

New as of: 2023-05



X-Smart® Pro+ X-Smart® Pro

Instructions for Use

English



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1 General information

1.1 Dear customer,

We are pleased that you have equipped your practice with the product X-Smart Pro/Pro+.

You now have a motor with state-of-the-art endodontic technology featuring a wide range of applications: Many endodontics file settings have already been preset. Depending on the procedure, you can change the settings or create your own treatment programs. The X-Smart Pro/Pro+ endodontic motor can be operated either using the finger switch on the handpiece or the optional wireless foot control.

The X-Smart Pro/Pro+ endodontic motor also has the latest in motor technology and apex location. It also features a wide range of torque and speed.

These instructions for use are designed to assist you prior to initial use and whenever you require information later on. Also observe the safety notices to prevent personal injury and material damage. Please perform care and cleaning based on the corresponding instructions.

We wish you a great deal of success and hope you enjoy your X-Smart Pro/Pro+.

Your X-Smart team

1.2 Contact information

Dentsply Sirona Product service

Log in to register your units and make service requests:
<https://dentsplysirona.service-pacemaker.com/>

Manufacturer's address



Sirona Dental Systems GmbH
Fabrikstrasse 31
64625 Bensheim
Germany

Tel.: +49 (0) 6251/16-0
Fax: +49 (0) 6251/16-2591
E-Mail: contact@dentsplysirona.com
www.dentsplysirona.com

1.3 General information about these instructions for use

Follow the instructions for use

Please familiarize yourself with the unit by reading through these instructions for use before putting it into operation. It is essential that you comply with the warning and safety information listed.

Retain documents

Keep the instructions for use so that they are always at hand in case you or another user requires information at a later point in time. Save the instructions for use on the PC or print them out.

If you sell the unit, make sure that the instructions for use are included with it either as a hard copy or on an electronic storage device so that the new owner can familiarize himself with its functions and the specified warning and safety information.

"Download Center" for technical documents

We have set up a "Download Center" or the technical documents at dentsplysirona.com/ifu. From here, you can download these instructions for use along with other documents. Please complete the online form if you would like a hard copy of the instructions for use or operator's manual. We would be happy to send you a printed copy, free of charge.


Help


If you need help despite having thoroughly studied the instructions for use, please contact your dental depot.


1.4 Structure of the document

1.4.1 Identification of danger levels

To prevent personal injury and material damage, please observe the warning and safety information provided in these operating instructions. Such information is highlighted as follows:

 **DANGER**
An imminent danger that could result in serious bodily injury or death.

 **WARNING**
A possibly dangerous situation that could result in serious bodily injury or death.

 **CAUTION**
A possibly dangerous situation that could result in minor or moderate bodily injury.

NOTICE
A possibly harmful situation which could lead to damage of the product or an object in its environment.

IMPORTANT
Application instructions and other important information.

Tip: Information on making work easier.

1.4.2 Formats and symbols used

The formats and symbols used in this document have the following meaning:

✓ Prerequisite 1. First action step 2. Second action step or ➤ Alternative action ⊕ Result ➤ Individual action step	Request for action.
see "Formats and symbols used [→ 8]"	Identifies a reference to another text passage and specifies its page number.
• List	Identifies a list.
"Command / menu item"	Indicates commands, menu items or quotations.

1.5 Scope of these instructions for use

Equipment options This document describes the full version of your unit. It may therefore cover components that are not included in the unit you purchased.

These instructions for use apply to:

- X-Smart Pro (without apex location function)
- X-Smart Pro+ (with apex location function)

File terminology In this instructions for use, the terms file and endodontic file are used synonymously.

1.6 Warranty and liability

The manufacturer guarantees that the product delivered to you (X-Smart Pro/Pro+) was subjected to a thorough quality test before it left the factory.

The following warranty periods are granted for the X-Smart Pro/Pro+, starting from the date of delivery:

- 3 years for the main unit incl. foot control
- 3 years for the handpiece and cable
- 2 years for the battery
- 1 year for the contra-angle handpiece

Warranty

The warranty does not cover defective products:

- That were serviced by service technicians not authorized by the manufacturer
- If non-original spare parts have been used
- That have been handled improperly or have been damaged while in transit
- That have been used in a way other than described in the instructions for use
- For which the prescribed maintenance and care was not carried out

The manufacturer reserves the right to make changes/improvements of any kind to the product manufactured or sold by the manufacturer without being obligated to apply these changes to products that were manufactured or sold by the manufacturer before this time.

Exclusion of liability

The manufacturer assumes no liability whatsoever in cases involving:

- Service or repairs made by other persons who are not authorized by the manufacturer or dealer
- Use of the X-Smart Pro/Pro+ that does not comply with its intended use

1.7 Intended use

The device is used in dentistry to drive endodontic instruments for the mechanical preparation of the patient's root canal and cavity.

Some models incorporate an electronic apex locator that assists the operator to locate the file tip inside the root canal.

1.8 Target group

This product is intended for use only by trained dental personnel in dental practices.

WARNING

Injury to user and patients caused by improper use or user's lack of information.

This product is intended for use only by trained dental personnel in dental practices.

1.9 Indications for Use

The device is indicated for use when endodontic procedures are required.

1.10 Contraindications

None known.

1.11 Obligation to notify authorities

In the European Union, operators or users must report all serious events related to medical devices to the competent authority of the Member State in which they are established.

1.12 Cyber security

The device is protected against security threats via the network using the following features:

- Network connections are only possible after the network (WLAN) is actively turned on by the user at the device.
- Network connections to the server are password protected and encrypted.
- The device will only allow software that is specific to the device, and with a valid checksum, to be installed.

In addition, we recommend:

- Turning off the network connection when not in use.
- Restricting physical access to the IT infrastructure of your practice or clinic.

2 Safety notices

Obligations of the user

- Use only fault-free materials that do **not** deviate from the "specified data".
- Protect yourself, the patient and any third parties from danger. To do this, observe the safety information.
- Observe the "intended use [→ 10]".
- Keep these instructions for use within reach for further reference.

Preventing the spread of infections and cross contamination

Prevent the spread of infections and cross contamination between patients, users, and third parties. Sterilize equipment after each patient. Take the appropriate hygiene measures, e.g. wear protective gloves.

The technical personnel must be trained in the reprocessing of medical devices.

WARNING

Infections and cross contamination!

Prevent infections and cross contamination between patients, users and third parties.

- > Before initial start-up and after every treatment, the product must be cleaned, disinfected, lubricated and sterilized.
- > Before sending the unit for repairs, all parts must be properly processed (cleaned/disinfected).
- > Prior to disassembly/disposal of the unit, all parts must be properly processed (cleaned/disinfected).

Heating of the head of the contra-angle handpiece

If the contra-angle handpiece is defective, the area around the instrument head may heat up. This leads to a risk of burning the patient's oral mucosa.

Malfunction or damage

WARNING

Malfunction or damage

Discontinue use immediately in case of malfunction, failure or no reaction of the display, unusual or different sounds or damage. Damaged products may cause injury. Notify your dental depot or the manufacturer.

