

UNIVERSIDADE DE SÃO PAULO

FACULDADE DE ODONTOLOGIA DE RIBEIRÃO PRETO

DISCIPLINA DE ENDODONTIA

**FORP - USP**

Prof. Dr. ANTONIO MIRANDA DA CRUZ FILHO



# INSTRUMENTOS MANUAIS



**Geralmente aço inox**

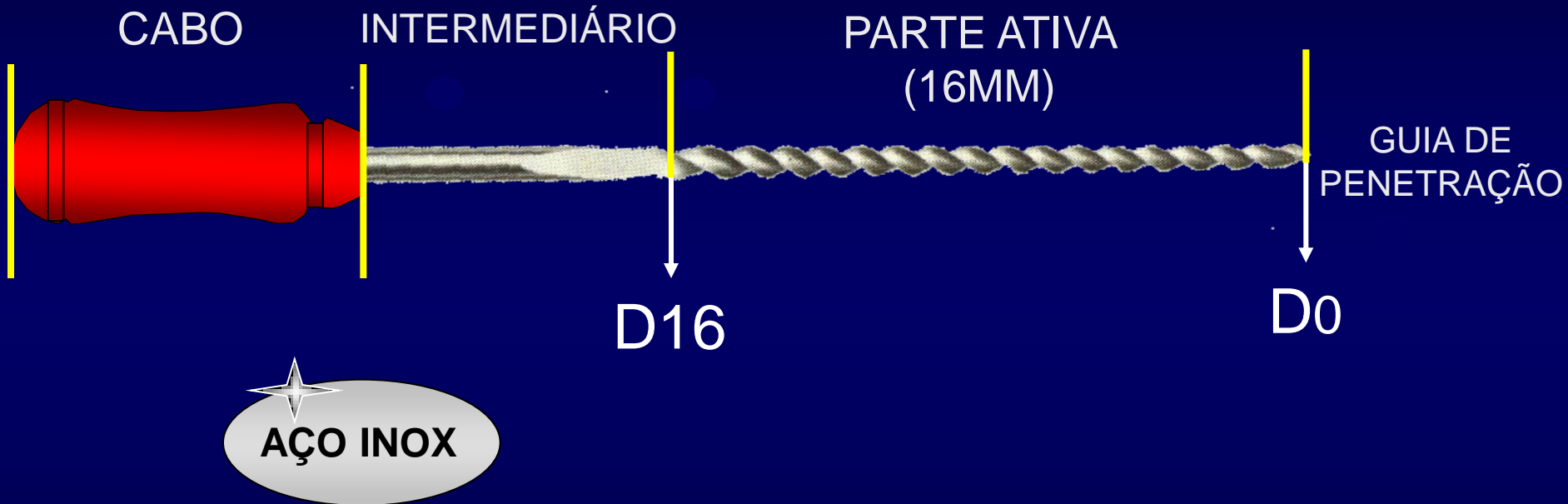
**Padronização INGLE e LEVINE (1958)**

Associação Americana de Endodontia (1962)

**Normas de fabricação ISO/FDI (1992)**

The International Organization for Standardização

# COMPONENTES



**Padronização INGLE e LEVINE (1958)**

**Associação Americana de Endodontia (1962)**

# PARTE ATIVA

**TAPER**  
**.02**



$$D16 = D0 + 320\mu\text{m}$$

# INTERMEDIÁRIO

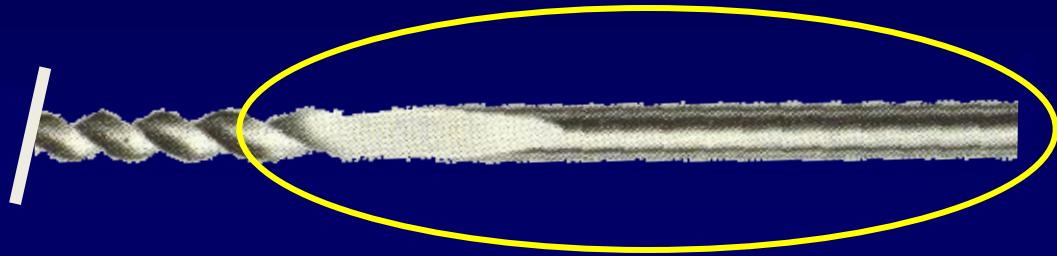
Confere comprimento ao instrumento

21 mm

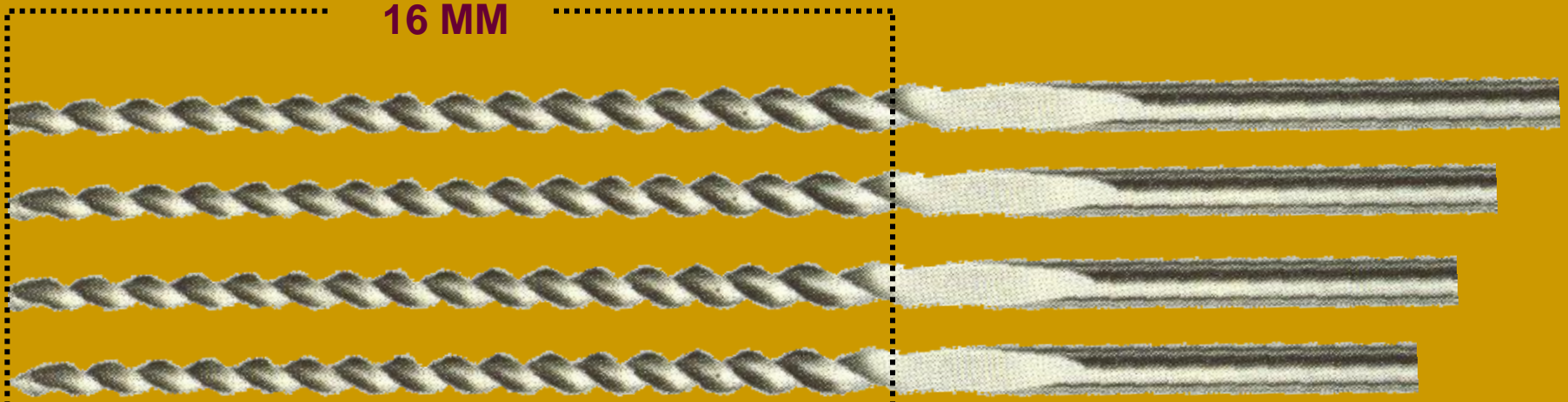
25 mm

28 mm

31 mm



16 MM



# CABO DO INSTRUMENTO



# SÉRIES DOS INSTRUMENTOS

## Série Especial

06 - Rosa

08 - Cinza

10 - Roxa



## Série Golden Mediums

12 - Roxa

17 - Branca

22 - Amarela

27 - Vermelha

32 - Azul

37 - Verde

# SÉRIES DOS INSTRUMENTOS

## 1ª Série

15 - Branca

20 - Amarela

25 - Vermelha

30 - Azul

35 - Verde

40 - Preta

## 2ª Série

45 - Branca

50 - Amarela

55 - Vermelha

60 - Azul

70 - Verde

80 - Preta

## 3ª Série

90 - Branca

100 - Amarela

110 - Vermelha

120 - Azul

130 - Verde

140 - Preta



# INSTRUMENTOS ENDODÔNTICOS MANUAIS

**ALARGADOR**

**LIMAS**

**Tipo K**

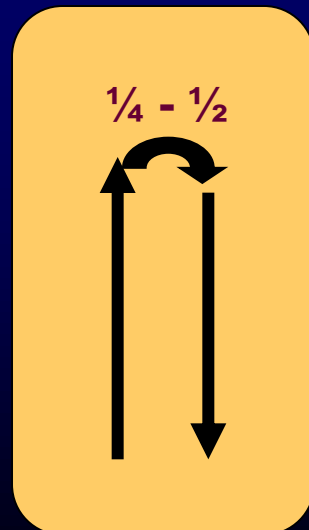
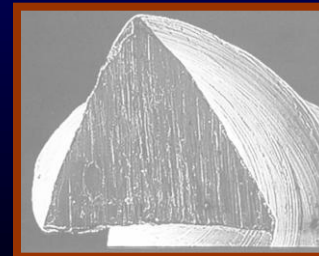
**Hedström**

