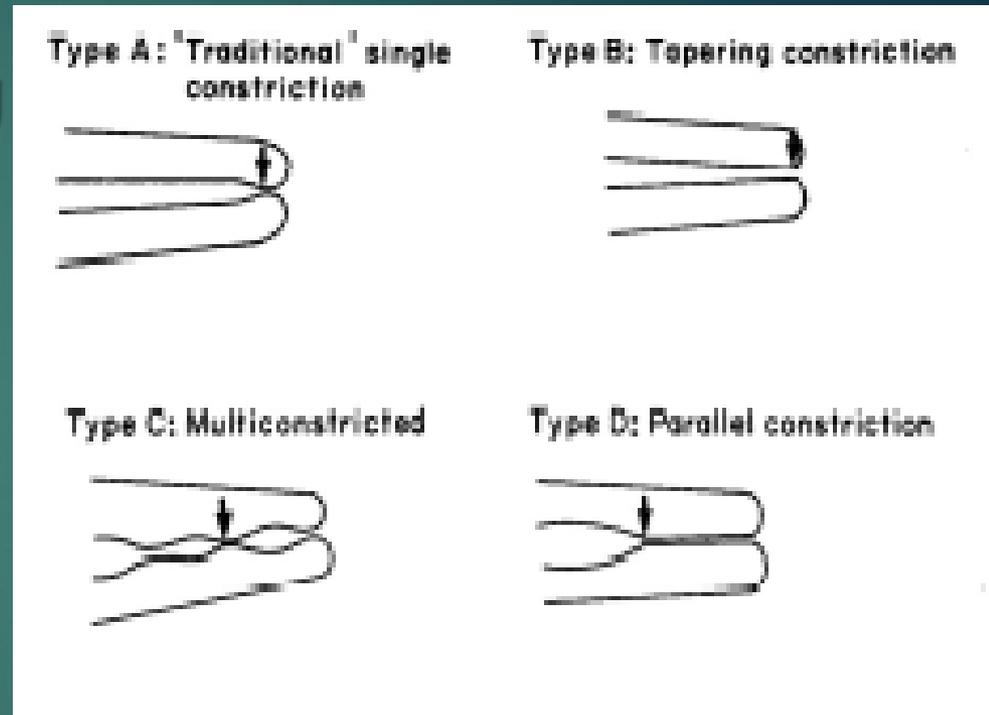


Aufbereitung

- ▶ **Koronale Drittel**
 - ▶ aggressive Aufbereitung
- ▶ **Mittlere Drittel**
 - ▶ Konizität
- ▶ **Apikale Aufbereitung**
 - ▶ Mechanische Reinigung
 - ▶ apikaler Stopp

Apex

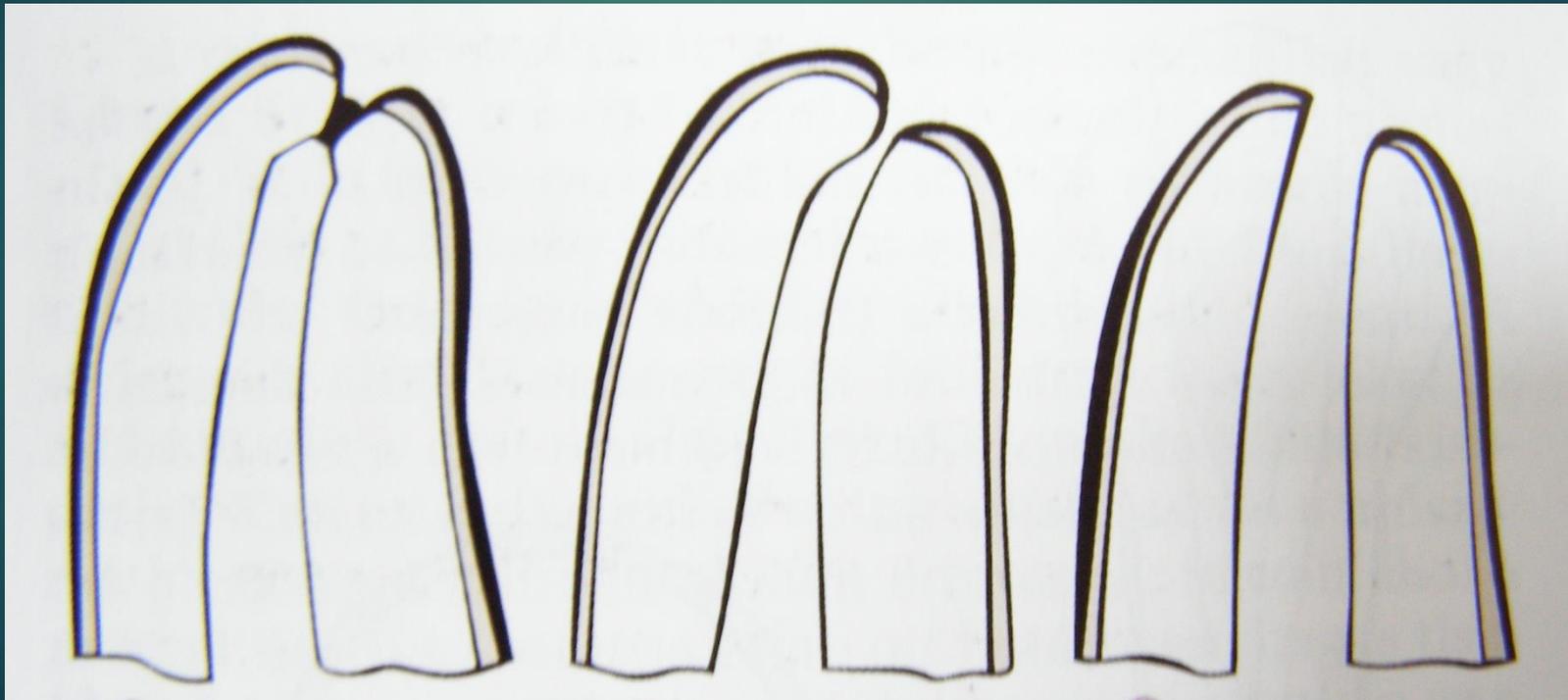
- ▶ „klassische“ Einengung
- ▶ konische Kanal
- ▶ mehrfache Einengung
- ▶ „parallele“ Einengung



Dummer et al. The position and topography of the apical canal constriction and apical foramen. *Int Endod J* 1984;17:192–8.

Apikale Präparation

- ▶ apikaler Stopp
- ▶ „Apical seat”
- ▶ übererweiterte Foramen



Präparations-Techniken

Standardisierte Technik	(Ingle 1961)
Step-back-Technik	(Clem 1969)
Circumferential filing	(kein Autor ermittelbar)
Incremental Technik	(Weine et al., 1970)
Anticurvature filing	(Abou-Rass et al., 1980)
Step-down-Technik	(Goerig et al., 1982)
Double-Flare-Technik	(Fava 1983)
Crown-down-pressureless-Technik	(Morgan & Montgomery 1984)
Balanced force-Technik	(Roane et al., 1985)
Canal-Master-Technik	(Willey & Senia 1989)
Apical-box-Technik	(Tronstad 1991)
Progressive-enlargement-Technik	(Backman et al., 1992)
Modified Double-Flare-Technik	(Saunders & Saunders 1992)
Korono-apikale Technik	(Griesinger et al., 1995)

**Zusammenfassung der bekannten Handaufbereitungstechniken
(nach Hülsmann, 2000)**

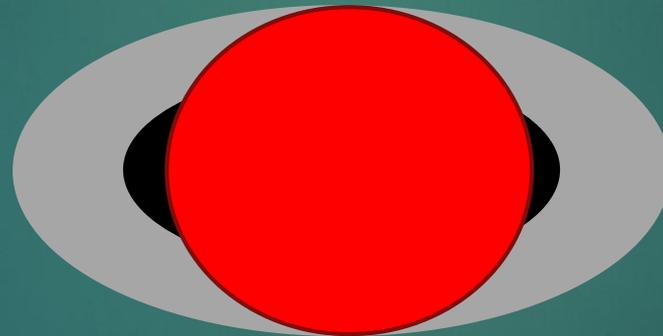


Präparations-Techniken

- ▶ Standardisierte -
- ▶ Step-back -
- ▶ Crown-down -
- ▶ Balance forced –
- ▶ Hybrid Technik

Präparations-Techniken

Standardisierte –





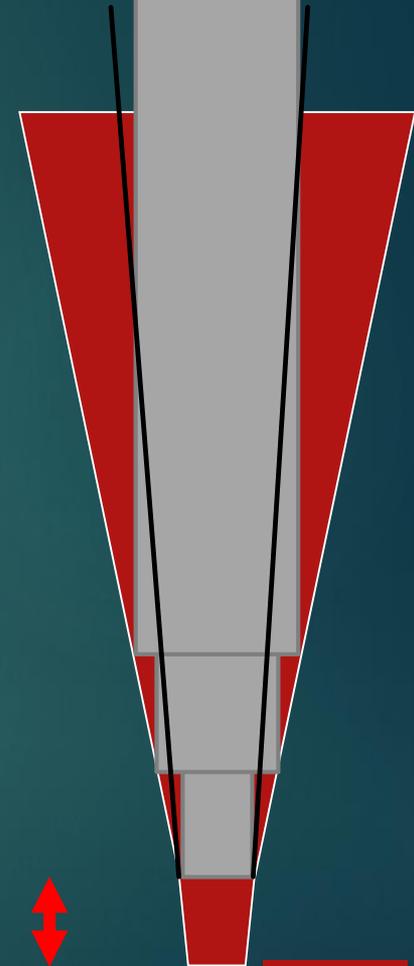
Präparations-Techniken: Step-back-

- ▶ Diagnose
- ▶ Trepanation
- ▶ **Arbeitslänge-Bestimmung**
- ▶ Apikaler Stopp → Master Feile min. #25
- ▶ Häufiges Rekapitulation
- ▶ Konische Präparation (Arbeitslänge wird verkürzt)
- ▶ Rekapitulation mit Master Feile

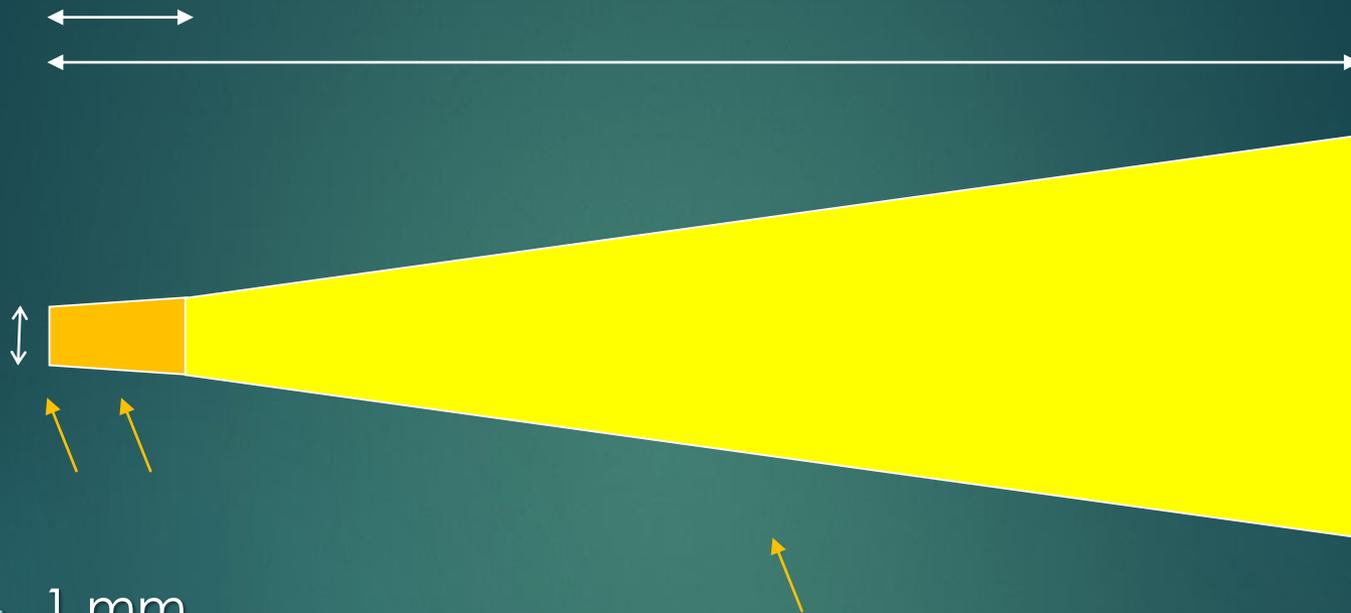
Step-back Technik

- ▶ IAF (Initiale Apikale Feile)
- ▶ MAF (Master Apikale File)
- ▶ Dann: Arbeitslänge wird verkürzt
(mit 0,5 oder 1 mm)