Repair

WARNING

Do **not** attempt to repair X-Smart Pro/Pro+ yourself. Please contact your local authorized DS customer service for repairs.

Spare parts and accessories

Use only original Dentsply Sirona parts or parts approved by Dentsply Sirona. Safe operation is **not** guaranteed for parts that have not been approved by Dentsply Sirona.

Unapproved spare parts and accessories may lead to increased emissions or to reduced immunity to interference.

DANGER

Electrical shock

Only the power supply delivered with the unit or an authorized spare part may be used.

Storage conditions: Temperature: -40 °C – +70 °C.
Humidity: 10 % - 95 %.
Air pressure: 50 – 106 kPa

Operating conditions: Temperature: +15 °C – +35 °C.
Humidity: <80%.
Air pressure: 60 – 106 kPa
No operation over 3000 m.

Disconnection from mains power The product can be disconnected from the mains power by removing the power supply plug.

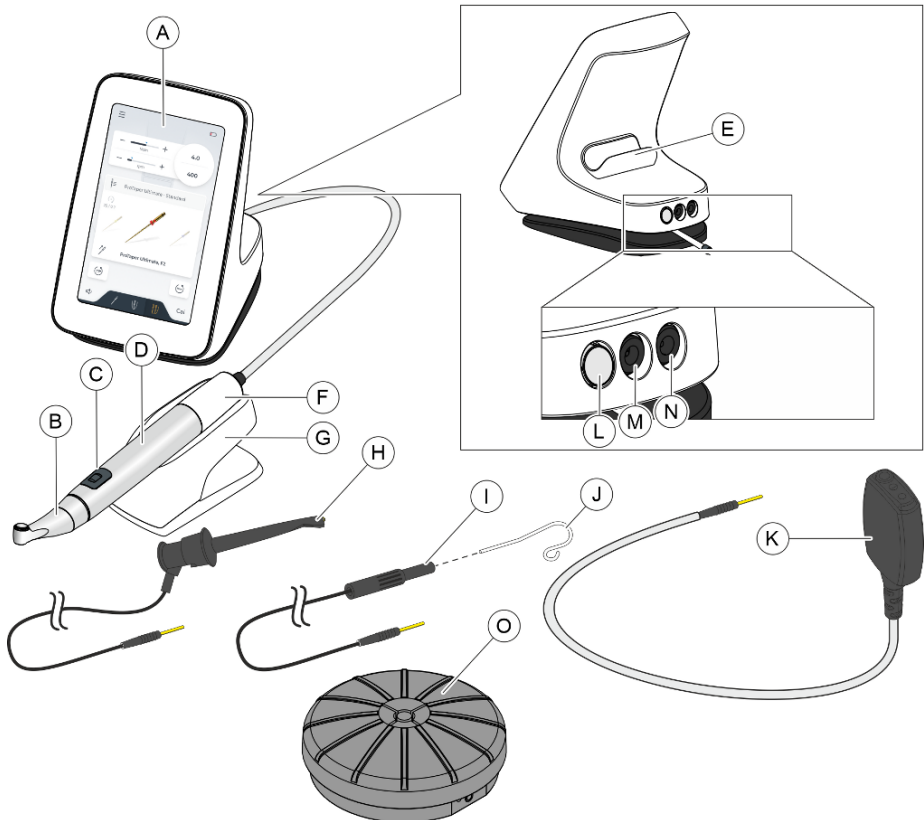
If you have any questions, please contact your dental depot or the manufacturer.

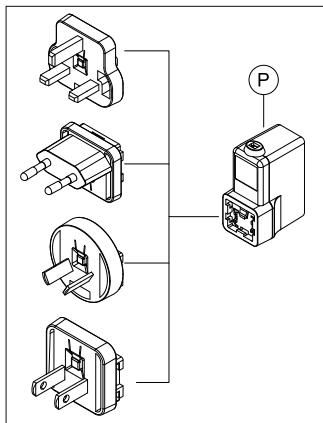
3 System description

3.1 Design of the X-Smart Pro/Pro+

The full version of the X-Smart Pro+ is described below. It serves as an example for both versions (X-Smart Pro and X-Smart Pro+).

Components that are relevant for apex location (H, I, J and K) are not part of X-Smart Pro, as this product version is not equipped with this function.





A	User interface
B	Contra-angle handpiece
C	Finger switch
D	Rotating handpiece sleeve
E	Integrated handpiece holder
F	Handpiece
G	Separate handpiece holder
H	File clamp (including cable)
I	Lip clip cable
J	Lip clip
K	Apex locator adapter
L	ON/OFF button
M	Apex locator socket
N	Power supply socket
O	Wireless foot control (optional) – separate product
P	Power supply unit



Parts B/C/D/H/J are type BF applied parts.

3.2 Technical data

Endodontic unit

X-Smart Pro/Pro+		
Large touchscreen in inches		7
Operation with		
	Finger switch	x
	Wireless foot control	x
Power supply unit		
1	manufacturer	Meanwell
	Model	GEM60112-P1J
	Operating conditions	No operation over 2000 m.
	Atmospheric pressure	80-106 kPa
2	manufacturer	Dongguan Shilong Fuhua Electronic Co. LTD.
	Model	UES60LCP2-120500SPA
	Operating conditions	No operation over 5000 m.
	Atmospheric pressure	50-106 kPa
Mains power supply units		
	Power connection in V AC	100 - 240
	Output voltage V DC	12
	Frequency in Hz	50/60 Hz

Wireless foot control interface

Type of wireless module	802.11 b/g/n WiFi module +BT combo module	
Manufacturer / Model number	Telit / WE310F5	
Transmission standard	Wifi IEEE 802.11 b/g/n	Bluetooth Low Energy 5
Frequency band	2412.0 – 2462.0 MHz	2402.0 – 2480.0 MHz
Transmitting power	< 54 mW	< 3 mW
Maximum range (approx.)	30 m	10 m
Modulation	GFSK	DBPSK, DQPSK, CCK, OFDM, 16-QAM, 64-QAM

Safety protocol	WPA2, WPA3	1 to 1 pairing / binding with proprietary protocol
Additional Information	The WLAN interface serves the user as a convenient alternative for updating the firmware of the device. An update must be actively started by the user. The interface does not allow clinical function.	The BLE interface can be used to connect to an optional foot control. In the event of an interrupted connection due to a low battery level or high-frequency interference, the unit stops and remains in a safe state.

The device does not require any quality of service to perform its intended use.

Contra-angle handpiece

	X-Smart 5:1 AL
Gear ratio	5:1
Maximum motor speed in rpm	15 000
Maximum operating speed in rpm	3 000
Clamping system	CA
Light function	x
Apex measurement function	x
Insulated contra-angle handpiece	x

File

	X-Smart 5:1 AL
Shank diameter in mm	2.334 - 2.350
Maximum total length in mm	25
Maximum working diameter in mm (ISO 2157)	2.1
Gripping length in mm	≥ 11
Standard	ISO 1797, Type 1

3.3 Standards and approvals

The X-Smart Pro/Pro+ endodontic unit was developed in compliance with the following standards:

- IEC 60601-1 (electrical, mechanical, and software safety)
- IEC 80601-2-60 (safety of dental equipment)
- IEC 60601-1-2 (electromagnetic compatibility)
- IEC 62366-1 (usability)
- IEC 62304 (software process)
- ISO 10993-1 (biocompatibility)
- ISO 17664-1 (hygiene)
- ISO 14457 (dentistry – handpieces and motors)
- IEC 62471 (photobiological safety)
- IEC 14971 (risk management)

X-Smart Pro/Pro+ complies with the requirements of the RoHS Directive 2011/65/EU.