# ALARGADOR



Forma da parte ativa: espirais de passo longo

Secção transversal: triangular

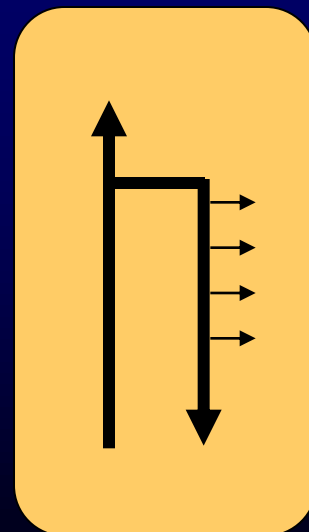
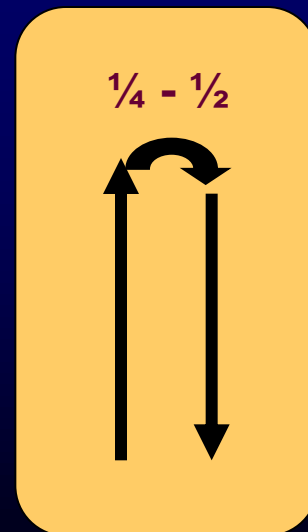
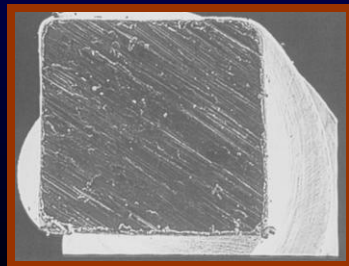


# LIMA TIPO K



**Forma da parte ativa: espirais de passo curto**

**Secção transversal: quadrangular**

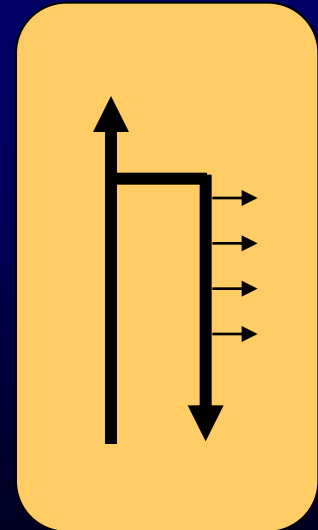
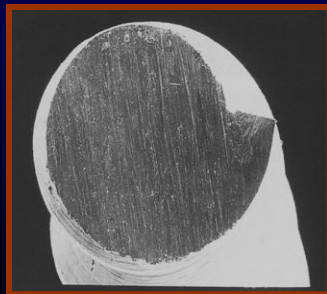


# LIMA HEDSTRÖEN



**Forma da parte ativa: cones sobrepostos**

**Secção transversal: circular ou em vírgula**



# INSTRUMENTOS MANUAIS DE Ni-Ti



Lima NitiFlex

# INSTRUMENTOS ROTATÓRIOS



**EXCLUSIVAMENTE Ni-Ti**

**Padronização INGLE e LEVINE (1958)**

Associação Americana de Endodontia (1962)

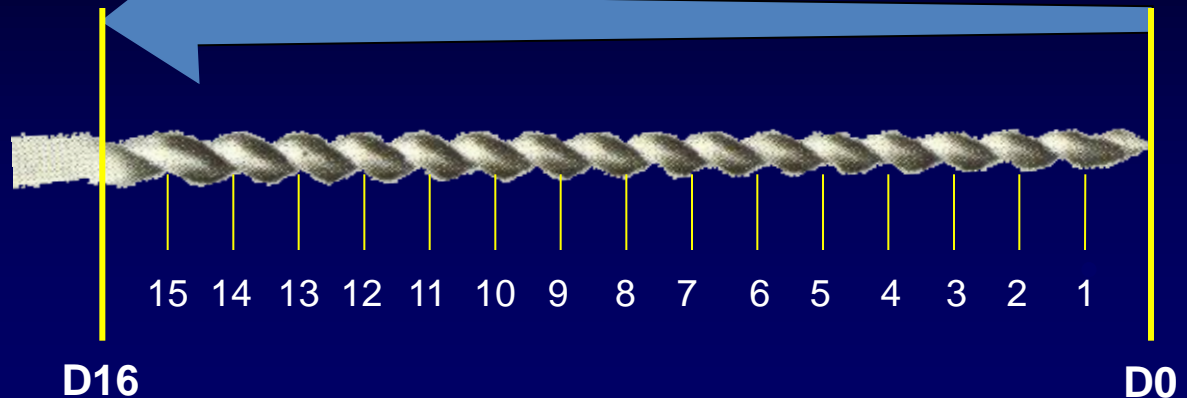
**Normas de fabricação ISO/FDI (1992)**

The International Organization for Standardização

# PARTE ATIVA

Conicidade 20 $\mu$ m ou 0,02mm

**TAPER**  
**.02**



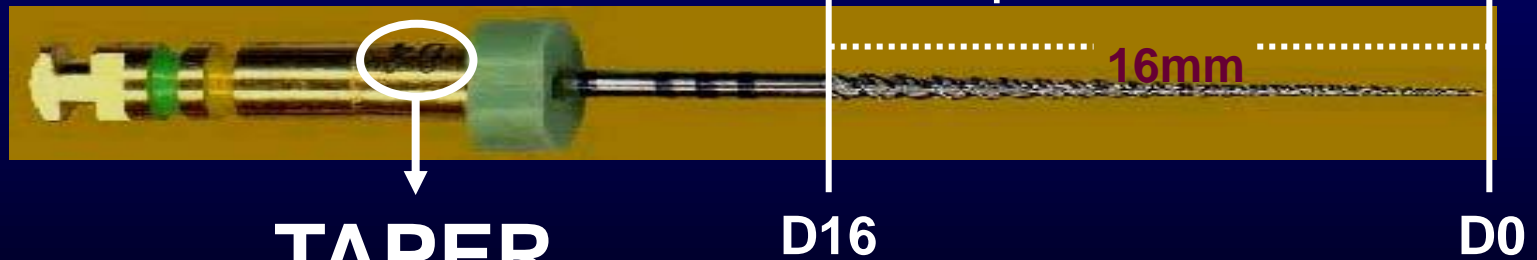
Norma 28 da ANSI/ADA (1988) e 3630/1 ISO (1992)