1 mm



Step-back Technik



- ▶ 1 mm
- ▶ Arbeitslänge
- ▶ $\emptyset = \text{MAF}$
- ▶ Apikaler Stopp
- ▶ Konizität: 2%
- ▶ Konizität: 5%



Präparation-Techniken: Crown-down-

- ▶ seltener Nachwehen
- ▶ Kanal besser durchspülbar



Crown-down Technik

- ▶ **Erst koronale Drittel:**
 - ▶ GG Eingangs-Erweiterung
 - ▶ Erst größere
- ▶ **Arbeitslänge Bestimmung**
- ▶ **Dann bis volle AL (ap. Drittel)**
- ▶ **Aufbereitung, letzte Feile mind. mit 2 Größe größerer als IAF**



Crown-down vs. Step-back

Crown-down ist sicherer, weniger Kontakt mit der Wand



Präparation-Techniken: Balance forced – Roane

- ▶ Für stark gekrümmte Kanäle

Präparationsfehler

- ▶ Verkürzung – weniger gekrümmt
- ▶ Stufenbildung
- ▶ Perforation
- ▶ Transportation von Apex



Vergrößerung

- ▶ Vorsetzlupe
- ▶ Lupe
- ▶ OP Mikroskop





Wurzelbehandlung – die Schritte

- ▶ Diagnostik
- ▶ Anästhesie
- ▶ Trockenlegung
- ▶ Trepanation
- ▶ Arbeitslängebestimmung
- ▶ WK Aufbereitung
- ▶ WK Füllung
- ▶ Revision



Trockenlegung

- ▶ relative -
- ▶ absolute - (Kofferdam)



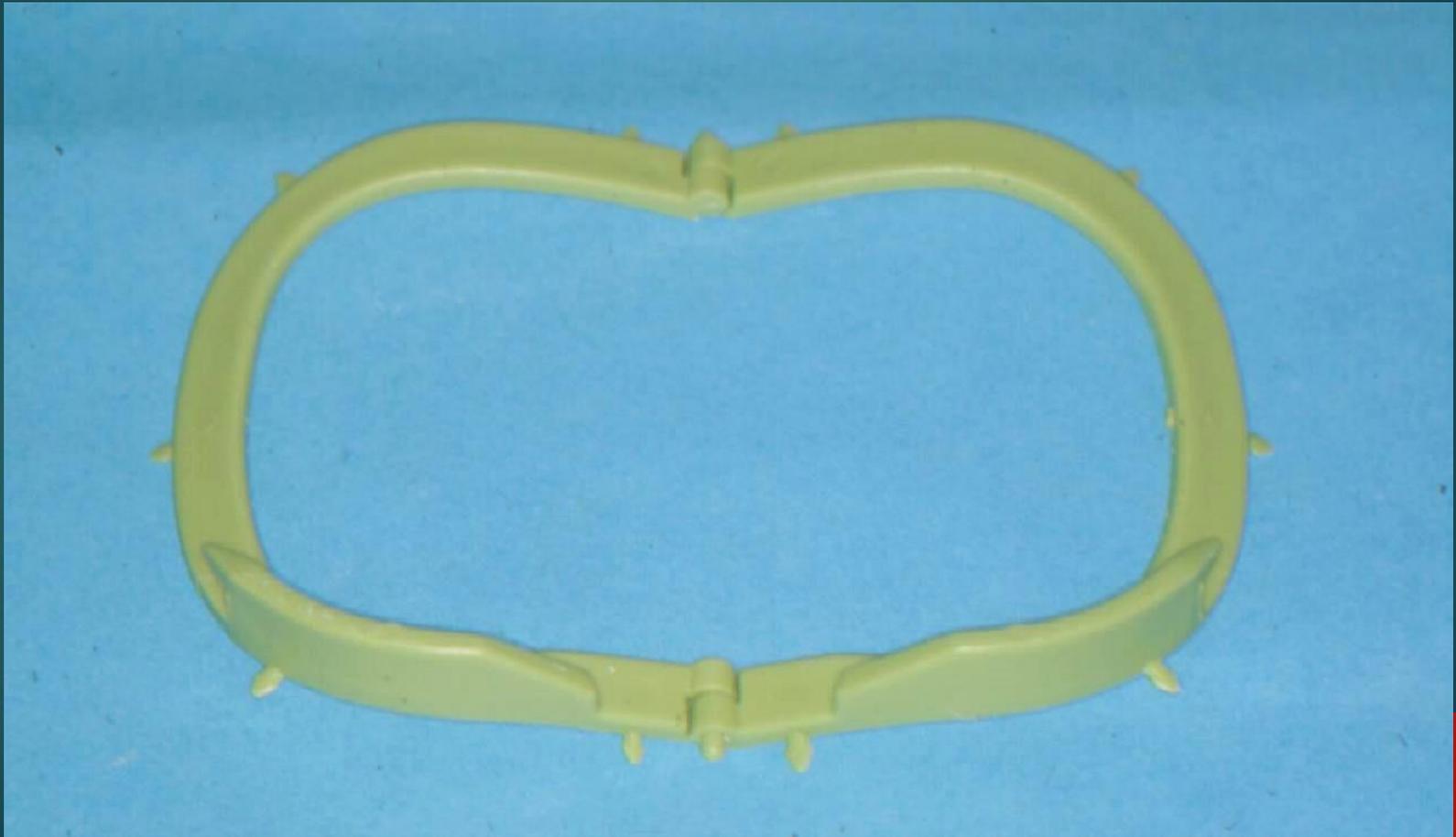


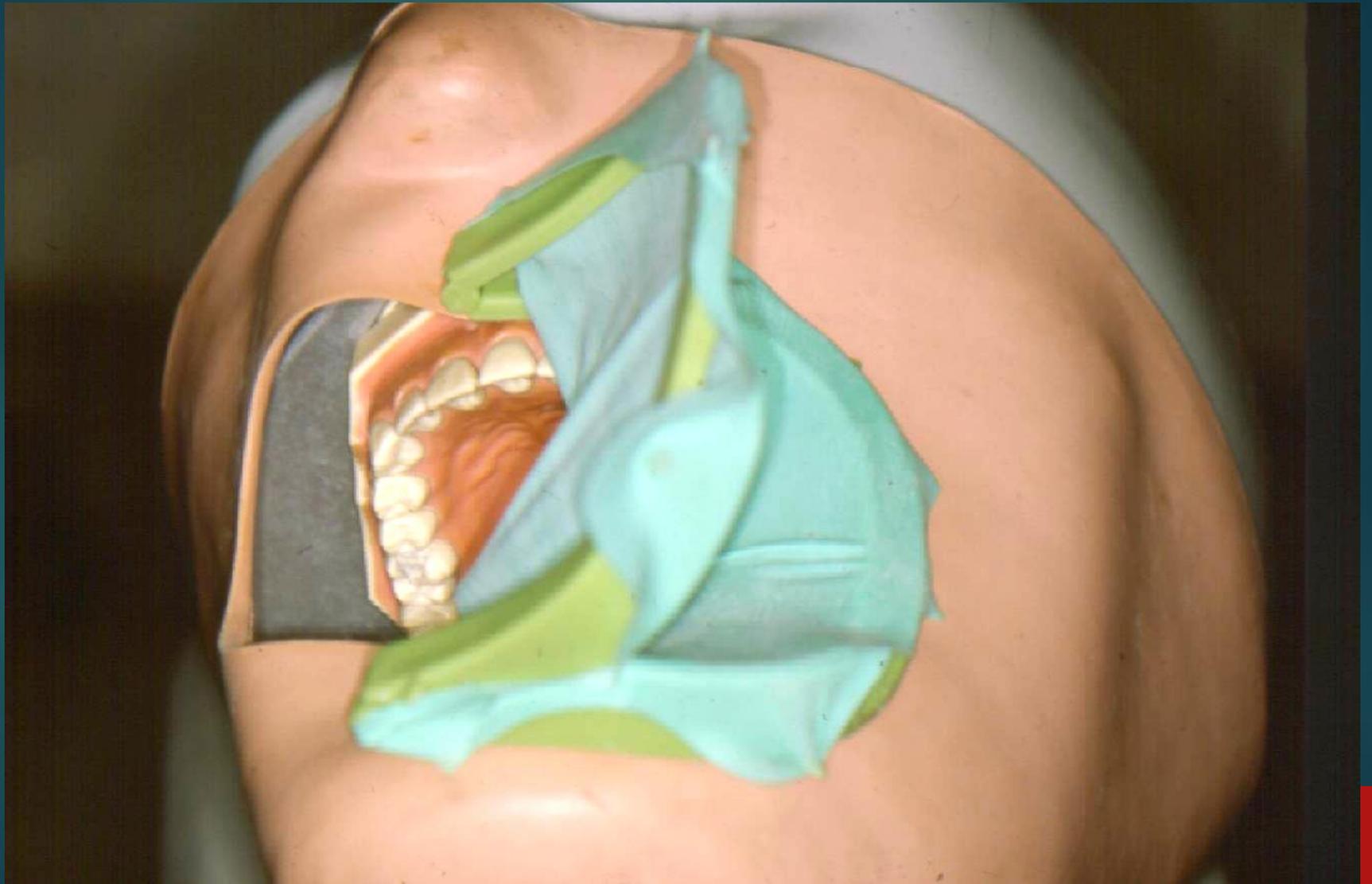


Instrumentar für Kofferdam

- ▶ Gummituch
- ▶ Lochzange
- ▶ Klammer + Klammerzange
- ▶ Rahmen
- ▶ Zahnseide
- ▶ Vaseline