This product bears the CE marking in accordance with the provisions of the Regulation (EU) 2017/745 of April 5, 2017 concerning medical devices.



This product is a medical device.



The unit meets the requirements in accordance with CAN/CSA- C22.2 No. 60601-1 and AAMI/ANSI ES 60601-1.

Wireless module



The wireless module complies with the requirements of the Federal Communications Commission (Part 15 of the FCC Rules).

FCC ID: RI7WE310F5

Industry Canada

The wireless module meets the requirements of Industry Canada (RSS-247).

IC ID: 5131A-WE310F5




The wireless module complies with the RED Directive 2014/53/EU. Standards:

Harmonized and non-harmonized standard reference	articles of Directive 2014/53/EU
EN 62311, EN 50665:17, EN 62368-1:2014+A11:2017	3.1 (a): Health and safety of the user
Draft EN 301 489-1 V2.2.0, Draft EN 301 489-,17 V3.2.0, EN 55032:2015/AC:2016, EN 55024:2010/A1:2015, EN 55035:217	3.1 (b): Electromagnetic compatibility
EN 300 328 V2.2.2	3.2: Effective use of the allocated spectrum

EU-Type Examination Certificate No. E1177-210296 with Module B+C

The Telit wireless module used is a qualified design according to the Bluetooth Qualification Program Reference Document
Declaration ID: D053356
Qualified Design ID: 107942

3.4 Electromagnetic compatibility

 CAUTION
<p>Under or over instrumentation due to electromagnetic interference!</p> <p>The apex locator can be affected by electromagnetic fields. This may lead to measurement errors. Strong influence is indicated by red flashing of the distance display.</p> <p>> Ensure that there are no sources of electromagnetic interference close to the device.</p>

The following information must be observed to ensure safe operation regarding EMC aspects.

X-Smart Pro/Pro+ complies with the requirements for electromagnetic compatibility (EMC) according to IEC 60601-1-2:2014/AMD1:2020

X-Smart Pro/Pro+ is designed for use in environments in professional health care facilities.

X-Smart Pro/Pro+ is hereinafter referred to as UNIT.

Essential performance: The product has no clinical functions that are not related to basic safety and whose loss or impairment would lead to an unacceptable risk. (IEC 60601-1-2 sub-section 5.2.1.1b)

Environment: Professional healthcare environment (IEC 60601-1-2 sub-section 5.2.1.1a)

3.4.1 Electromagnetic emission

The UNIT is intended for operation in the electromagnetic environment specified below.

The customer or user of the UNIT should make sure that it is used in such an environment.

Emission measurement	Conformity	Electromagnetic environment - guidelines
RF emissions according to CISPR 11	Group 1	The UNIT uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions according to CISPR 11	Class B	The UNIT is intended for use in all facilities, including residential areas and in any facilities connected directly to a public power supply also providing electricity to buildings used for residential purposes.
Harmonics according to IEC 61000-3-2	Class A	
Voltage fluctuations / flicker according to IEC 61000-3-3	Conform	

3.4.2 Interference immunity

Enclosure

Phenomenon	Basic EMC standard or test method	Interference immunity test level for professional healthcare facilities
Electrostatic discharge	IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
RF electromagnetic fields	IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz
RF electromagnetic fields in the immediate vicinity of wireless communications equipment	IEC 61000-4-3	See table "Test specifications for the immunity of enclosure ports to RF wireless communications equipment"
Rated power frequency magnetic fields	IEC 61000-4-8	30 A/m 50 Hz or 60 Hz
Magnetic fields in the vicinity	IEC 61000-4-39	65 A/m – 134.2 kHz (2.1 kHz PM) 7.5 A/m – 13.56 MHz (50 kHz PM)

Input AC power port

Phenomenon	Basic EMC standard	Interference immunity test level for professional healthcare facilities
Input AC power port	IEC 61000-4-4	± 2 kV 100 kHz repetition frequency
Surges Line to line	IEC 61000-4-5	± 0.5 kV, ± 1 kV
Surges Line to ground	IEC 61000-4-5	± 0.5 kV, ± 1 kV, ± 2 kV
Conducted disturbances induced by RF fields	IEC 61000-4-6	3 V 0.15 MHz to 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz 80% AM at 1 kHz
Voltage dips	IEC 61000-4-11	0% UT; 1/2 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% UT; 1 cycle and 70% UT; 25/30 cycles Single phase: at 0°
Voltage interruptions	IEC 61000-4-11	0% UT; 250/300 cycles

Test specifications for the immunity of enclosure ports to RF wireless communications equipment

Frequencies according to Table 9 of IEC 60601-1-2:2014/AMD1:2020:

Test frequency (MHz)	Frequency band ^a (MHz)	Radio service ^a	Modulation ^b	Immunity test level (V/m)
385	380 - 390	TETRA 400	Pulse modulation ^b 18 Hz	27
450	430 - 470	GMRS 460, FRS 460	FM ^c ± 5 kHz stroke 1 kHz sinus	28
710 745 780	704 - 787	LTE volume 13, 17	Pulse modulation ^b 217 Hz	9
810 870 930	800 - 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE band 5	Pulse modulation ^b 18 Hz	28
1720 1845 1970	1700 - 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE band 1, 3, 4, 25; UMTS	Pulse modulation ^b 217 Hz	28
2450	2400 - 2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE band 7	Pulse modulation ^b 217 Hz	28
5240 5500 5785	5100 - 5800	WLAN 802.11 a/n	Pulse modulation ^b 217 Hz	9

Additional frequencies for common transmitters resulting from the risk management process (not included in Table 9 of IEC 60601-1-2:2014/AMD1:2020)

Test frequency (MHz)	Frequency band ^a (MHz)	Radio service ^a	Modulation ^b	Immunity test level (V/m)
660 680 700	663 - 698	LTE or 5G	Pulse modulation ^b 217 Hz	28
3300 3750 4200	430 - 470	C-band LTE and 5G NR band n77	Pulse modulation ^b 217 Hz	28

Test frequency (MHz)	Frequency band ^a (MHz)	Radio service ^a	Modulation ^b	Immunity test level (V/m)
4400 4700 5000	1700 - 1990	C-band LTE and 5G NR band n79	Pulse modulation ^b 217 Hz	25
5925	2400 - 2570	5G NR band n96, n102, n104	Pulse modulation ^b 217 Hz	9

NOTE If necessary, the distance between the transmitting antenna and the UNIT can be reduced to 1 m in order to achieve the immunity test level. The 1 m test distance conforms to IEC 61000-4-3.