**Taper**

- .03
- .04
- .05
- .06
- .07
- .08
- .10
- .12

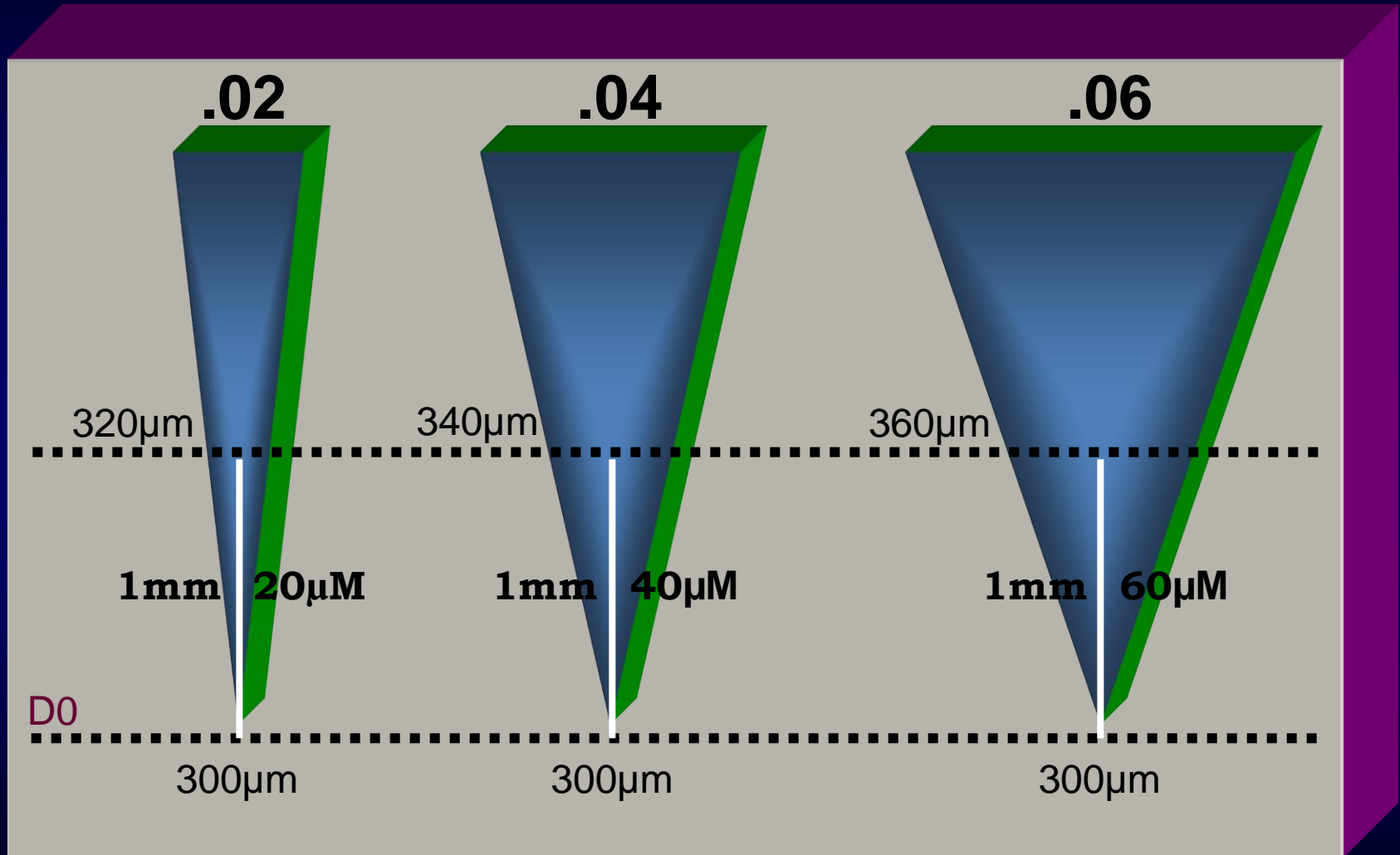
Conicidade

40 $\mu$ m ou 0,04mm



**TAPER**  
**.04**

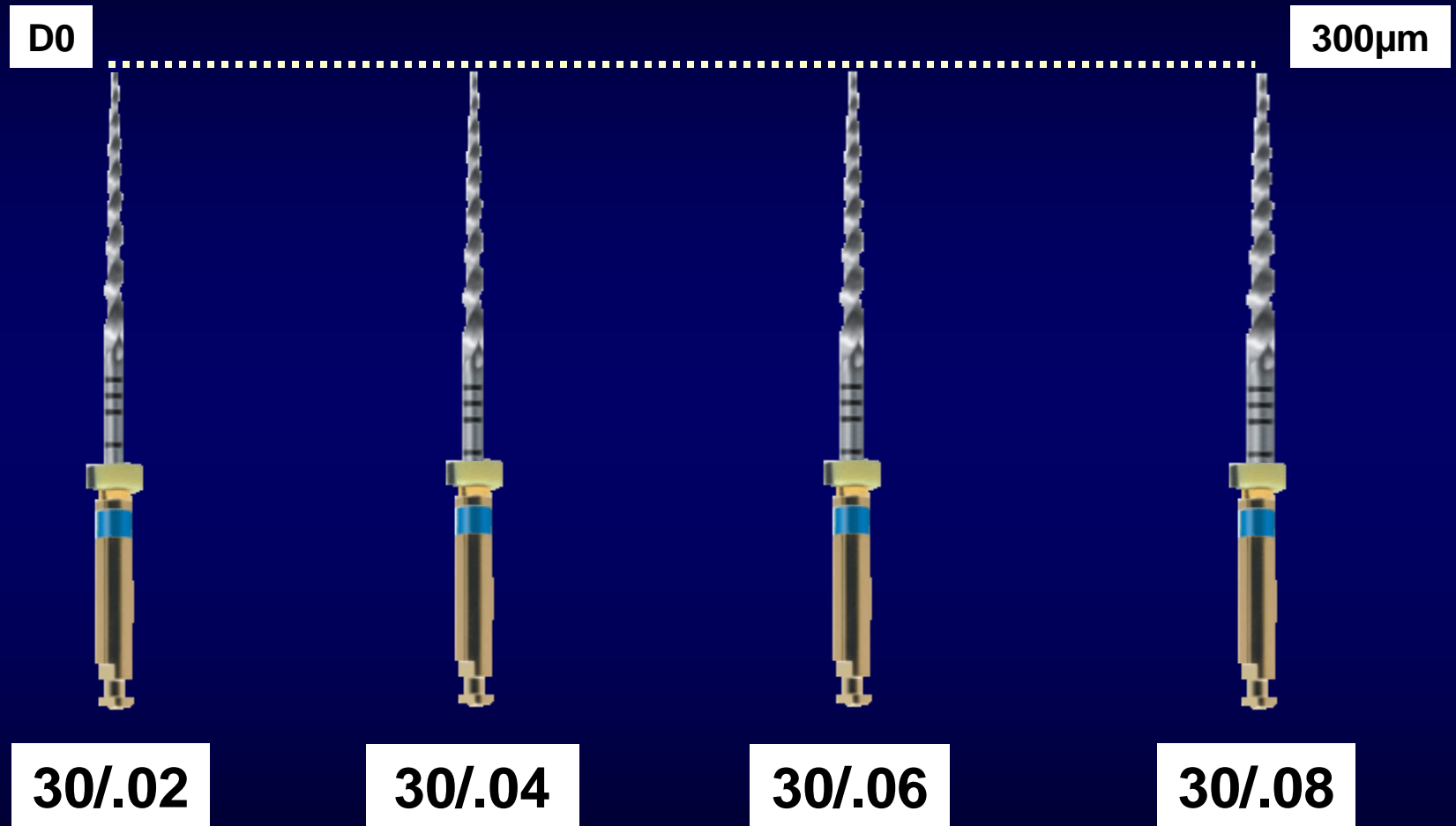
# Instrumento #30



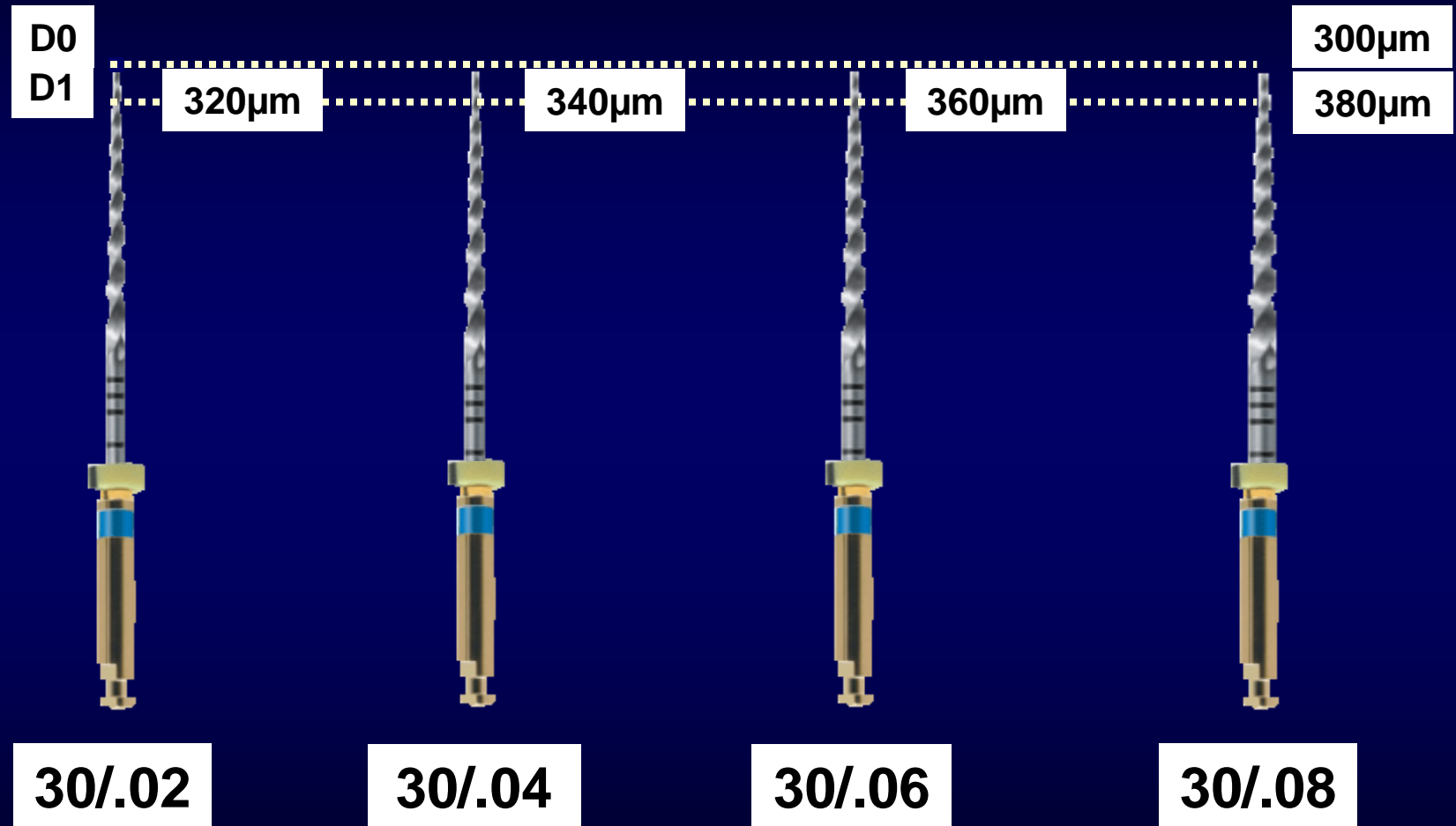
Leonardo; Leonardo (2002)