Kofferdamrahmen nach Sauveur



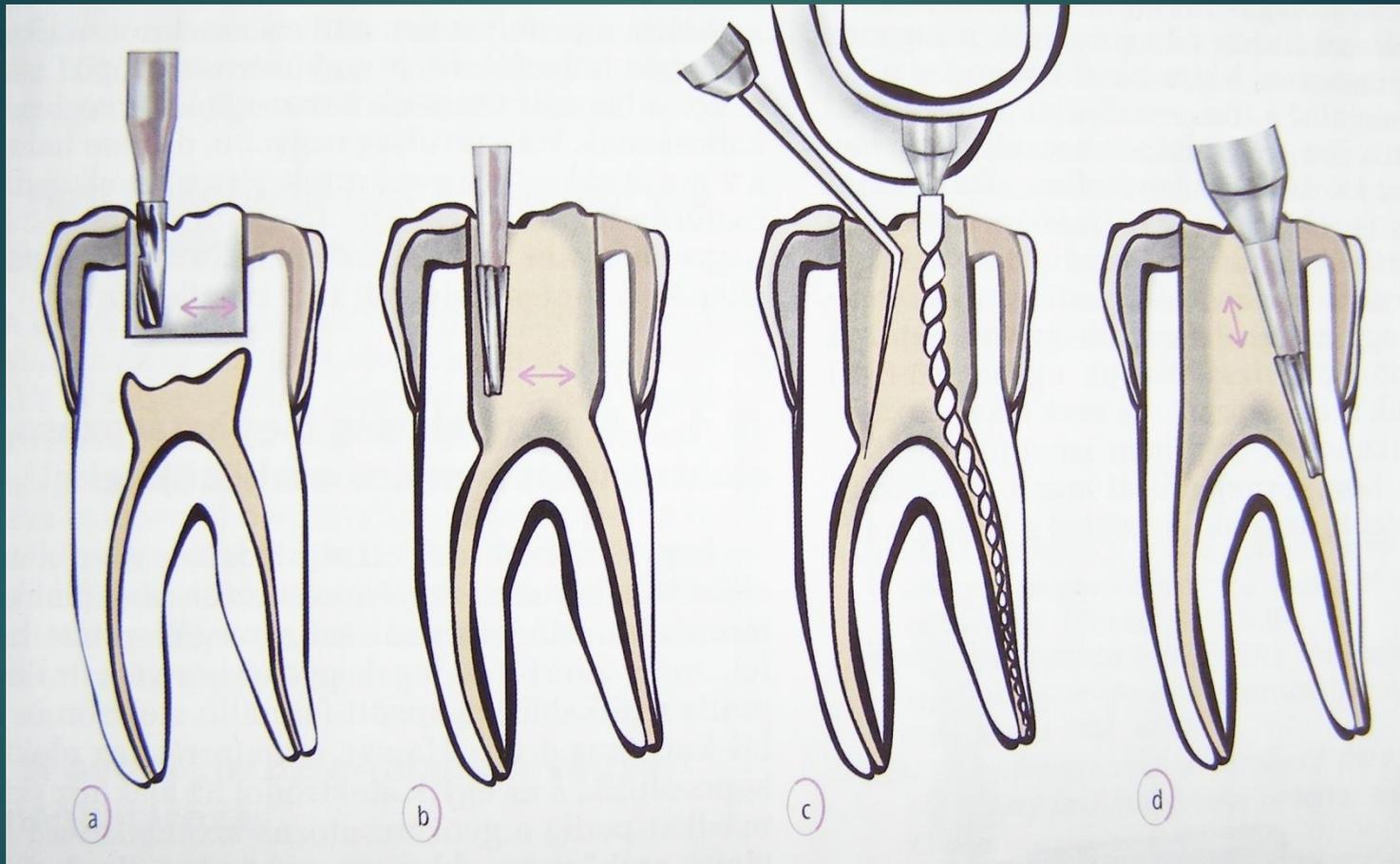




Trepanation - Zugangskavität

- ▶ Handstück
- ▶ Bohrer
 - ▶ FG
 - ▶ für Winkelstück

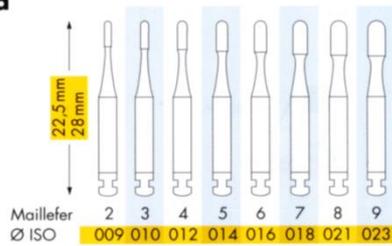
Trepanation





BATT cylindrique
BATT cylinder
BATT Zylinder

BATT cilíndrica
BATT cilíndrica

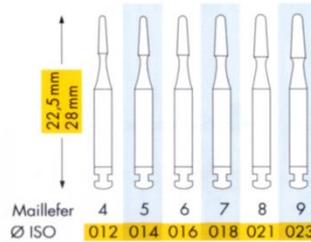


AD 204



BATT conique
BATT cone
BATT konisch

BATT cónica
BATT conica



AD 204



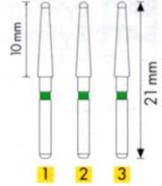
D

ENDO ACCESS BUR

Dr Howard Martin

534 coarse

FG 314

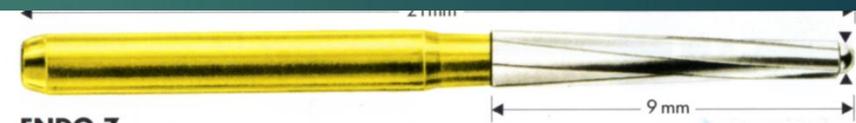
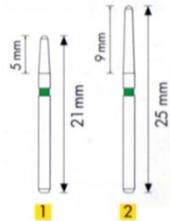
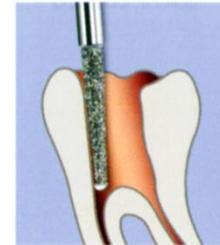


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DIAMENDO

534 coarse

FG 314



ENDO Z

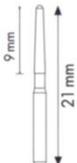
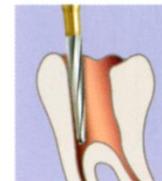
(Dr Zekrya)