^a For some radio services, only the frequencies for the radio link between the mobile communication device and the base station (uplink) have been recorded in the table.

^b The carrier must be modulated with a square-wave signal with 50 % duty cycle.

^c Alternatively to the frequency modulation (FM), a pulse modulation with a 50% duty cycle at 18 Hz can be used, as this would represent the worst case, although not the actual modulation.

3.4.3 Working clearances

The UNIT is intended for operation in an electromagnetic environment, where radiated RF interference is checked. The customer or the user of the UNIT can help prevent electromagnetic interference by maintaining a minimum distance between mobile RF communications equipment (transmitters) and the UNIT - depending on the maximum output power of the communication device, as shown below.

Power rating of the transmitter [W]	Working clearance according to transmission frequency [m]		
	150 kHz to 80 MHz	80 MHz - 800 MHz	800 MHz to 2.5 GHz
	$d = [1, 2] \sqrt{P}$	$d = [1, 2] \sqrt{P}$	$d = [2, 3] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

The recommended safety distance d in meters (m) can be determined for transmitters, whose maximum power rating is not specified in the above table, using the equation that belongs to the corresponding column, wherein P is the maximum power rating of the transmitter in watts (W) according to the transmitter manufacturer.

REMARK The higher frequency range applies at 80 MHz and 800 MHz.

REMARK These guidelines may not be applicable in all cases.

Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

3.5 Product labeling



Can be thermally disinfected



Sterilizable in a steam sterilizer (autoclave) at the temperature specified



Order number



Serial number



Unique Device Identification



Type designation



Date of manufacture

- yyyy-mm-dd
- yyyy



manufacturer



Medical device



Type BF applied parts



Only for single use.



Electronic instructions for use

You can easily download the electronic instructions for use from the internet at <https://www.dentsplysirona.com/ifu>.



Follow the instructions for use. To ensure safe operation of the unit, the user must follow the instructions for use.

Rx only

Federal law restricts the sale of this device to dentists or to a purchase by order of a dentist.



The product meets the requirements in accordance with CAN/CSA- C22.2 No. 60601-1 and AAMI/ANSI ES 60601-1.



On the basis of the Directive 2012/19/EU and the country-specific disposal regulations on waste electrical and electronic equipment, we would like to stress that such equipment must be disposed of accordingly within the European Union (EU). These regulations require the environmentally friendly recycling/disposal of old electrical and electronic devices. These parts must not be disposed of as domestic refuse. This is indicated by the “crossed out trash can” symbol.



This product bears the CE marking in accordance with the provisions of the Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices.



Data matrix code (here: an example)

Content of the data matrix code:

+E27659942770/\$\$+75192/16D20170309E

A B C D

- A Manufacturer code (here: E276)
- B REF number (here: 5994277)
- C Serial no. (here: 5192)
- D Manufacture date (YYYYMMDD)

4 Getting started

4.1 Transport and unpacking

All Dentsply Sirona units are carefully checked prior to shipment. Please perform an incoming inspection immediately after delivery.

1. Check the delivery note to ensure that the consignment is complete.
2. Check whether the product shows any visible signs of damage.

NOTICE

Damage during transport

If the product was damaged during transport, please contact your shipping agent.

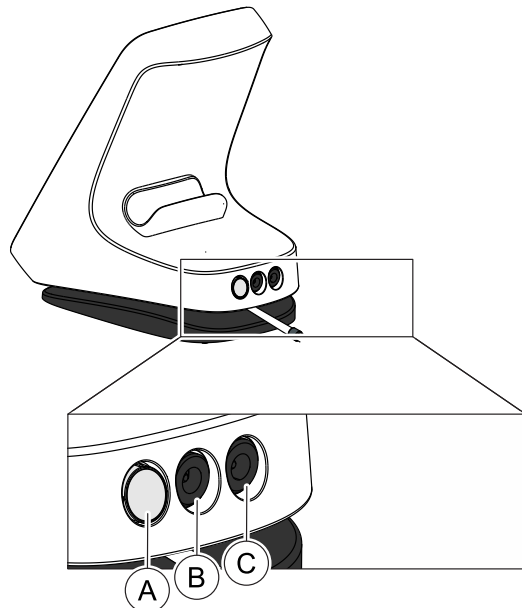
If return shipment is required, please use the original packaging for shipment.

4.2 Disposal of packaging materials

The packaging must be disposed of in compliance with the relevant national regulations. Observe the regulations applicable in your country.

Both the box and the foam material inside are recyclable.

4.3 Starting the unit



A	ON/OFF button
B	Apex locator socket
C	Power supply socket

On initial startup

1. The contra-angle handpiece and accessories must be sterilized before each treatment. [→ 44]
2. Select the appropriate power supply adapter for your country and attach it to the power supply part.
3. Plug the unit cable connector into the socket (C).
4. Connect the unit to the power supply.

IMPORTANT

The battery is in protection mode and must be charged to activate it prior to initial use.

5. Press the on/off switch (A).
 - ↳ A window with a prompt appears.
6. Select your preferred language.
7. Select your region in the next step.
 - ↳ Information on language and region will be stored. It can be changed under "General Settings".
8. Perform an initial calibration of your unit with your handpiece.
9. Attach the handpiece sleeve to the handpiece. [→ 45]
10. Attach the contra-angle handpiece to the handpiece.
11. Insert the file. [→ 47]
12. Assemble the apex locator set [→ 56] and connect it to the socket (B).
13. Perform a calibration. [→ 53]

In daily routine

- ✓ The unit is connected to the power supply or the battery is sufficiently charged.
 - ✓ Contra-angle handpiece and accessories are sterilized and ready. [→ 44]
1. Press the ON button (A).
 2. Attach the handpiece sleeve to the handpiece. [→ 45]
 3. Attach the contra-angle handpiece to the handpiece.
 4. Insert the file. [→ 47]
 5. Assemble the apex locator set [→ 56] and connect it to the socket (B).
 6. Perform a calibration. [→ 53]

4.4 Switching off the unit

1. Press the ON/OFF button.
 - ↳ A window opens.
2. Confirm shut down of the unit.

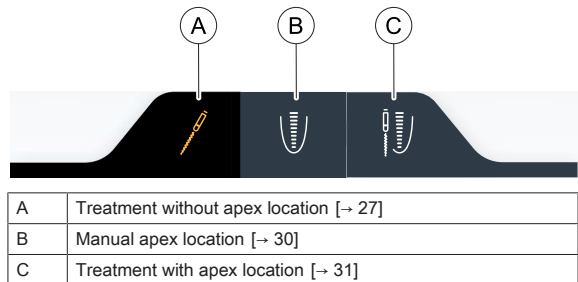
5 User interface

5.1 Main menu

5.1.1 Main dialogs

The following description applies to the expanded view of the product X-Smart Pro+. The product X-Smart Pro includes only the main dialog "Treatment without apex location [-> 27]" (A).

The main menu is divided into three main dialogs.