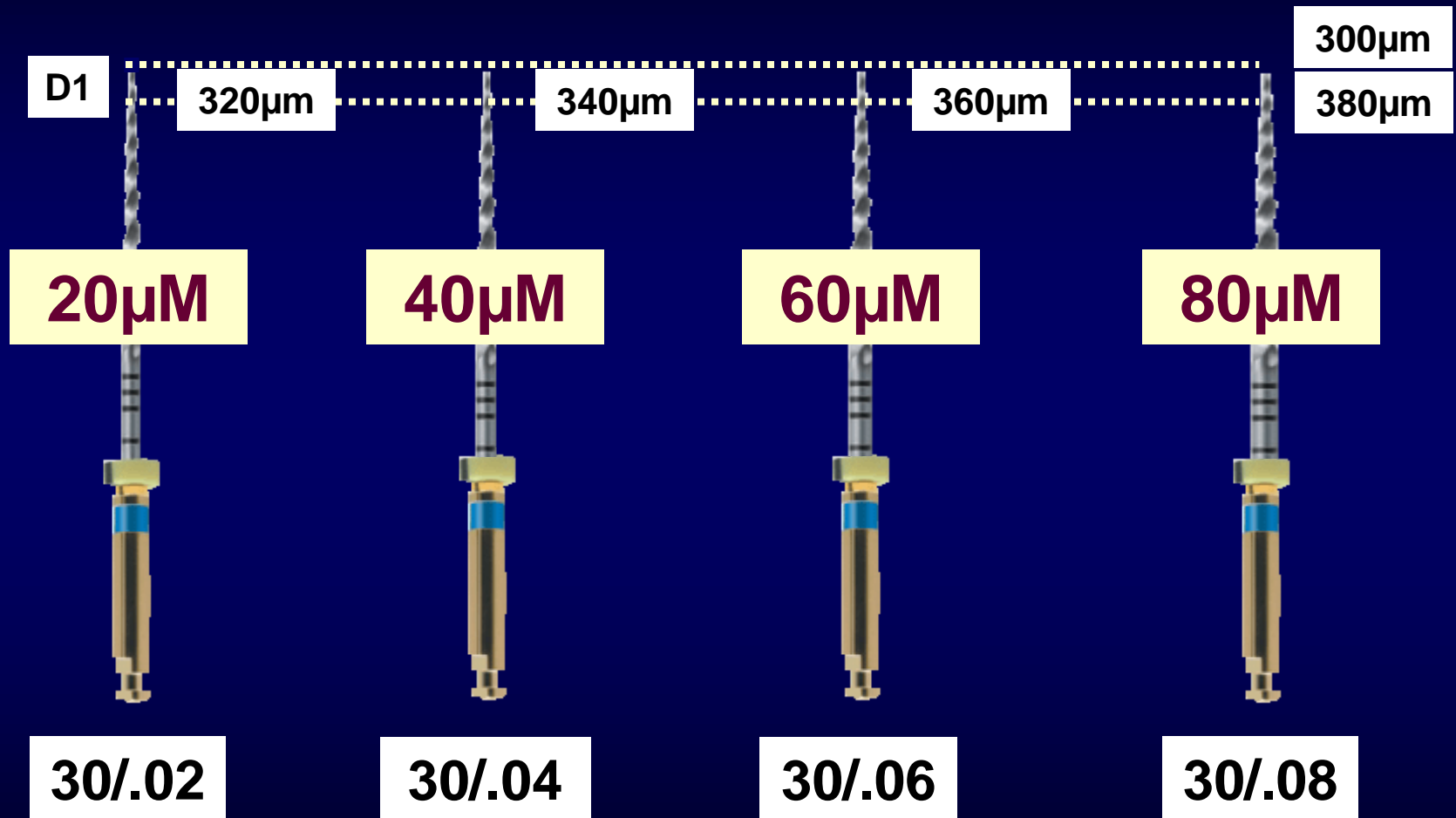
# Diferença entre instrumentos (Taper)



# Diferença entre instrumentos (Taper)



# Diferença entre instrumentos (Taper)

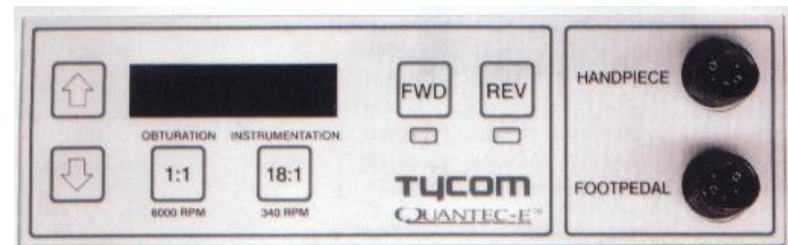


# MODO DE ACIONAMENTO

## •Motores Pneumáticos



## •Motores Eléctricos



# SISTEMA ROTATÓRIO

## *Sistema de rotação Alternada*

M4 (Kerr)

Tep-10R (NSK)

Endo Gripper (Moyco Union Broach)

Contra ângulo Kavo 3 LD

Tep (Super 16)

Endo Eze (Ultradent)

## *Sistema de rotação Contínua*

FKG-Race (FKG Dentaire)

Protaper (Dentsply/Maillefer)

Profile (Dentsply/Maillefer)

K3 (Sybronendo-SDS-Kerr)

Hero (Micro Mega)

Quantec (Analytic Endodontics-Kerr)

Profile GT (Dentsply/Maillefer)

Profile série "29" (Dentsply/Maillefer)

Lightspeed (Lightspeed)

Pow-R (Moyco – Union Broach)



# SISTEMA ROTATÓRIO

## *Sistema de rotação Alternada*

M4 (kerr)

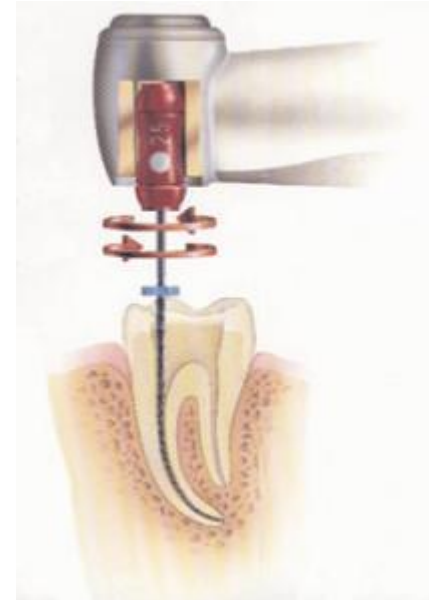
Tep-10R (NSK)