Conique extra-longue
Extra-long tapered
Extra-lang konisch

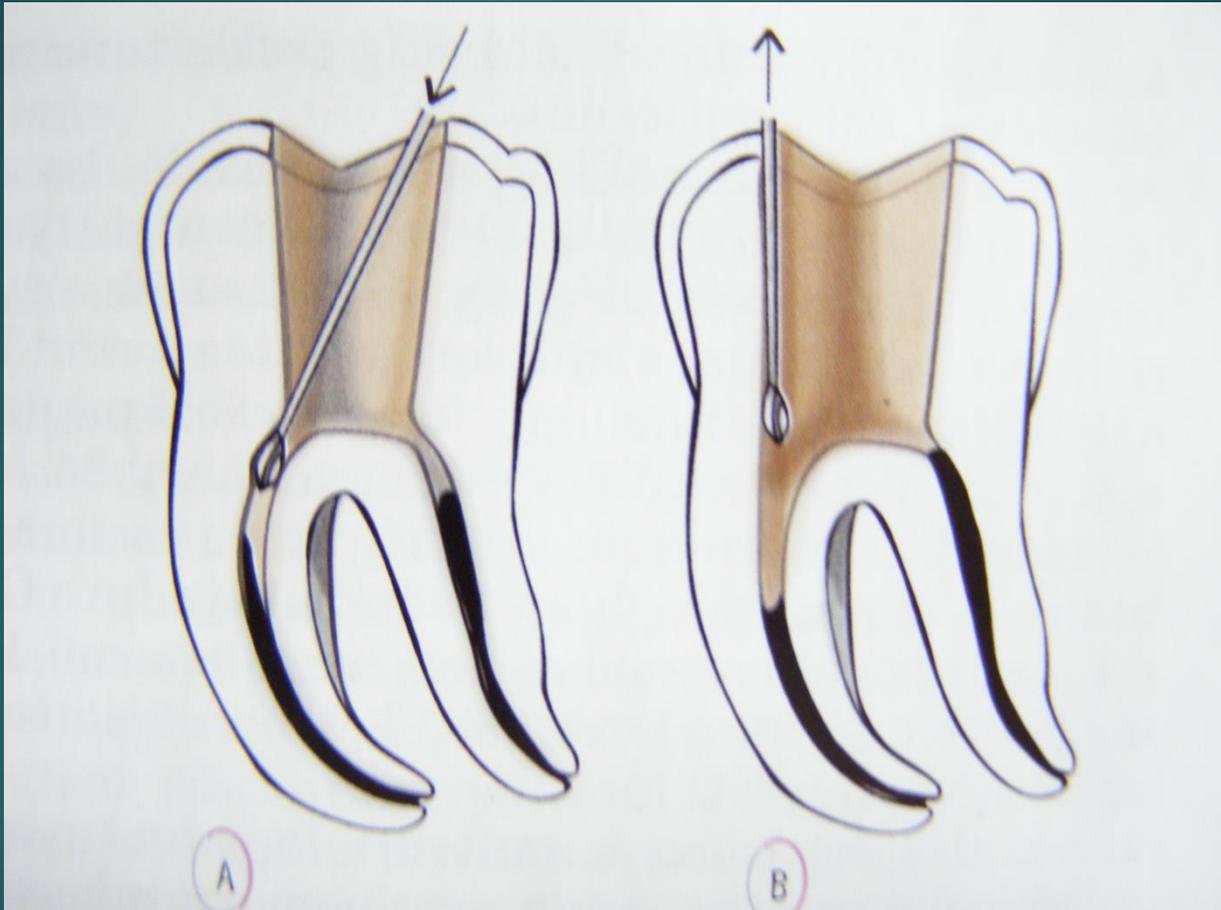
Extra larga cónica
Coniche extra-lunghe

AD 204

FG 314

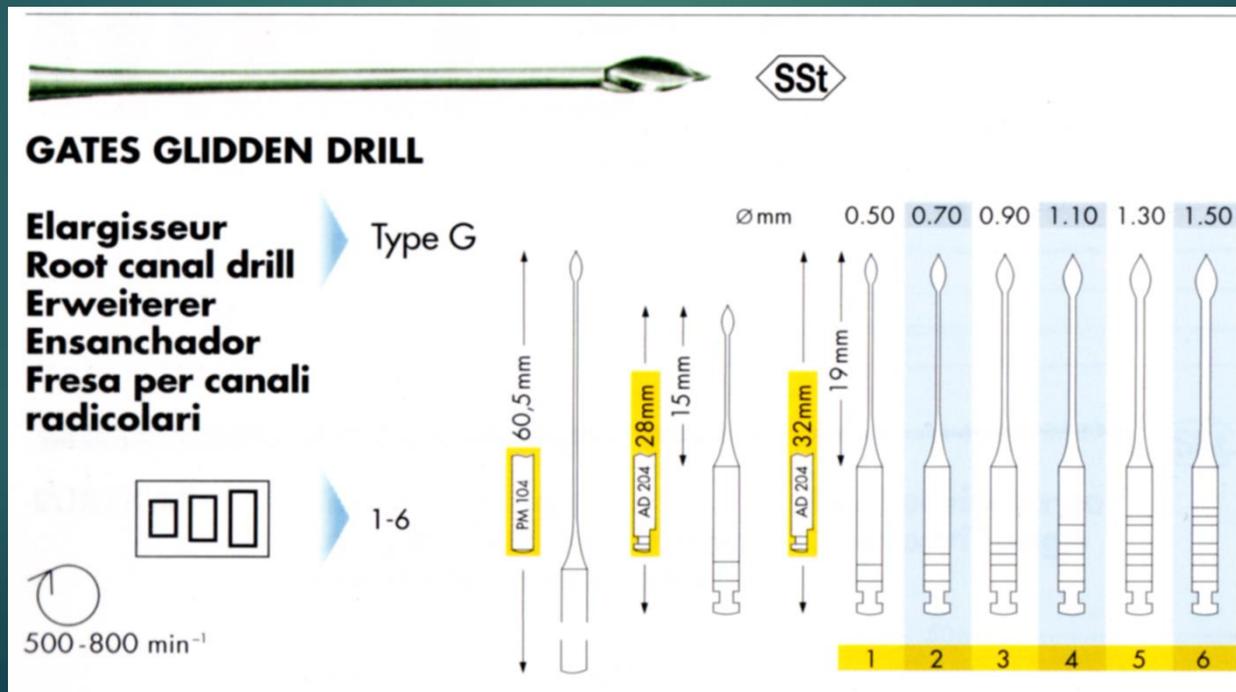


Gates-Glidden Bohrer



Gates-Glidden Bohrer

- ▶ Kanaleingangs Erweiterung
- ▶ Aufbereitung der Koronale Drittel

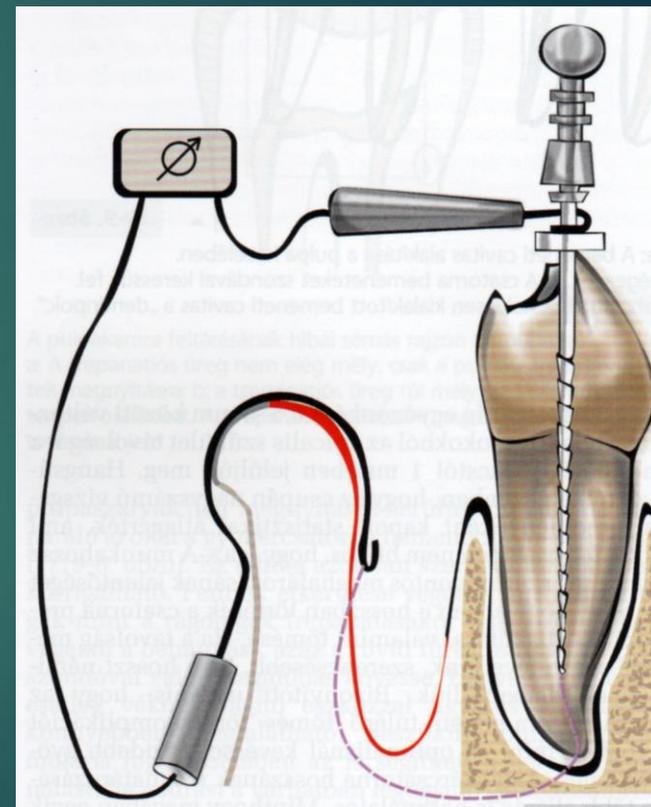


Arbeitslänge-Bestimmung

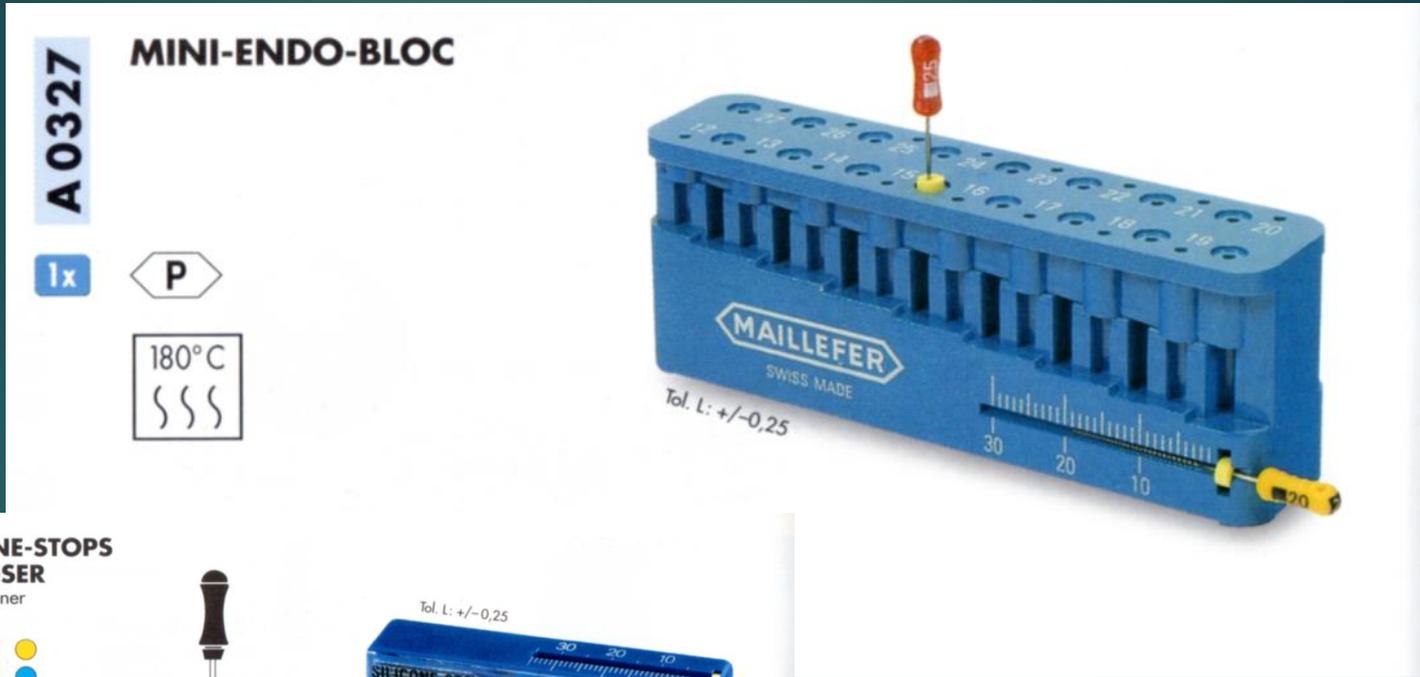
- ▶ Radiologische –
- ▶ Elektronische Methode



Elektronische Bestimmung



Endoblock, silicone Stopper





WK Aufbereitung

- Manuelle - Handinstrumenten
- Maschinelle



Handinstrumenten

- ▶ Nervnadel
- ▶ Kerr Reamer
- ▶ Kerr File
- ▶ Hedstroem File

Nervnadel

A 0004

**SPIRO®
COLORINOX®**

**Tire-nerf court
Short barbed nervbroach
Kurzer Nervextraktor**

**Tiranervio corto
Tiranervi corto
Kurzer Nervextraktor**

12x

30mm

21mm

XXF (2x)
XF (3x)
F (4x)
M (2x)
C (1x)

XXF
XF
F
M
C

18

DENSPLY
MAILLEFER

SSt

! p/12

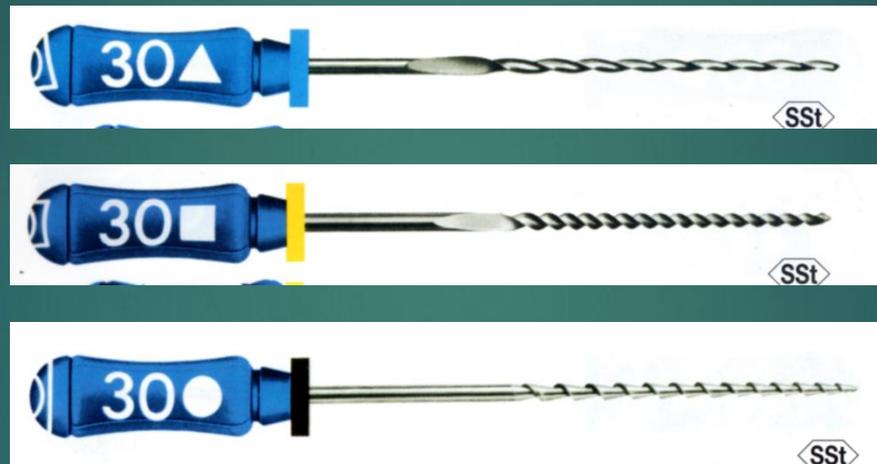
VDW® STERILE

Barbed Broaches
Pack of 150 instruments

Size		21 mm
XXXXF / 0	●	333 021 410
XXXF / 1	○	333 021 420
XXF / 2	●	333 021 430
XF / 3	●	333 021 440
F / 4	●	333 021 450
M / 5	●	333 021 460
C / 6	●	333 021 470
XXF-F / 2-4		333 021 480

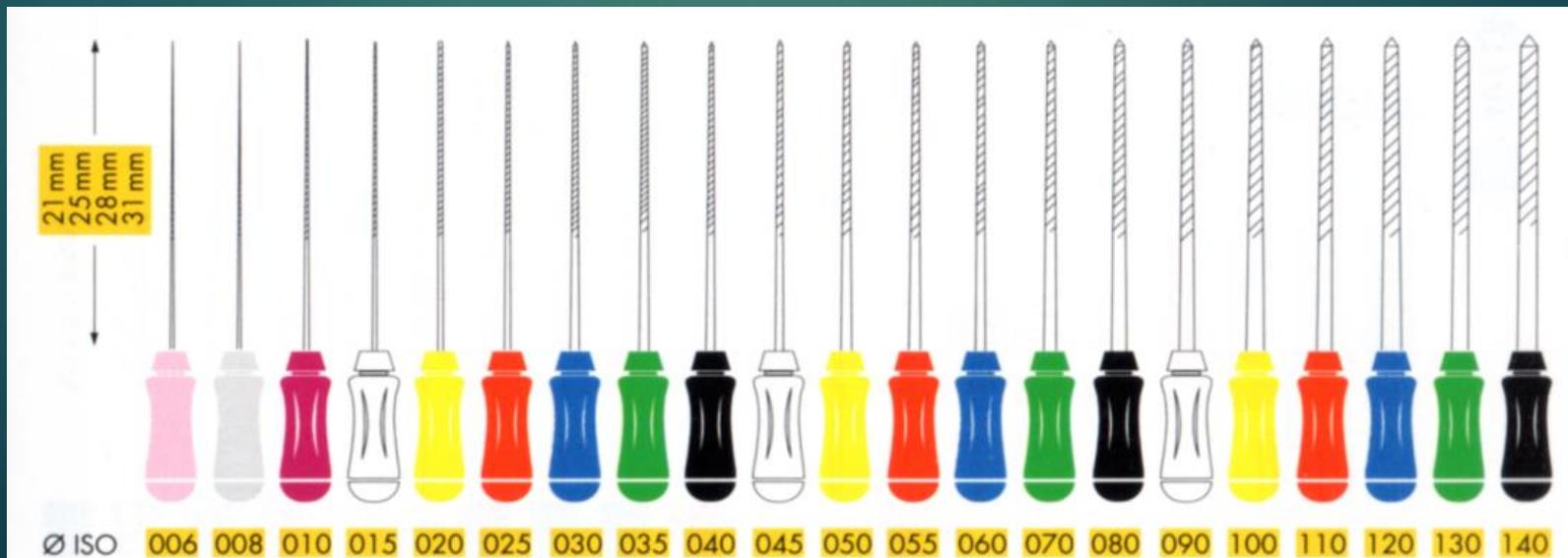
ISO Normen

- ▶ Konizität = 2%
- ▶ Symbole:



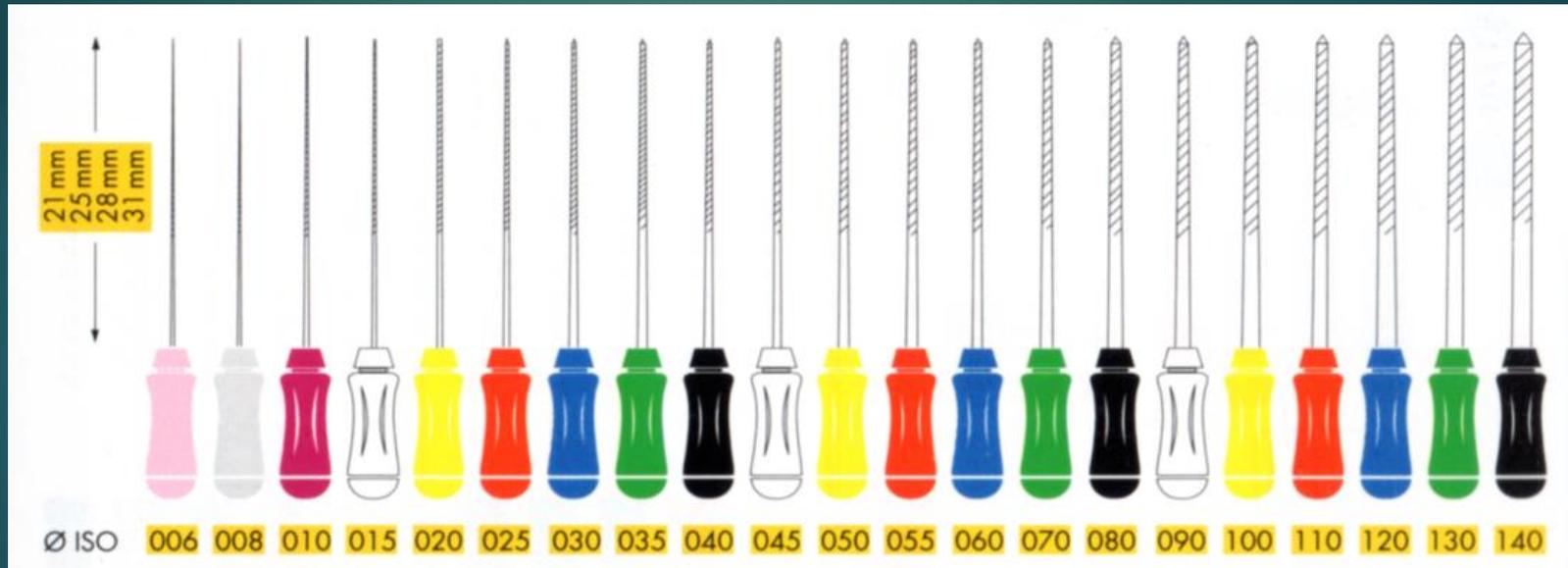
ISO Normen

- ▶ aktives Teil = 16 mm
- ▶ gesamte Länge = 21 / 25 / 28 / 31 mm
- ▶ Durchmesser der Spitze (x 0,01 mm):
 06/08/10
 15/20/25/30/35/40
 45/50/55/60/70/80
 90/100/110/120/130/140
- ▶ Farbkodierung