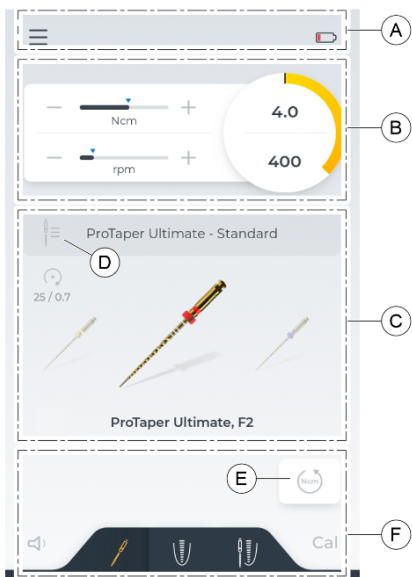


A selected dialog is marked by an orange symbol and a dark dialog field, see the diagram above.

5.1.1.1 Treatment without apex location

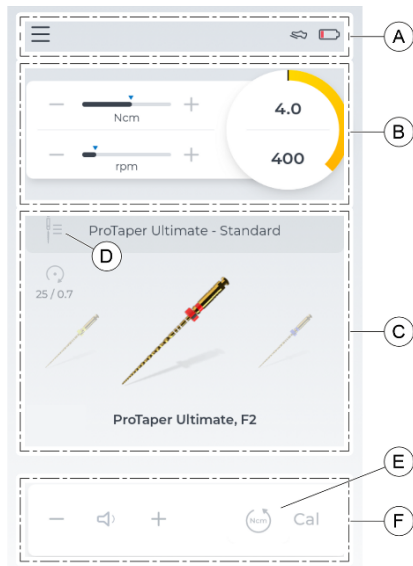
The main dialog "Treatment without apex location" differs in the respective X-Smart Pro/Pro+ product versions. The description of the version required is found in the sub-sections.

5.1.1.1.1 View of X-Smart Pro+



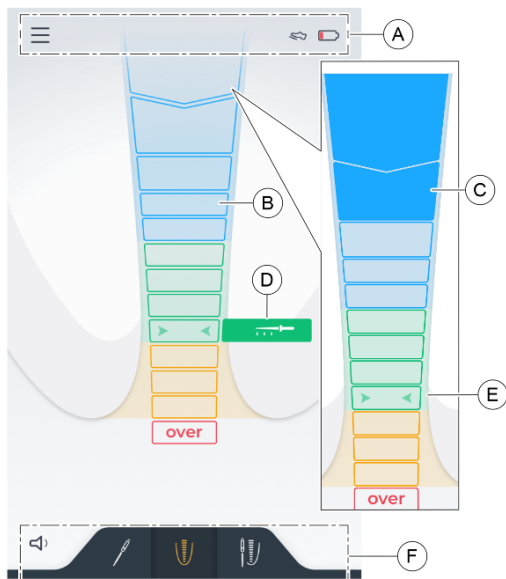
A	Heading [-> 33]
B	File settings [-> 36]
C	Display of the current file and possible change to another file within this sequence [-> 35]
D	Button for changing the sequence [-> 34]
E	Button for automatically switching the direction of rotation when reaching the maximum set torque [-> 37]
F	Footer [-> 33]

5.1.1.1.2 View of X-Smart Pro



A	Heading [→ 33]
B	File settings [→ 36]
C	Display of the current file and possible change to another file within this sequence [→ 35]
D	Button for changing the sequence [→ 34]
E	Button for automatically switching the direction of rotation when reaching the maximum set torque [→ 37]
F	Footer [→ 33]

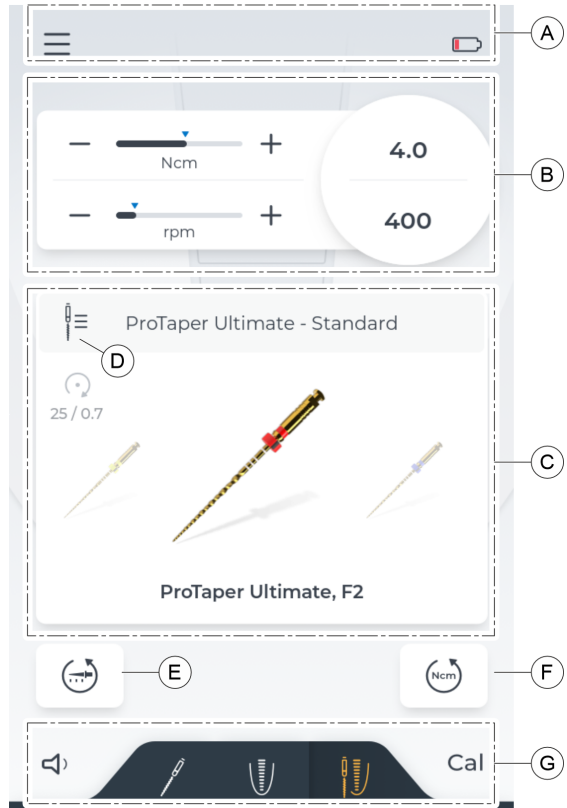
5.1.1.2 Manual apex location



A	Header [→ 33]
B	Distance to apex display before manual apex location.
C	Distance display to apex. The colored boxes show the current penetration depth during apex location. A simulation can be viewed under "Settings" in the "Apex locator settings [→ 42]" section. Further information under "Distance display [→ 57]".
D	Display of the preferred maximum apex preparation site. This can be changed under "Settings" in section "Apex locator settings [→ 42]" under "Doctor's Choice".
E	The two green arrowheads indicate the mid-apical region.
F	Footer [→ 33]

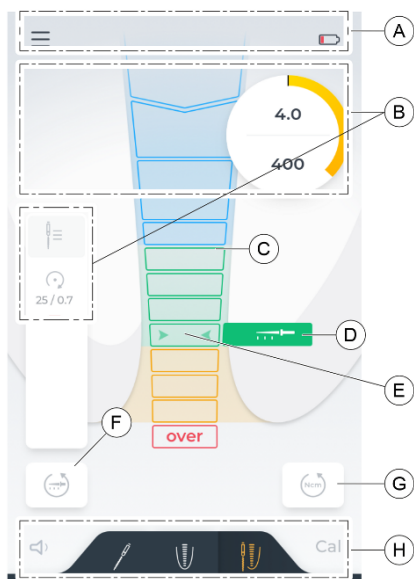
5.1.1.3 Treatment with apex location

View before treatment



A	Heading [→ 33]
B	File settings [→ 36]
C	Display of the current file and possible change to another file within this sequence [→ 35]
D	Button for changing the sequence [→ 34]
E	Button for automatically switching the direction of rotation when reaching the desired apex limit [→ 37]
F	Button for automatically switching the direction of rotation when reaching the maximum set torque [→ 37]
G	Footer [→ 33]

View during treatment



A	Heading [→ 33]
B	View of the most relevant information on the file being used
C	Distance display to apex. The colored boxes show the current penetration depth during apex location. A simulation can be viewed under "Settings" in the "Apex locator settings [→ 42]" section. Further information under "Distance display [→ 57]".
D	Display of the preferred maximum apex preparation site. This can be changed under "Settings" in section "Apex locator settings [→ 42]" under "Doctor's Choice".
E	The two green arrowheads indicate the mid-apical region.
F	Button for automatically switching the direction of rotation when reaching the desired apex limit [→ 37]
G	Button for switching the direction of rotation when reaching the maximum set torque [→ 37]
H	Footer [→ 33]

5.1.2 Header and footer

5.1.2.1 Header



Left

Clicking on the triple bar icon (A) opens the "Settings [→ 37]" menu level.