Endo Gripper (Moyco Union Broach

Contra ângulo Kavo 3 LD

Tep (Super 16)

Endo Eze (Ultradent)



# SISTEMA ROTATÓRIO

## *Sistema de rotação Contínua*

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Profile séries “29” (Dentsply/Maillefer)

Lightspeed (Lightspeed)

Pow-R (Moyco – Union Broach)

***Leonardo (2005)***

# SISTEMA RECIPROCANTE

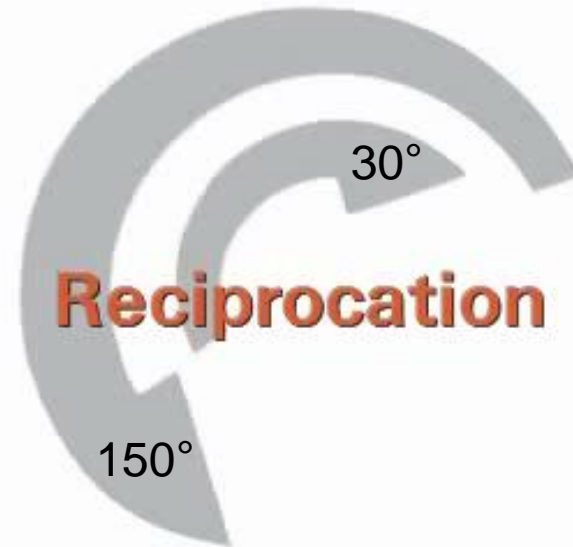
Waveone (Dentsply)

Waveone Gold (Dentsply)

Reciproc (VDW)

Prodesign R (Easy)

Unicone (Medin)



Twisted File Adaptive (TF Adaptive) (SybronEndo Kerr)

**Movimento rotatório e recíprocante**

Cinemática de rotação  $600^\circ$  (sentido horário)

Sob pressão gira  $370^\circ$  no sentido horário e  $50^\circ$  anti-horário



# k<sup>3</sup> XF (Sybronendo Kerr)

Esses instrumentos são fabricados por usinagem de um fio metálico de Ni-Ti, sendo constituído de alargadores apicais e cervicais.

*Lopes; Siqueira (2010)*



Alargadores cervicais

25/12

25/10

25/08

Alargadores apicais

#20 a #50 taper .04 e .06

# SISTEMA Mtwo (VDW)

Sequência básica

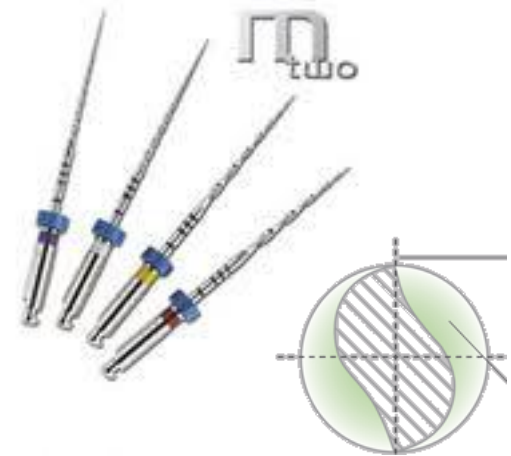


10/04 15/05 20/06 25/06

Sequência complementar



30/05 35/04 40/04 25/07



Mtwo Taper.04 - 1 Ring  
Mtwo Taper.05 - 2 Ring  
Mtwo Taper.06 - 3 Ring  
Mtwo Taper.07 - 4 Ring



# SISTEMA PROTAPER (Dentsply Tulsa)



*ProTaper Universal*



# PROTAPER NEXT (Dentsply Tulsa)

Confeccionada com fio de Ni-Ti M-Wire

- *Mais flexível*
- *Maior Resistência à fadiga cíclica*



Shaping Files




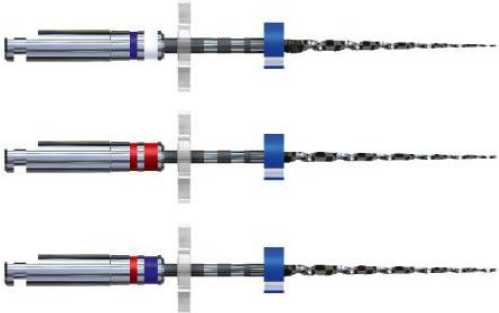

Optinal



*ProTaper next*



# SISTEMA RACE (FKG Dentaire)

|          |   |   |
|----------|---|---|
| Pré-Race | 30/06<br>35/08<br>40/06<br>40/10                                  |    |
| Race     | 10 a 60/02<br>10 a 40/04 e 50/04<br>10 a 40/06                    |    |
| BT-Race  | BT1 10/06<br>BT2 35/00<br>BT3 35/04<br><br>BT4 40/04<br>BT5 50/04 |  |

# SISTEMA RACE (FKG Dentaire)

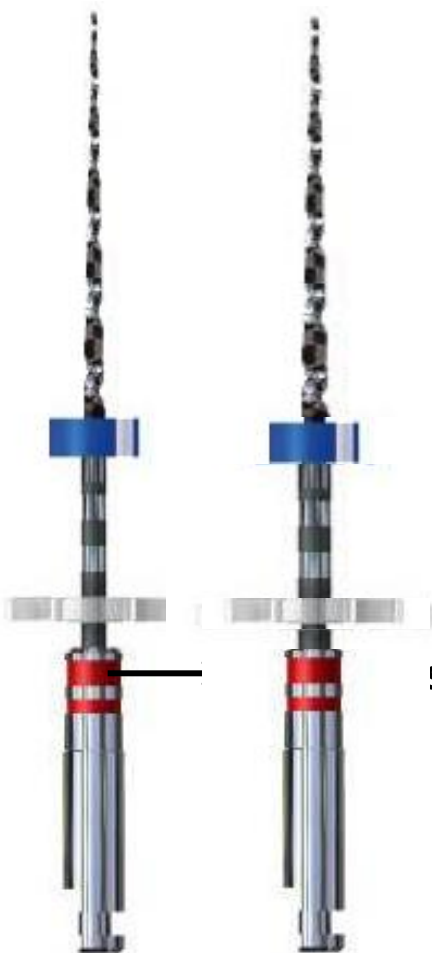


→ Nº do instrumento (DIÂMETRO)

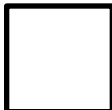
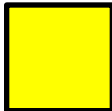


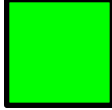

|            |     |
|------------|-----|
| White      | #15 |
| Yellow     | #20 |
| Red        | #25 |
| Light Blue | #30 |
| Green      | #35 |
| Black      | #40 |





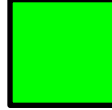

|            |     |
|------------|-----|
| White      | #45 |
| Yellow     | #50 |
| Red        | #55 |
| Light Blue | #60 |
| Green      | #70 |
| Black      | #80 |