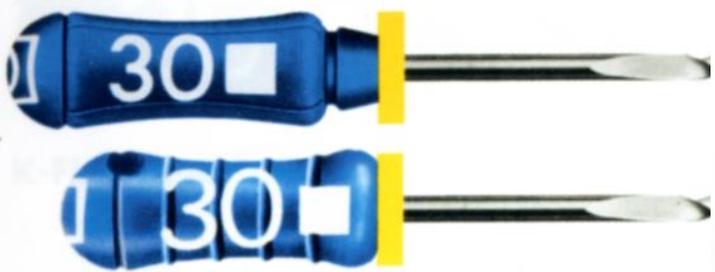


ISO Normen

► die Stufe: 0,05 oder 0,1 mm



ISO Normen



K-FILE COLORINOX®

A 012I
6x

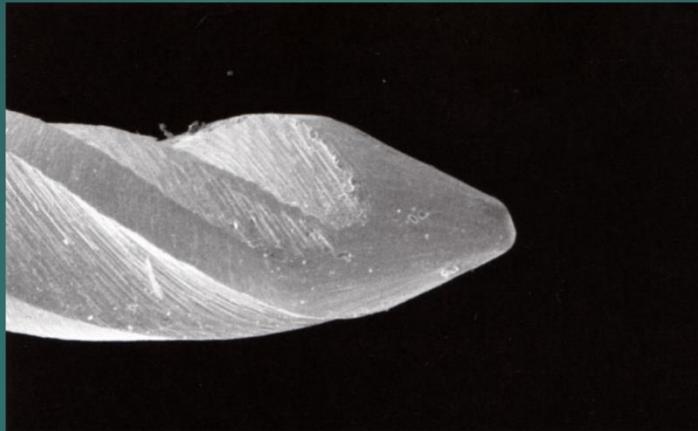


K-FLEXOFIL GOLDEN MEDIUMS®

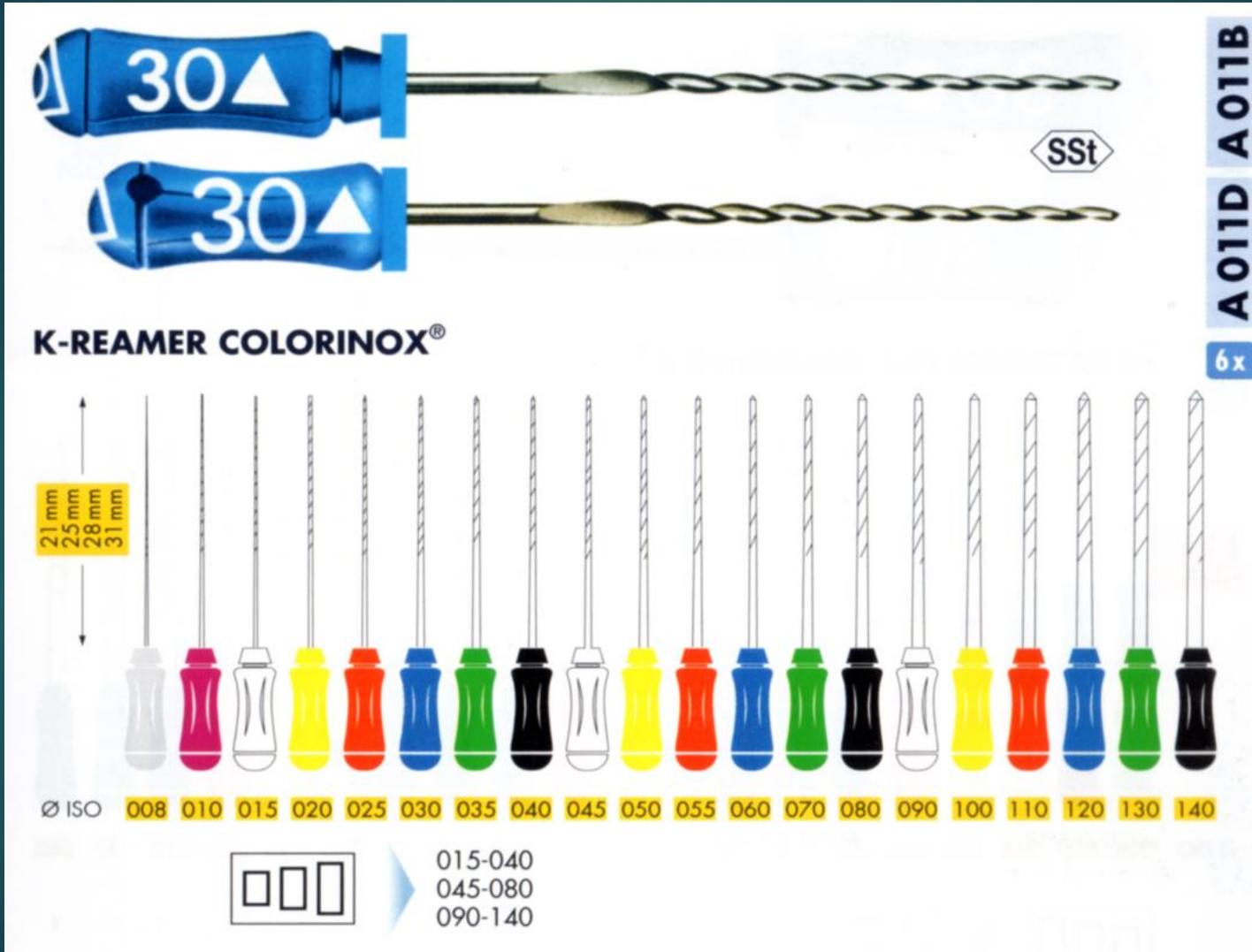
SSt



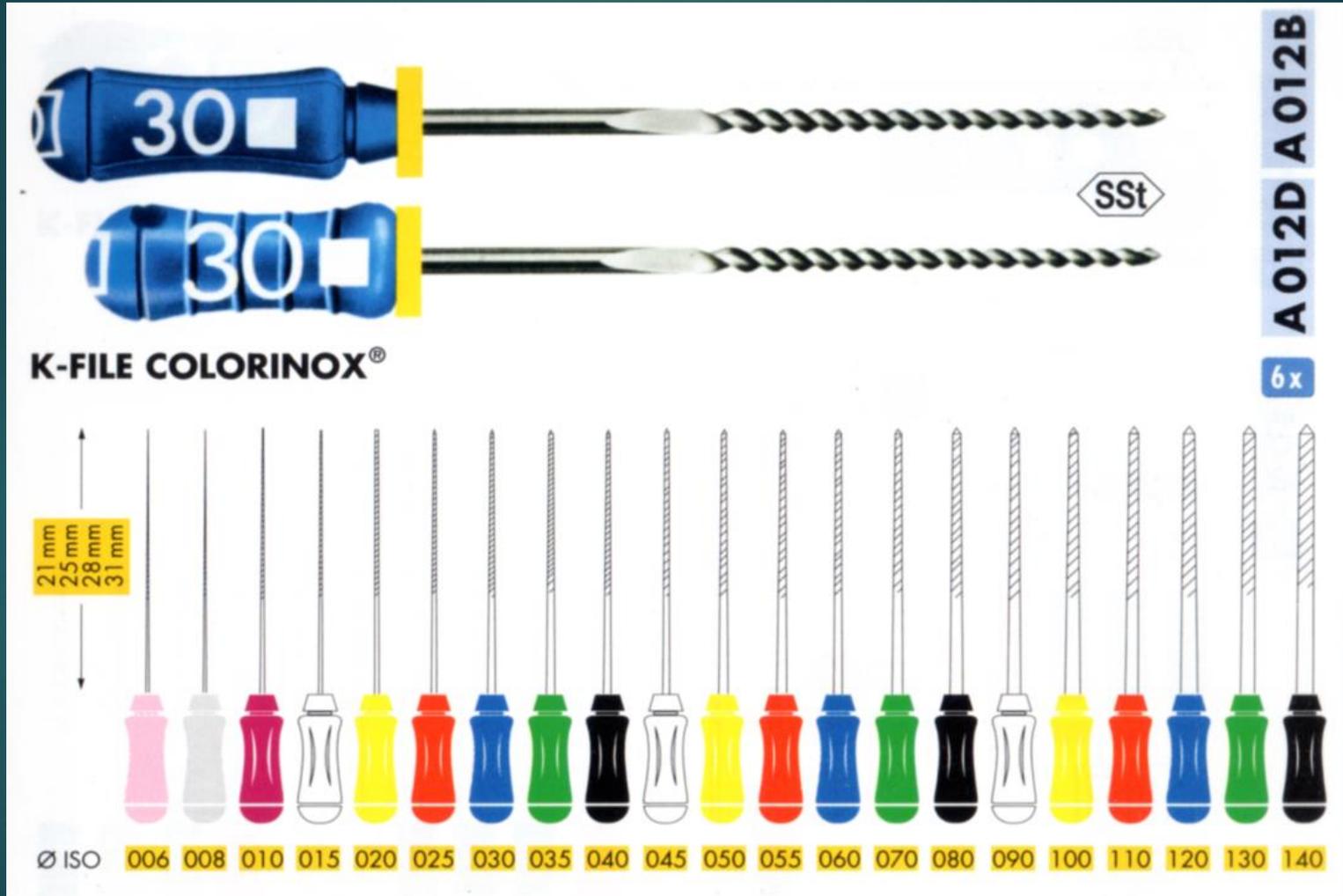
Spitze



Kerr - Reamer



Kerr - File



Hedstroem - File

A016B

A016D

6x

HEDSTROEM FILE COLORINOX®

SSt

21 mm
25 mm
28 mm
31 mm

Ø ISO 008 010 015 020 025 030 035 040 045 050 055 060 070 080 090 100 110 120 130 140

015-040
045-080
090-140



Maschinelle Aufbereitung

- ▶ NiTi Instrumente
- ▶ Stahlinstrumente

Maschinelle Aufbereitung

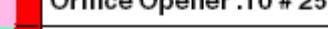
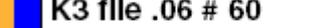
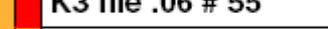
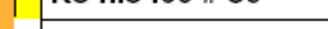
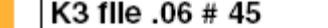
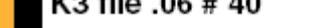
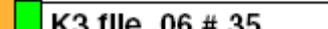
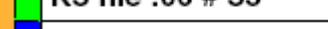
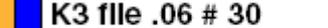
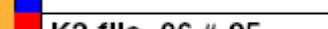
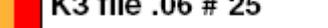
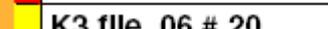
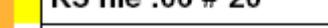
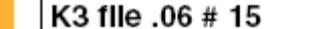
- ▶ Endodontische Winkelstück (mit Drehmomentregelung)
- ▶ Winkelstück mit Mikromotor und Steuerung
- ▶ Winkelstück mit Mikromotor und Steuerung incl. Apexlokator

Endodontische Winkel (mit Drehmomentrege

- ▶ Mtwo direct 115:1
- ▶ SiroNiTi 115:1
- ▶ SiroNiti air+ 66:1



Torque CARD
 $\ominus 300 - 350 \text{ mln}^{-1}$


	Orifice Opener .10 # 25	5
	Orifice Opener .08 # 25	5
	K3 file .06 # 60	5
	K3 file .06 # 55	5
	K3 file .06 # 50	5
	K3 file .06 # 45	5
	K3 file .06 # 40	5
	K3 file .06 # 35	4
	K3 file .06 # 30	4
	K3 file .06 # 25	4
	K3 file .06 # 20	4
	K3 file .06 # 15	4
	K3 file .04 # 60	5
	K3 file .04 # 55	5
	K3 file .04 # 50	5
	K3 file .04 # 45	5
	K3 file .04 # 40	5
	K3 file .04 # 35	4
	K3 file .04 # 30	4
	K3 file .04 # 25	4
	K3 file .04 # 20	4
	K3 file .04 # 15	3

59 63 322 (I) D 3436.201.02.02.09 05.2006

Endodontische Winkelstück (mit Drehmomentregelung)

SiroNiTi APEX

Contra-angle handpiece with small head
The extra small head allows an especially good view to the cavity.

Treatment right as gold
A wide variety of endometric units can be connected to the gold clip.

A clean solution
All SIRONITI endodontic handpieces are autoclavable at up to 135 °C.

sirona.
SIRONITI APEX



Maschinelle Aufbereitung

- ▶ Endodontische Winkelstück (mit Drehmomentregelung)
- ▶ Winkelstück mit Mikromotor und Steuerung
- ▶ Winkelstück mit Mikromotor und Steuerung incl. Apexlokator

Steuerung

- ▶ Drehzahl und
- ▶ Drehmoment einstellbar und kontrolliert
- ▶ autoreverse Funktion

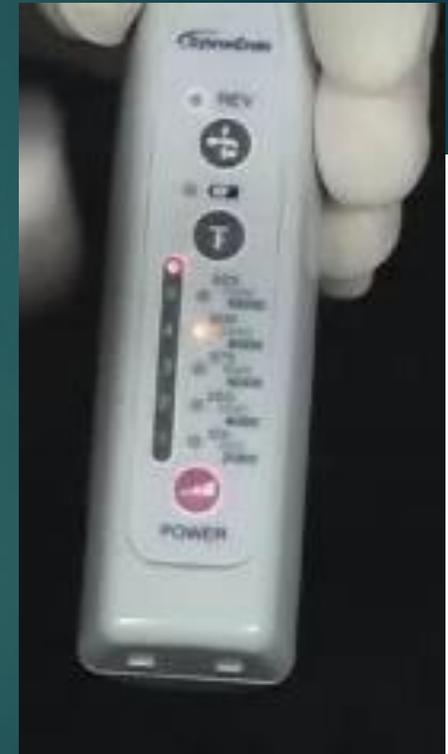
Steuerung

► VDW Silver



Kabellose Geräte

- ▶ Entran (W&H)
- ▶ InGeT Control (MicroMega)
- ▶ ENDOTOUCH™ TC Endodontic (Sybron Endo/NSK)



Maschinelle Aufbereitung

- ▶ Endodontische Winkelstück (mit Drehmomentregelung)
- ▶ Winkelstück mit Mikromotor und Steuerung
- ▶ Winkelstück mit Mikromotor und Steuerung incl. Apexlokator

Winkelstück mit Mikromotor und Steuerung incl. Apexlokator

► Dentaport ZX (Morita)



**A Smaller, Lighter, Finer Motor Handpiece
Ergonomically Designed to Minimize Fingertip Stress**

Comfortable Handling
The handpiece is both comfortable and sensitive.

- Weight: only 70 g (approx.)
- Compact head size: only 12.5 mm
- Speed: 150 to 800 rpm with 8 speed ranges



**Reduced file breakage
Auto Torque Reverse**

File stops and reverses if the torque goes over the set torque limit. Torque limit can be set at 11 levels.

**No switch to turn on and off
Auto Start and Stop**

Motor starts when file is inserted and stops when it is withdrawn.

**Precise control
Auto Apical Slowdown**

File slows down as it approaches the end of the set working length, ensuring safe and sure preparations.

**Reduced file breakage
Auto Torque Slowdown**

File slows down as the torque approaches the set torque limit.

Winkelstück mit Mikromotor und Steuerung incl. Apexlokator

► VDW Gold



Winkelstück mit Mikromotor und Steuerung incl. Apexlokator

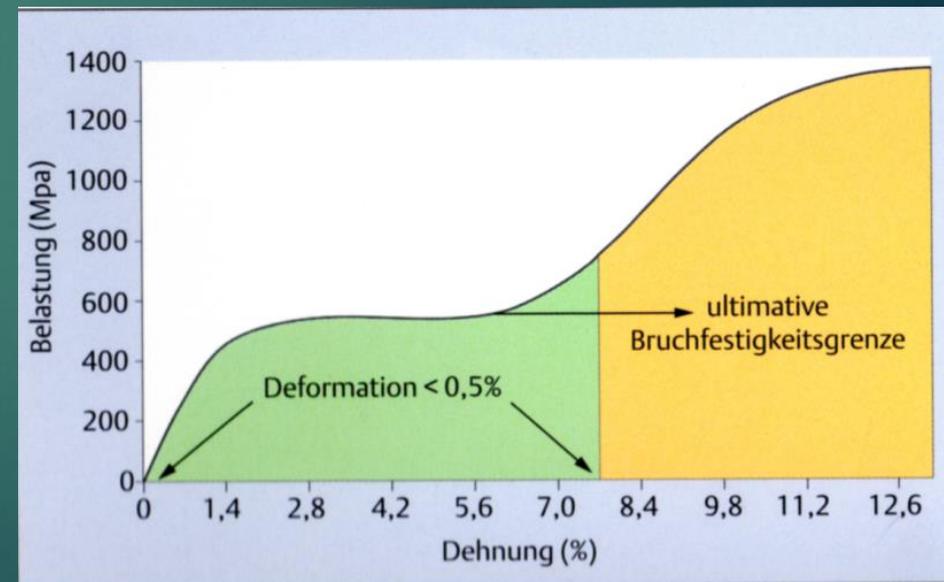
Tri Auto ZX (Morita)

- ▶ Auto Stop und Start
- ▶ auto torque reverse
- ▶ auto apical reverse
- ▶ Apexlokator
- ▶ kabellos

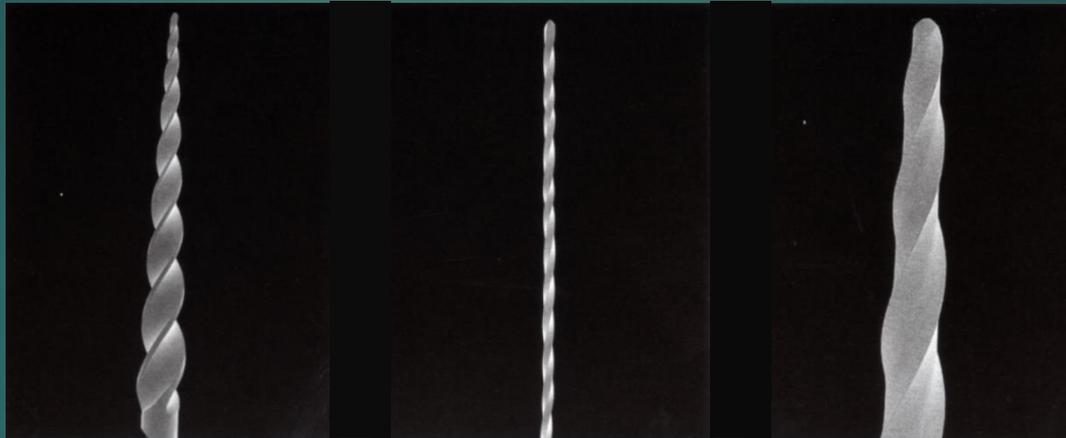


Warum NiTi?