Right

If the foot control (optional component) is selected as activation method, it is displayed at the top right as a shoe icon (B).



The battery display is at the far right. This indicates the battery charge in a graphic. Information on how to read the exact amount is found under "Settings: in the "General settings [→ 42]" section.

When the unit is connected to the power supply, the icon changes to a battery with an additional lightning bolt (C).

5.1.2.2 Footer

Left



At the left, there is an option to change or mute the volume, for more details, see "Changing the volume [→ 61]".

When the volume is changed, the icon is changed accordingly.

Right



Pressing the Cal icon starts calibration, for more details, see "Calibrating the drive [→ 53]". When calibration has been completed successfully, a green check mark can be seen next to the icon.

Only with X-Smart Pro+

In the middle of the footer it is possible to switch among the three "Main dialogs [→ 27]".



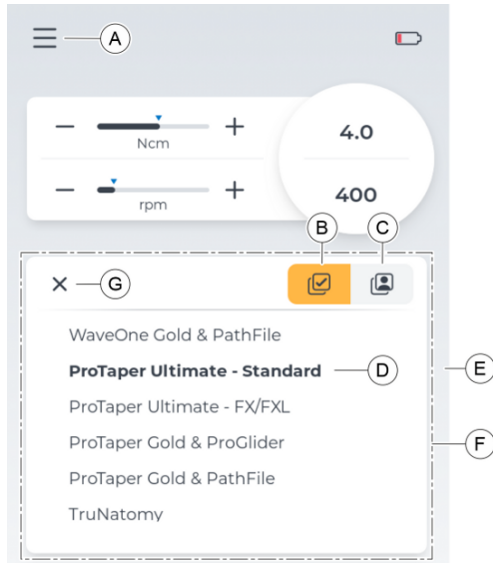
Only with X-Smart Pro



Here, the button for automatically changing direction when reaching the torque is integrated in the footer. Read more about this in section "Automatically changing the direction of rotation [→ 37]".

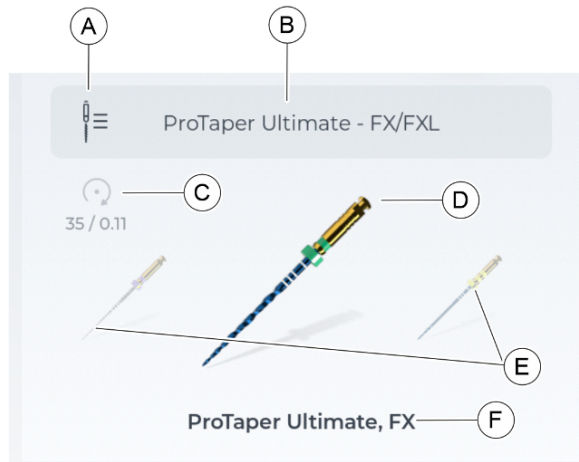
5.1.3 General operating keys

5.1.3.1 Selecting the file sequence



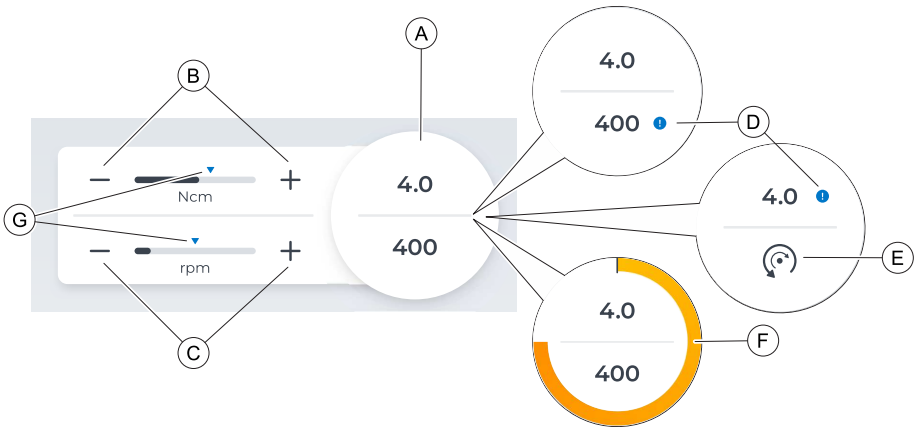
A	Clicking on the icon displayed in the main menu opens a window. A new file sequence from the categories "File Sequences" (B) or "My Sequences" (C) can be selected.
B	Key for displaying the sequence under "File Sequences". The active sequence category is marked orange.
C	Key for displaying the sequence under "My Sequences". The active sequence category is marked orange.
D	The currently selected file sequence is marked.
E	Scrollbar. Visible when scrolling. Indicates at which level in the list the currently selected file sequence (D) is located.
F	Scroll area. Depending on the position of the currently selected file sequence (D), there is the option to scroll down or up.
G	Closes the window without changing the file sequence.

5.1.3.2 File selection



A	Opens the "File Sequences: and "My Sequences" from the "Customize File Library" and allows the file sequence to be changed.
B	Name of the current "File Sequences"
C	Size and direction of rotation of the current file
D	Graphical representation of the current file
E	Previous and following file in this "File Sequences". The order of the files under "My Sequences" can be changed, see more under "Adapting the file library [-> 37]".
F	Name of the current file (file system, file name)

5.1.3.3 File settings



A	Set values for torque (Ncm) and speed (rpm).
B	Change the standard setting for torque using the plus/minus keys.
C	Change the standard setting for speed using the plus/minus keys.
D	When the standard settings are changed (B) (C), a blue exclamation mark is shown next to the value. If the standard value is reset or restored (G), the blue notice disappears.
E	The icon indicates that this is a reciprocating file. It is not possible to adjust the speed.
F	When the motor is activated, a colored display starts that shows the current torque as a percentage of the set value. When 75% of the set torque (Ncm) is reached, a warning beep sounds. You can deactivate this under "General settings [→ 42]".
G	The standard settings can be restored by clicking on the blue arrows.

5.1.3.4 Automatically changing the direction of rotation

On reaching the preferred working length



Selecting this key activates an automatic change of direction when the set working length is reached. The setting for working length can be defined under "Apex locator settings [→ 42]".



The key is active when it is marked orange.

On reaching the torque



Selecting this key activates an automatic change of direction when the defined torque of the file is reached. You can adjust the setting of the torque for the current file under "File settings [→ 36]".



The key is active when it is marked orange.