# SISTEMA RACE (FKG Dentaire)

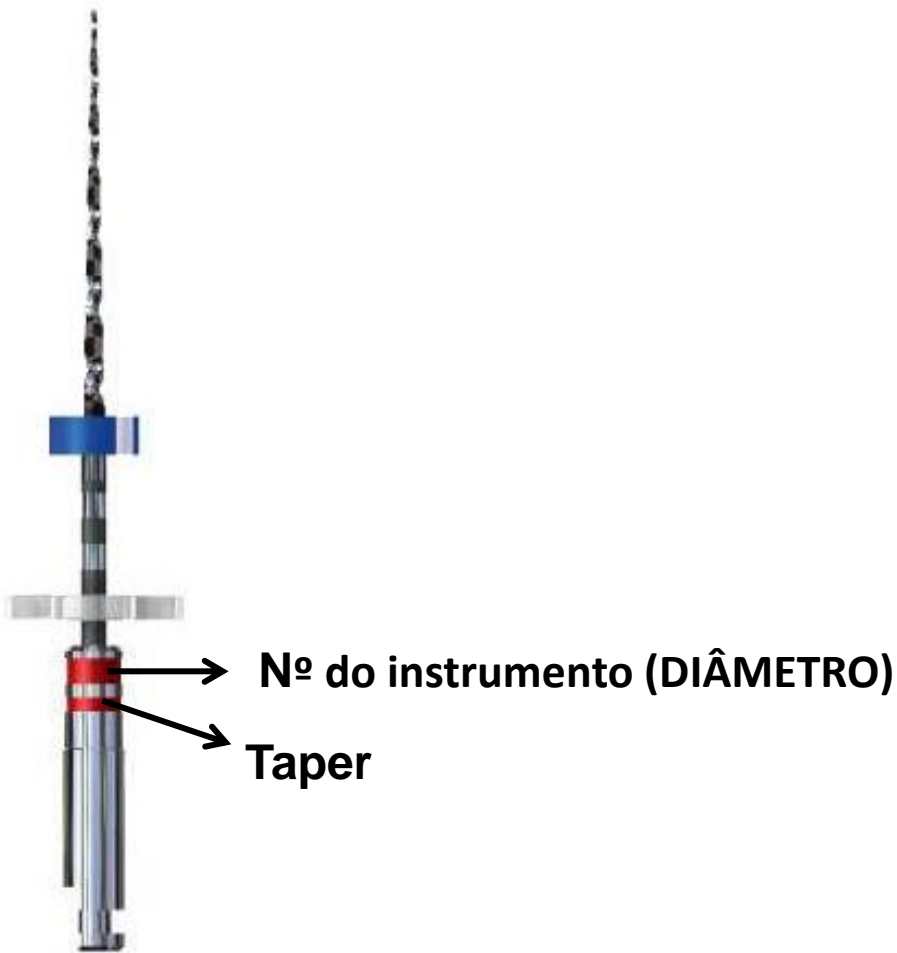





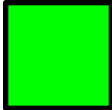
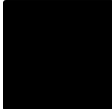
strumento (DIÂMETRO)

|   |     |
|---|-----|
|    | #15 |
|    | #20 |
|    | #25 |
|    | #30 |
|   | #35 |
|  | #40 |

|   |     |
|---|-----|
|    | #45 |
|    | #50 |
|    | #55 |
|    | #60 |
|   | #70 |
|  | #80 |

# SISTEMA RACE (FKG Dentaire)



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

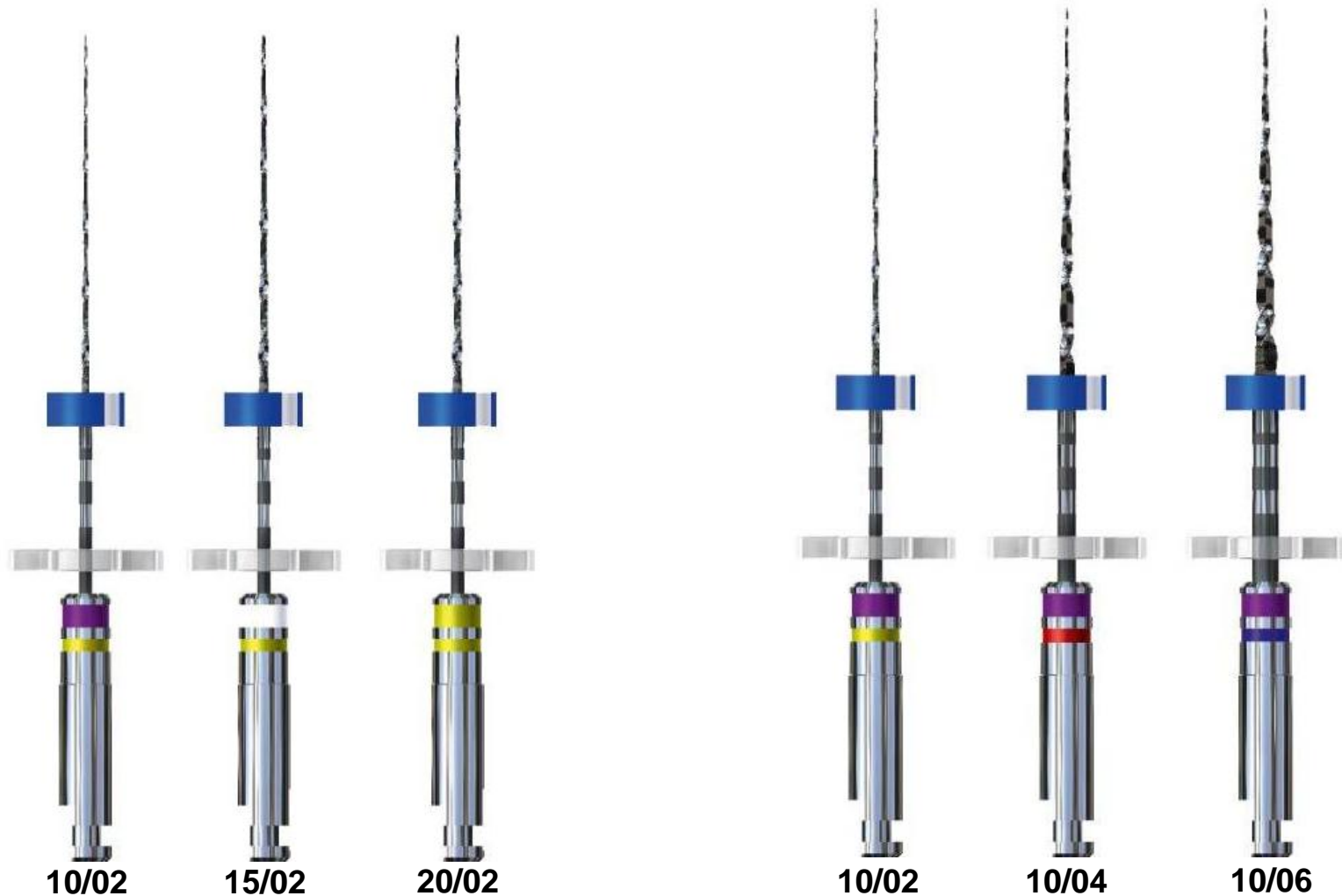




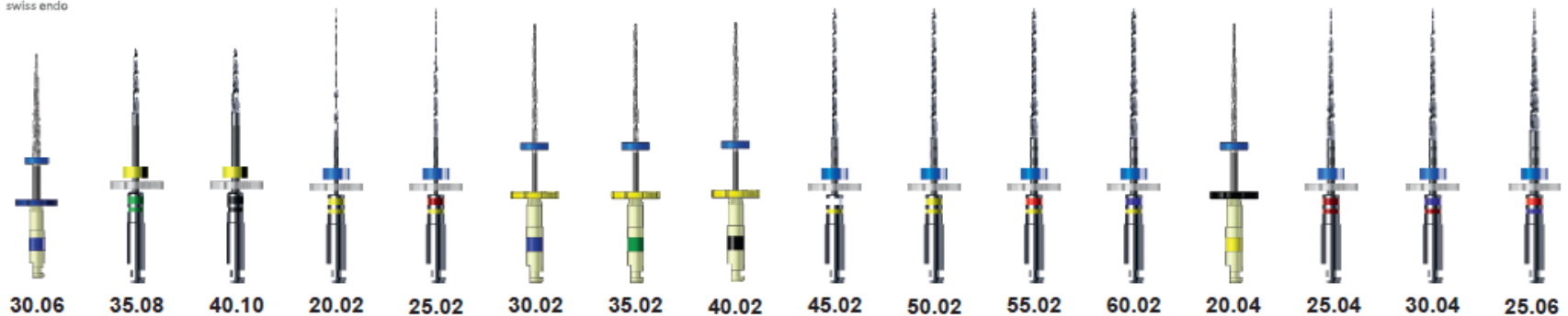
# SCOUT Race e RACE ISO 10

(FKG Dentaire)