- ▶ mit 500% flexibel -
- ▶ mit 1000% stärker gegen Stress als Stahl
- ▶ 7% Verformung ohne bleibende Alteration



Konizität



GT-File

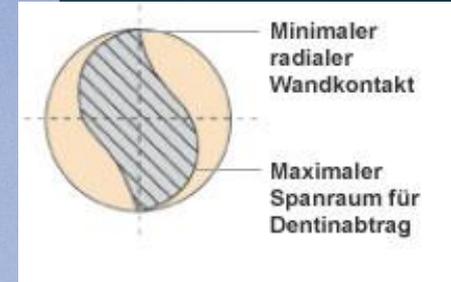
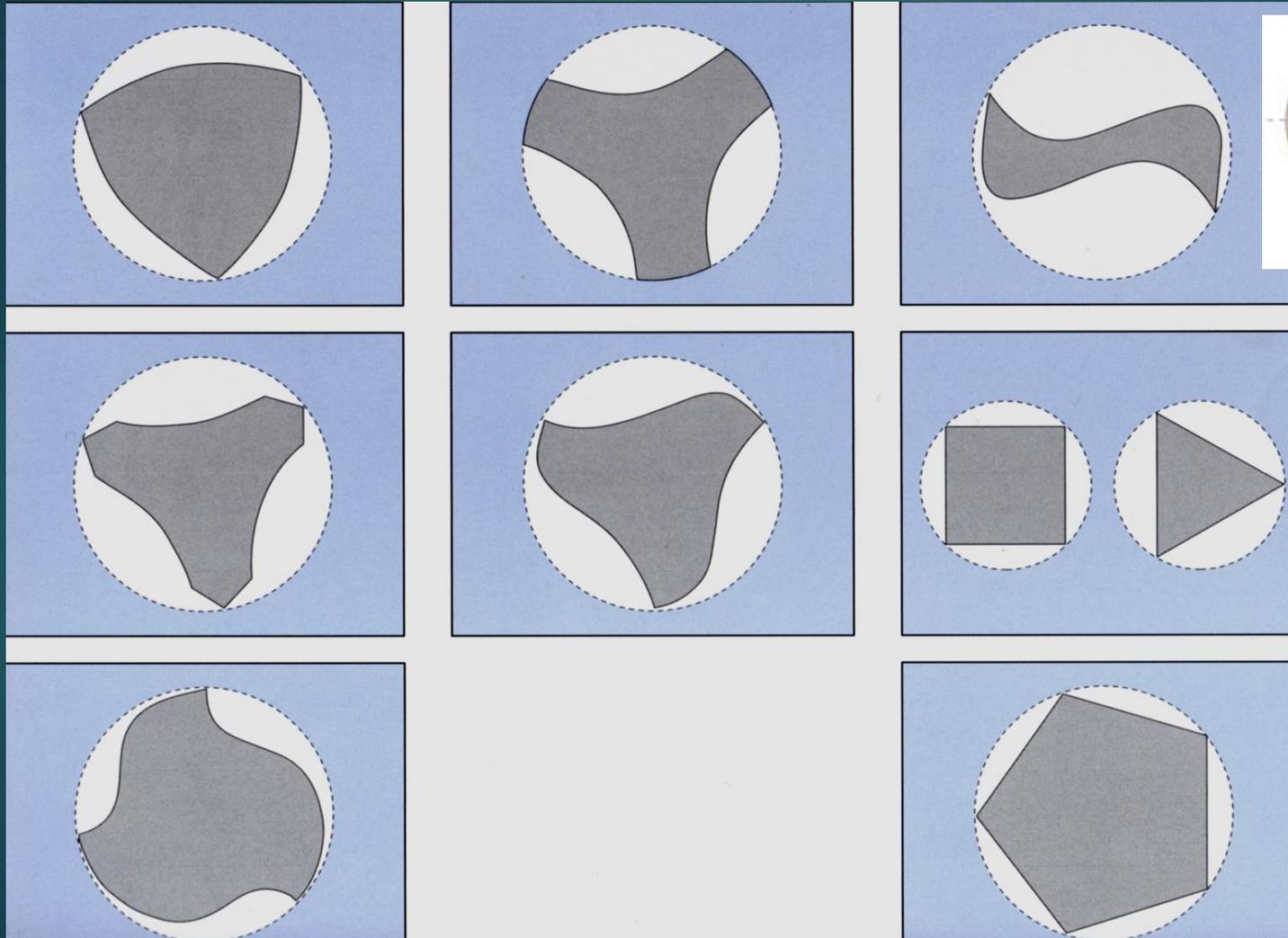
S-Apex

ProTaper

12%

Spitze 7%, 8%, 9% dann 5%

Querschnitt



Querschnitt

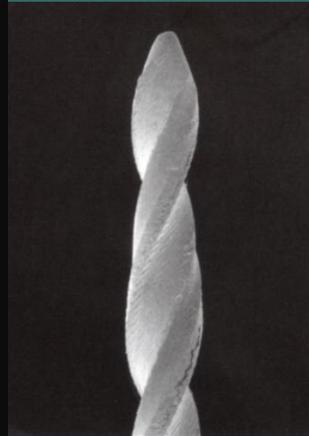
ProtaperNext M-wire



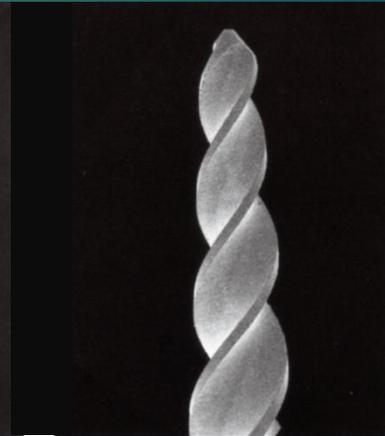
Spanraum



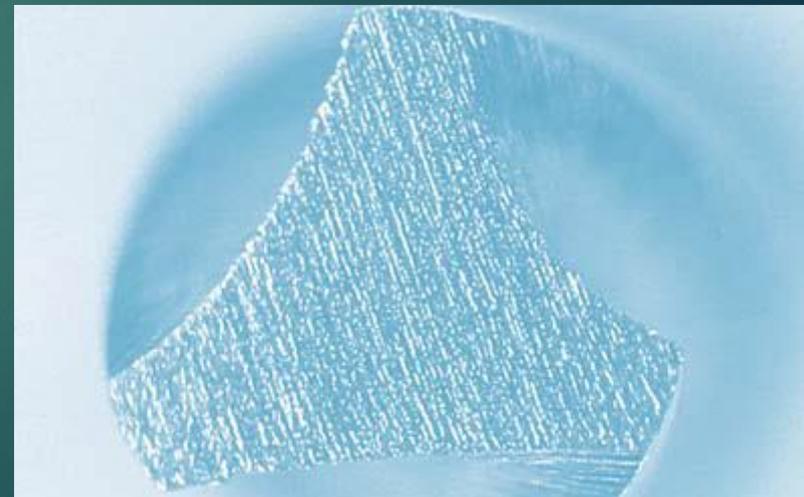
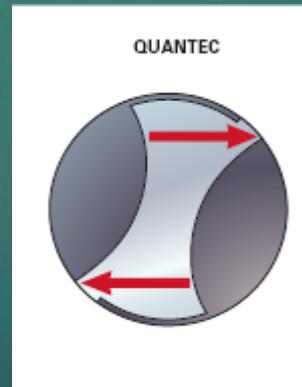
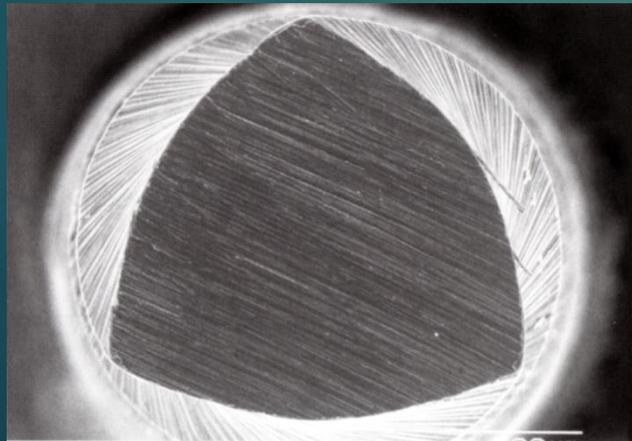
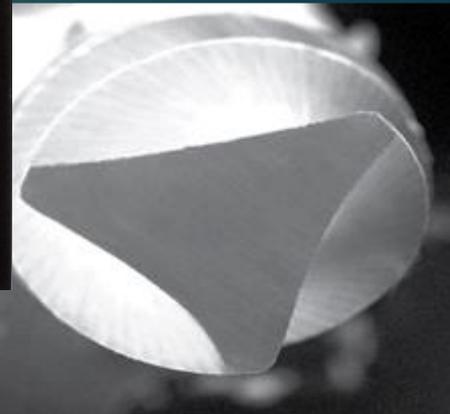
FlexMaster



Quantec



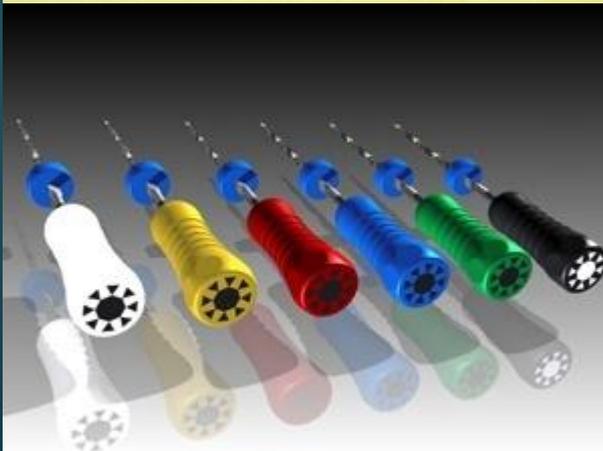
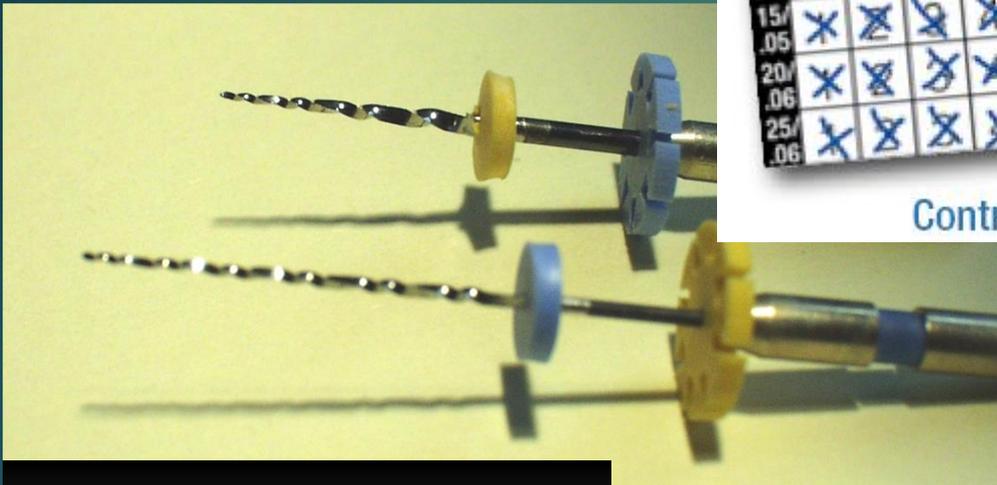
GT-File