5.2 Settings

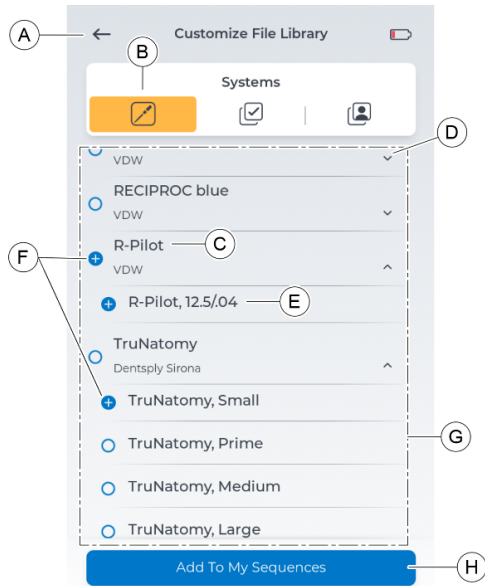
5.2.1 Adapting the file library

It is possible to switch between three categories of the file overview in this dialog:

- "Systems [→ 38]"
- "Sequences [→ 39]"
- "My sequences [→ 40]"

5.2.1.1 Systems

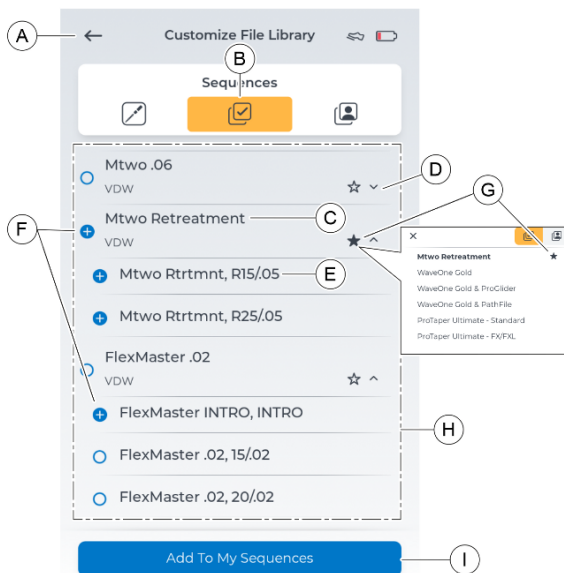
All standard files in the unit are listed in alphabetical order by systems. The file names within these systems are also alphabetized.



A	Back key to "Settings"
B	Within the selected category "Systems"
C	File systems
D	Activating this area opens or closes the file overview below it.
E	Files within this system
F	Blue marking for the selection of file systems. Several systems and files can be selected. By selecting one system, all the files below it are selected. The selection can be added to "My Sequences", see more under "Adding files from "Systems/sequences" [-> 47]".
G	Scrollable section
H	Key for adding in "My Sequences", see more under "Adding files from "Systems/sequences" [-> 47]".

5.2.1.2 Sequences

Standard files in the unit are listed in alphabetical order by sequences. The file names within these sequences are also alphabetized.



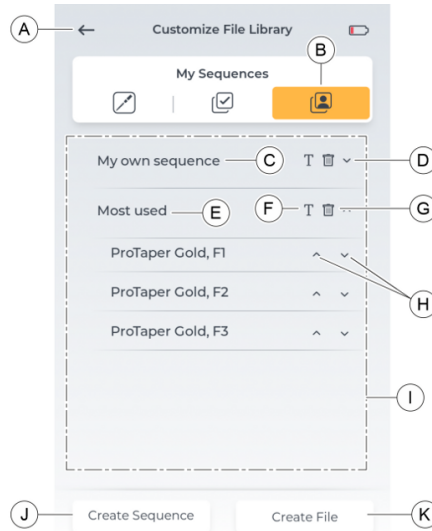
A	Back key to "Settings"
B	Within the selected category "Sequences"
C	File sequence
D	Activating this area opens or closes the file overview below it.
E	Files within a sequence are displayed grouped together.
F	Blue marking for the selection of files/sequences. Several sequences and files can be selected. By selecting a sequence, all the files under it are selected. The selection can be added to "My Sequences", see more under "Adding files from "Systems/sequences" [-> 47]".
G	There is an option to mark favorite sequences. When selected, the star icon is filled in. Favorite sequences are available at the top of the "Sequences" category during treatment when changing the file sequence.
H	Scrollable section
I	Key for adding in "My Sequences", see more under "Adding files from "Systems/sequences" [-> 47]".

5.2.1.3 My sequences

Within this category are the preferred standard files from the "Systems" and "Sequences" categories and files added by you from within sequences compiled by you.

The order of the sequences is determined by the order they were created.

The order of the files within these sequences can be adapted, see more under "Changing the order of the files [-> 51]".



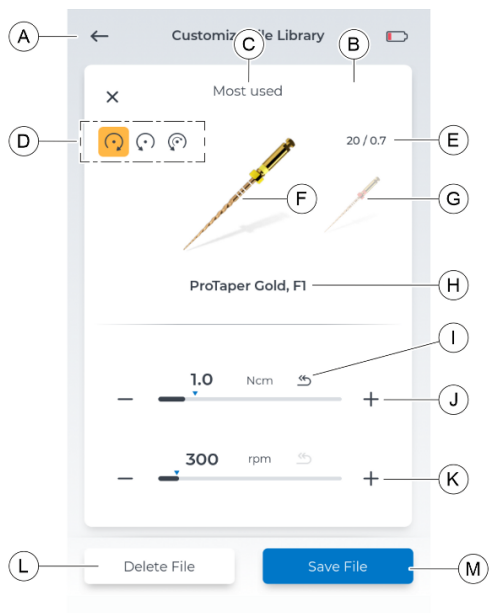
A	Back key to "Settings"
B	Within the selected category "My Sequences"
C	Self-generated file sequence
D	Activating this area opens or closes the file overview below it.
E	Files within this sequence
F	Changes the sequence name, see more under "Changing the sequence name [-> 51]".
G	Deletes the sequence, see more under "Removing files/sequences [-> 50]".
H	Scrollable section
I	Changes the position of the file in the overview, see more under "Changing the order of the files [-> 51]".
J	Key for creating new sequences, see more under "Adding new files/sequences [-> 48]".
K	Key for creating new files, see more under "Adding new files/sequences [-> 48]".

5.2.1.3.1 File settings under "My sequences"

Changes can be made to the settings of files added to the "My Sequences" section.

The following settings can be changed:

- Direction of rotation
- Torque
- Speed



A	Back key to "Settings"
B	Within the selected category "My Sequences"
C	Sequence name
D	The direction of rotation can be changed to: <ul style="list-style-type: none"> • Right rotation • Left rotation • Reciprocating rotation
E	Information on file length and width. This information is missing for files added by you.
F	File currently being used
G	It is possible to change to another file within the same sequence
H	Name of the current file (here: file system, file name)

I	If there is a deviation from the standard setting (blue triangle), the "Reset" icon can be used to reset the torque or speed to the standard setting. This function is not available for files added by you.
J	Change the torque value using the "-" key (left) and "+" key (right). The standard setting of the file is marked by a blue indicator. The blue marking is missing for files you added by you.
K	Change the speed using the "-" key (left) and "+" key (right). The standard setting of the file is marked by a blue indicator. The blue marking is missing for files you added by you.
L	Key for deleting the currently displayed file.
M	Key for saving the changes to one or more of the files within this sequence.