Para realizar o *glide path*

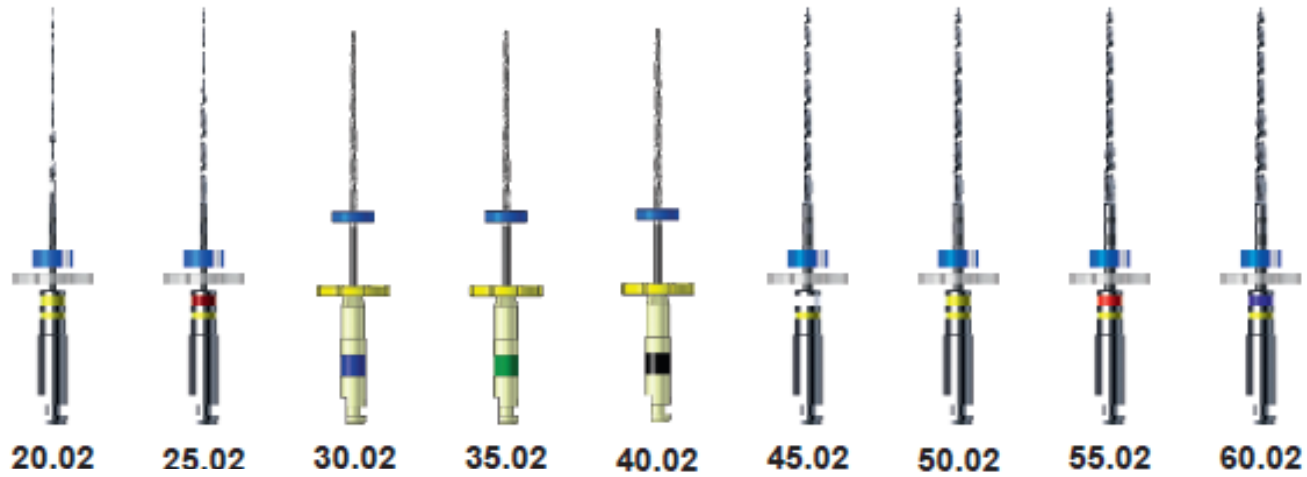
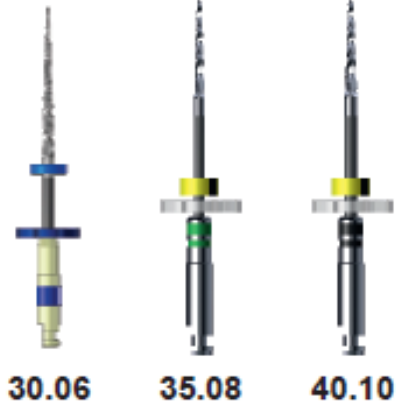


# SISTEMA RACE (FKG Dentaire)

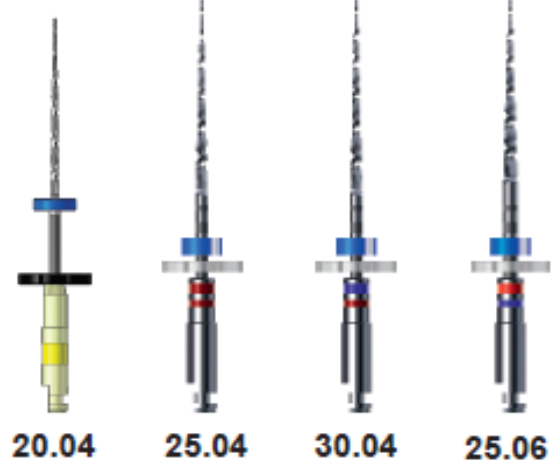


**Sequência de limas rotatórias  
solicitada pela Disciplina de  
Endodontia**

Preparo cervical



.02



.04 e .06

# Sistema rotatório com instrumento único

One Shape (Micro Mega)

F360 (KOMET)

XP Shaping (FKG)



# DIFERENÇAS BÁSICAS ENTRE INSTRUMENTOS MANUAIS E ROTATÓRIOS



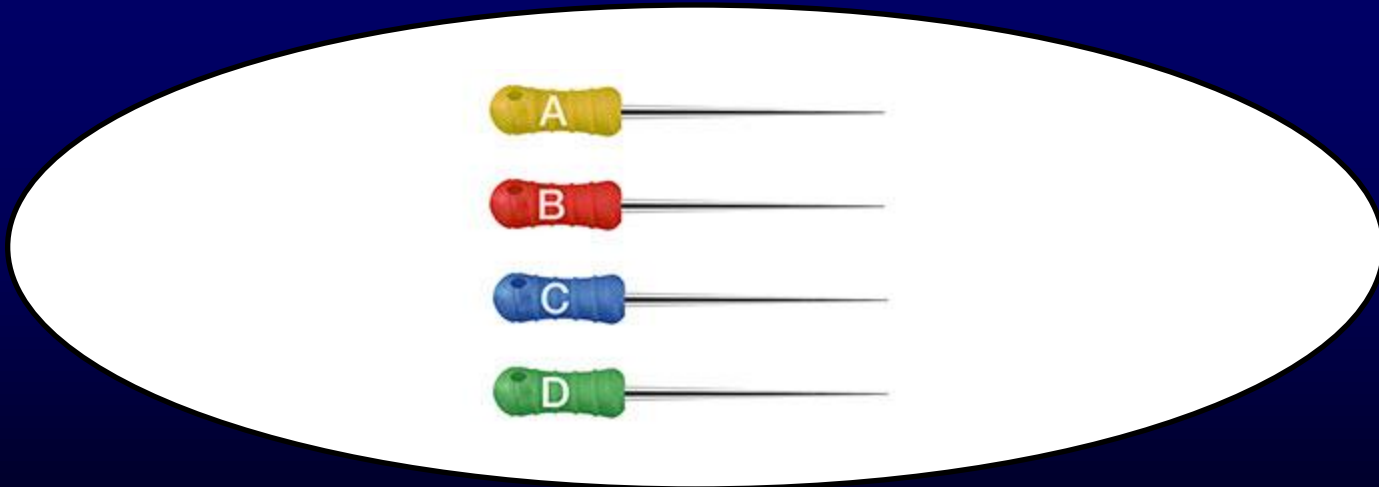
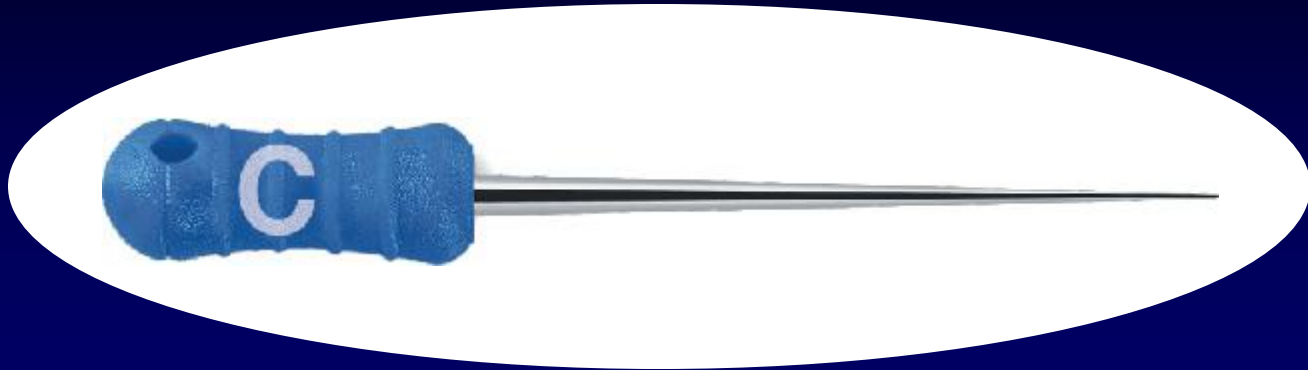
- 1- Seguem a padronização ISO.
- 2- Possuem Taper fixo (.02).
- 3- Geralmente são de aço inox.
- 4- Possuem cabo.
- 5- Não são acoplados em motores.
- 6- Não tem memória elástica .