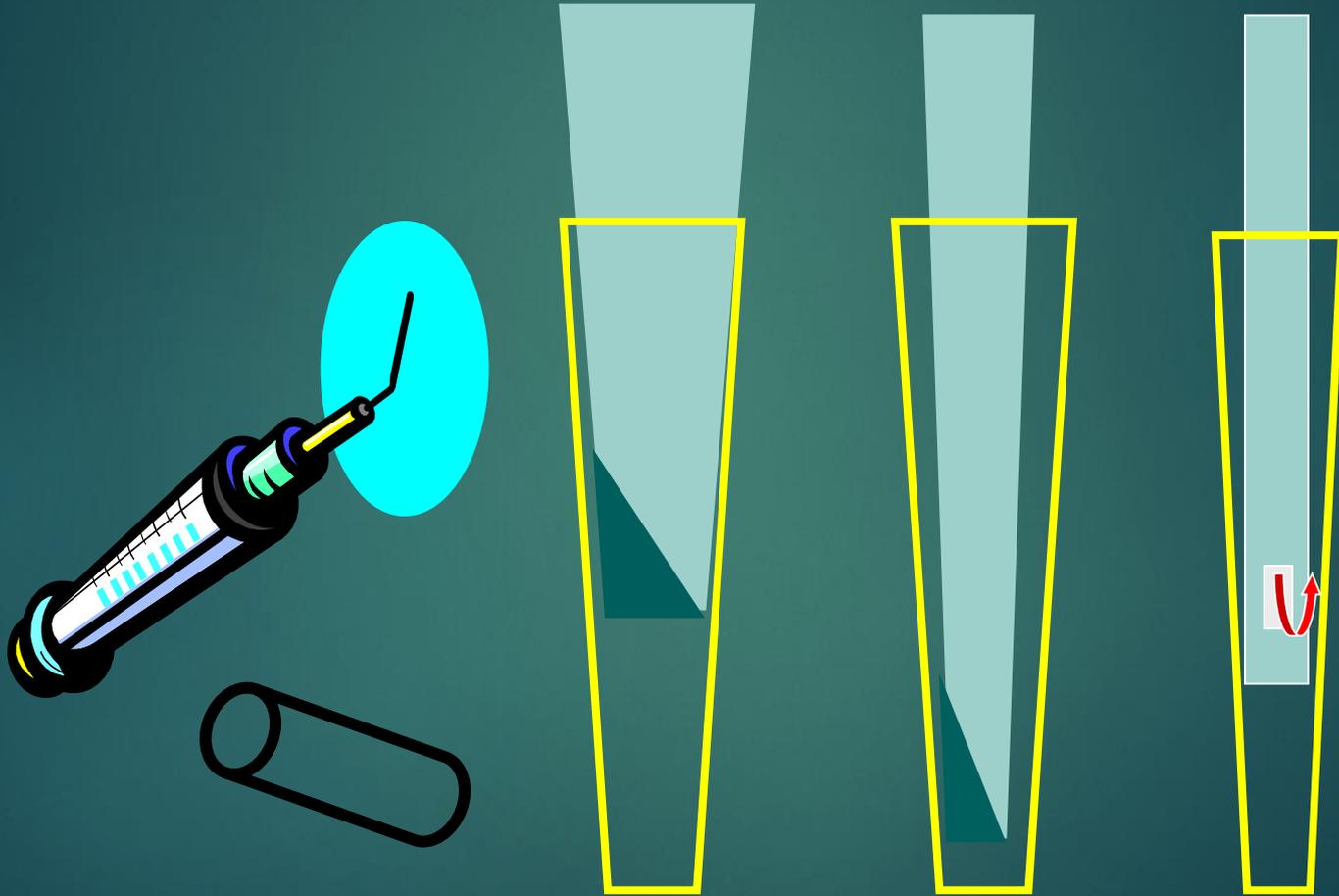
Wievielmal benutzbar eines NiTi Instrument?

10/	X	X	X	X	X	6	7
.04	X	X	X	X	X	7	7
15/	X	X	X	X	X	7	7
.05	X	X	X	X	X	7	7
20/	X	X	X	X	X	7	7
.06	X	X	X	X	X	7	7
25/	X	X	X	X	X	7	7
.06	X	X	X	X	X	7	7

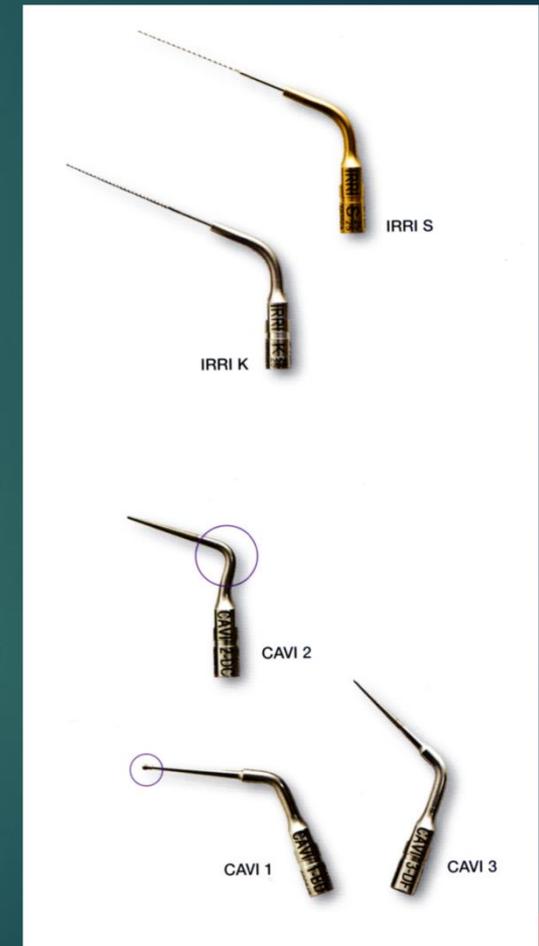
Control Sticker



Durchspülung



Ultraschallgerät





WK Füllung

- ▶ Provisorisch
- ▶ Definitiv

Instrumente für Kondensieren

A 0206

FINGER SPREADER

4x **pointu** **puntiagudo**
pointed **punta**
spitz

21 mm
2.5 mm

010-040

Ø ISO 010 020 030 040

SSt

A 0204

FINGER PLUGGER

4x

21 mm

Ø mm 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40

1-4
5-8

1 2 3 4 5 6 7 8

SSt

A 0198

SPREADER A

4x

030-060

Ø ISO 025 030 040 050 060

SSt

A 0199

PLUGGER B

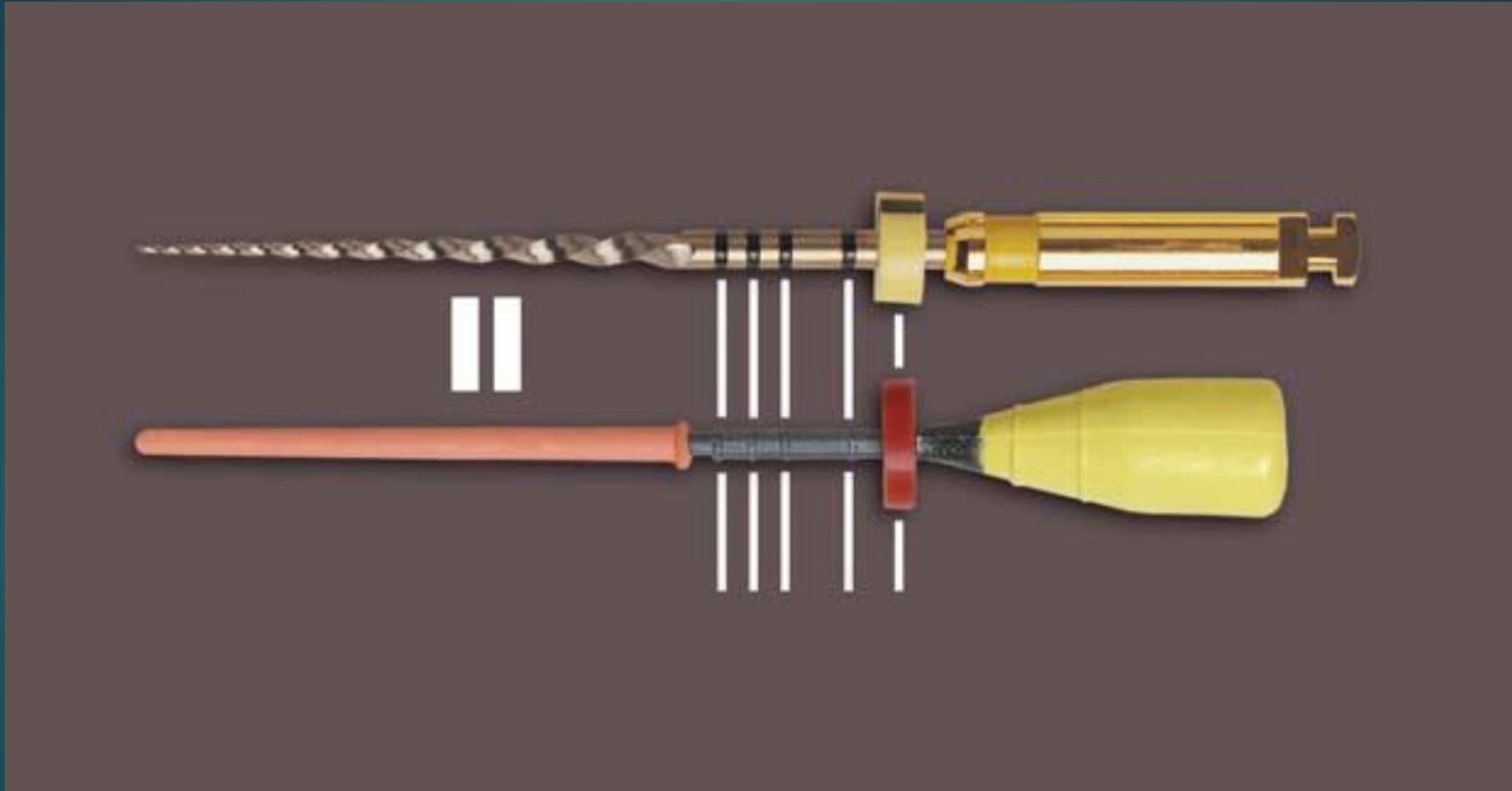
4x

030-060

Ø ISO 030 040 050 060

SSt

Füllsysteme



Thermoplastische Methoden Kombinierter Stift



Laterale Kondensation – warm



HEAT CARRIERS AND TIPS

Standard Anterior Heat Carrier	973-0214
Standard Posterior Heat Carrier	973-0215
Narrow Anterior Heat Carrier	973-0216
Narrow Posterior Heat Carrier	973-0217

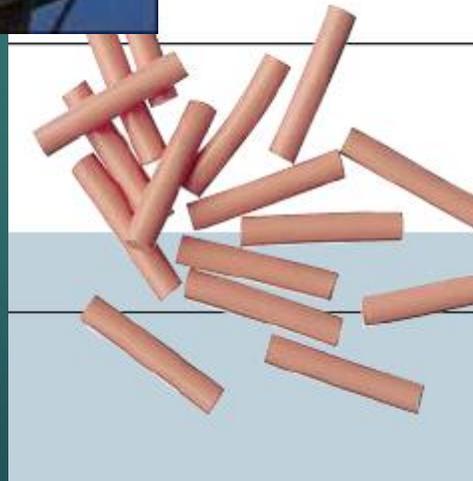


Vertikale Kondensations - warm



Thermoplastische Methoden Injektierbare Guttapercha

► Obtura System

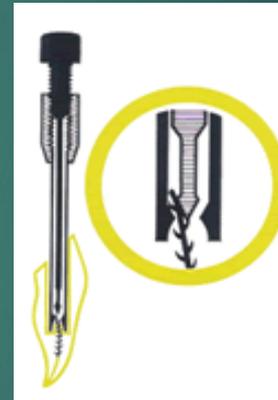
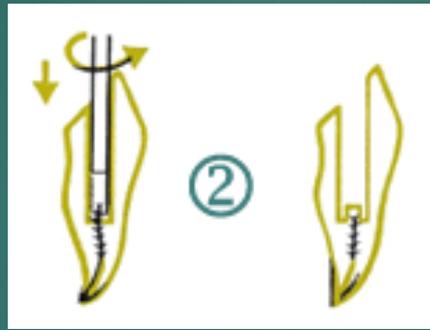
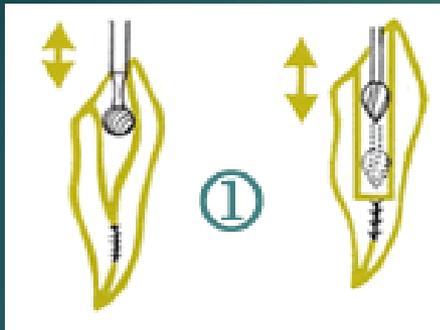


BeeFill 2in1 von VDW



Entfernung von frakturierten Nadeln

► Masserann Kit





Vielen Dank für Ihre
Aufmerksamkeit!