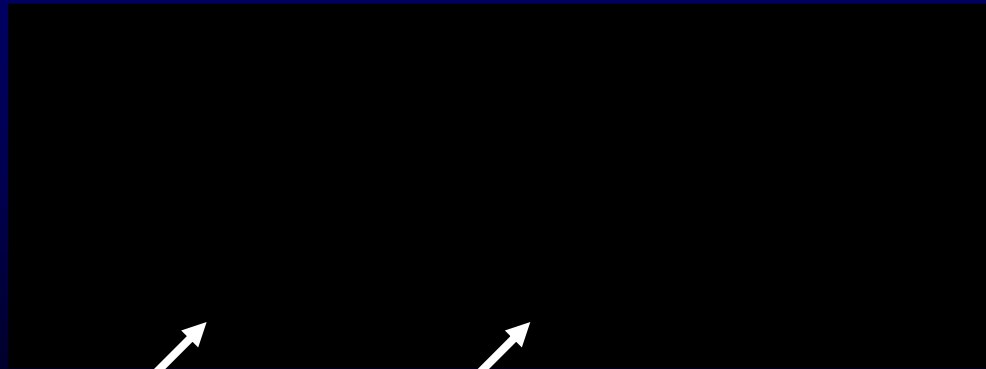
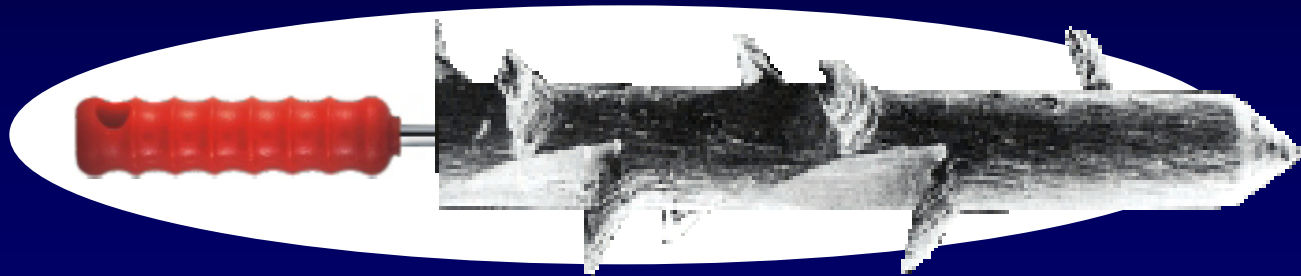
- 1- Não têm padronização.
- 2- Possuem Taper variados.
- 3- São exclusivamente de Ni-Ti.
- 4- Não possuem cabo.
- 5- São acoplados em motores elétricos ou pneumáticos.
- 6- Tem memória elástica .

**INSTRUMENTAL  
ENDODÔNTICO  
AUXILIAR**

# ESPAÇADOR DIGITAL



# EXTIRPA NERVO (POLPA)





# BROCAS



Broca endo Z



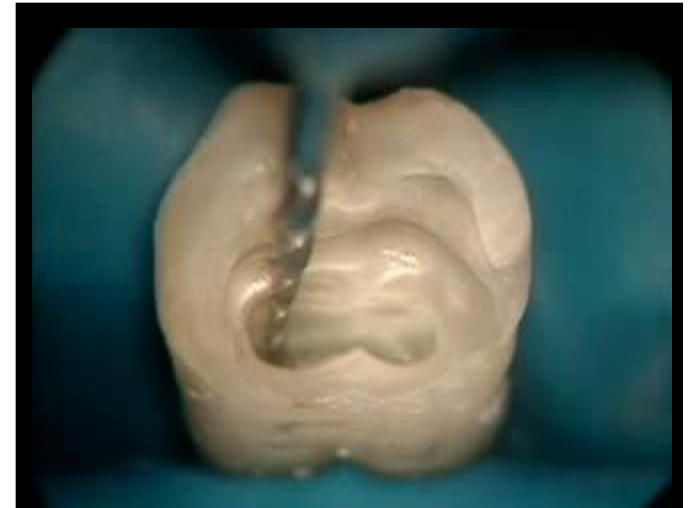
Broca esférica de pescoço longo



Broca esférica diamantadas  
(nº 1, 2, 3 e 4)

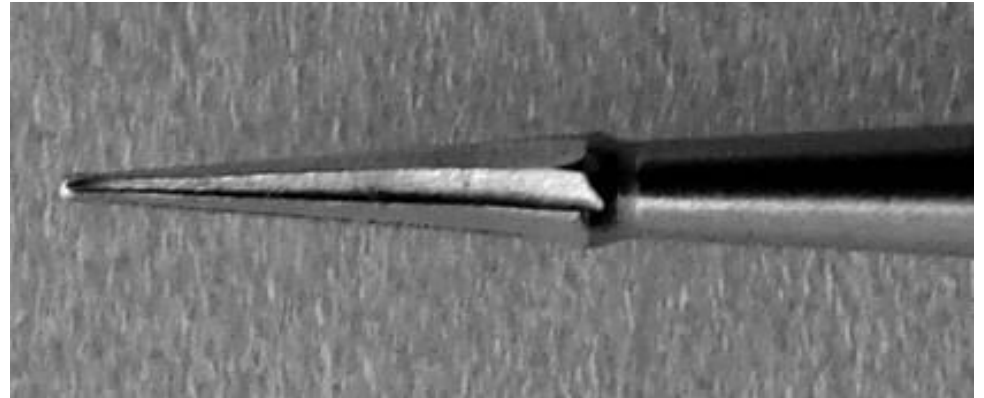
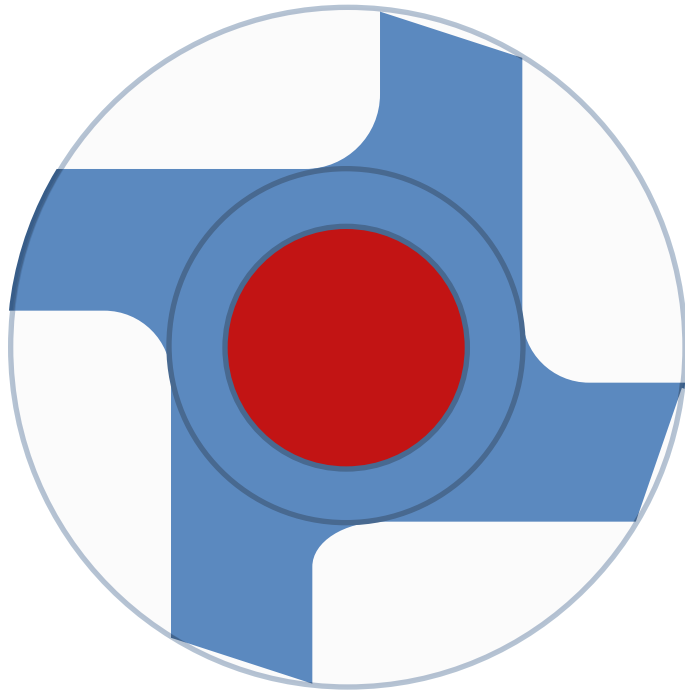
# BROCAS

## La Axxess



# BROCAS

CPDRILL®



# ***Instrumental***

## **Explorador clínico N° 5**



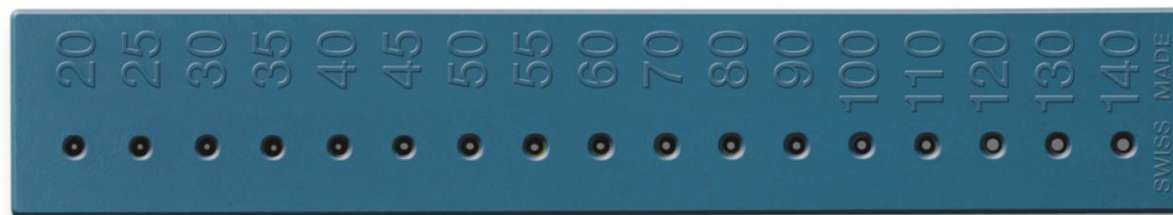
# *Instrumental*

## **Explorador de Endodontia (ponta reta)**



# Acessórios

## Régua calibradora



# Acessórios

## Porta limas



# Acessórios

## Condensadores de Paiva





# Acessórios

## Porta Guta-percha



# REFERÊNCIAS BIBLIOGRÁFICAS

LOPES, H. P., ELIAS, C. N., SIQUEIRA Jr, J. F., VIEIRA, M. V. B. Instrumentos Endodônticos. In: LOPES, H. P., SIQUEIRA Jr, J. F. **Endodontia. Biologia e Técnica**. 4 ed., Rio de Janeiro: Elsevier, 2015. Cap. 10, p. 265-353.