5.2.2 Apex locator settings

Doctor's Choice

Here you can set the preferred root canal depth for apex treatment using the up/down arrows.

This setting affects:

- The switchable working length autoreverse function [→ 58]
- The beep when reaching the desired working length [→ 61]

Demo

A simulation of the distance display during apex location can be seen in this dialog, see more here "Distance display [→ 57]".

Cable Check

A regular inspection of the apex cables can be performed using this dialog, see more under "Conducting a cable test [→ 56]".

5.2.3 General settings

Here you can make changes to the unit settings or find information on the unit.

Changeable settings

- Language of the user interface
- Brightness of the user interface (can be changed using a slider control)
- Region where the user is located (affects the file selection)
- Switch the "Reached 75% of torque" beep on/off
- LED brightness

Information that can be looked up

In the "About" dialog, the following information can be looked up:

- Firmware
- Foot Control Serial Number
- Hardware Version
- Motor Serial Number
- Battery charge level

5.2.4 Update

Activating the "Update" button checks whether a USB stick with valid software is plugged in. In a new window, you can agree to perform the update or cancel it.

For more information on the update, refer to "Perform an update [→ 62]".

5.2.5 Selection of activation method

Selecting the activation method of the motor:

- Foot Control
- Finger Switch

To use the foot control, it must first be paired once with the unit, see more at "Pairing the foot control with the unit [→ 54]".

When the unit is paired with the foot control and activation method "Foot Control" is selected, a shoe icon appears in the header of the screen.

5.2.6 Connecting the foot control

In this dialog, you can pair the optional foot control with the unit.

Pairing needs to be done only once per foot control. Both devices remember the set connection.

After successful pairing, the serial number of the foot control is shown in this display.

For more information on making the connection, refer to "Pairing the foot control with the unit [→ 54]".

5.2.7 Online resources

In this dialog level, there is a QR code that can be read with a scanner and opens a website with further information on the X-Smart Pro/Pro+ unit.

In this website, you can find the SW updates for your X-Smart Pro/Pro+.

6 Before use

6.1 Initial start-up and longer breaks in use

- > Sterilize the X-Smart 5:1 AL contra-angle handpiece, the handpiece sleeve, the file clamp, and lip clip cable and lip clip before initial startup.
- > Clean and care the X-Smart 5:1 AL contra-angle handpiece after longer breaks in use.
- > Charge the foot control completely before the first use.

6.2 Before each patient

IMPORTANT

Cable inspection

Inspect the cable of the charger, the handpiece, the lip clip, and the file clamp before and after each use. If you detect wear or tear of the cables, contact the service center.



WARNING

Danger of a defective file due to incorrect motor calibration.

Perform a system calibration before every treatment and every time a contra-angle handpiece is changed.

1. "Perform a cable test [→ 56]".
2. "Perform a calibration [→ 53]".
NOTICE! Repeat the calibration every time the contra-angle handpiece is changed.

7 Operation

⚠ WARNING

Risk of file breakage due to fatigue fracture

The patient could inhale broken files and choke.

- To prevent fatigue fracture as much as possible, use only fully intact, undamaged files.

⚠ CAUTION

Risk of burns!

Never pull the patient's cheek back with the contra-angle handpiece! The push button could be activated, with the risk of burning the patient's oral mucosa.

⚠ CAUTION

Burning hazard at push button!

Press the button only when the contra-angle handpiece is stopped.

⚠ WARNING

Hot motor!

If the motor overheats under high load, let it cool off by idling at half speed before continuing treatment.

⚠ WARNING

Improperly selected speeds and torque values endanger the patient!

Treatment errors can result from incorrect settings. Follow the recommendations of the file manufacturer.

7.1 Changing handpiece sleeve

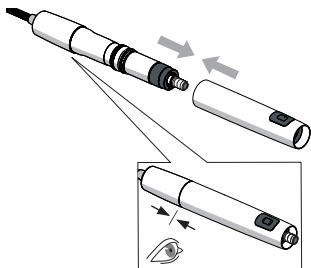
⚠ WARNING

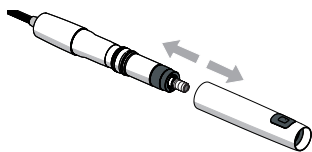
Risk of injury!

The handpiece sleeve should be attached or removed only when the motor is at standstill.

Attaching handpiece sleeve

- ✓ The motor is at a standstill.
- Attach the handpiece sleeve to the handpiece.
- ✘ The handpiece sleeve is flush with the motor.





Removing handpiece sleeve

- ✓ The motor is at a standstill.
- Detach the handpiece sleeve. Do not pull on the supply hose.

7.2 Changing the contra-angle handpiece

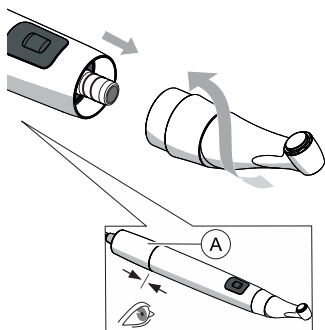
WARNING

Risk of injury!

The contra-angle handpiece should be attached or removed only when the motor is at standstill.

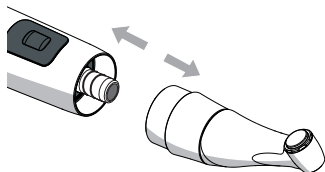
Attaching the contra-angle handpiece

- ✓ The motor is at a standstill.
- ✓ The handpiece sleeve is attached.
- Insert the contra-angle handpiece into the motor until it clicks into place.
Tip: Hold the motor (A) firmly while doing so.
- ⚠ The handpiece sleeve is flush with the motor. Contra-angle handpiece and motor can no longer be twisted.



Detaching the contra-angle handpiece

- ✓ The motor is at a standstill.
- Detach the contra-angle handpiece. Do not pull on the handpiece hose.



7.3 Attaching and removing a file

⚠ CAUTION

Burning hazard at push button!

Press the button only when the contra-angle handpiece is stopped.

⚠ WARNING

Risk of file breakage due to fatigue fracture

The patient could inhale broken files and choke.

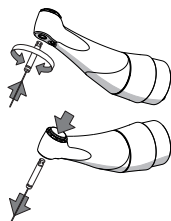
- To prevent fatigue fracture as much as possible, use only fully intact, undamaged files.

IMPORTANT

Check the push button to make sure it moves freely.

IMPORTANT

For safety, check the clamping system of contra-angle handpieces before every use.



Attaching a file

- ✓ The motor is at a standstill.
- 1. Insert the file by gently rotating it until it snaps into place. In doing so, do **not** press the pushbutton.
- 2. Then pull and turn the file to check that it is firmly seated.

Removing a file

- ✓ The file has come to a stop.
- Press the push button and detach the file.

7.4 Manage "My file sequences"

Dialog under "Settings" > "Customize File Library" > "My Sequences".

7.4.1 Adding files from "Systems/sequences"

Add existing files from "Systems" and "Sequences" to the "My Sequences" dialog.

Files / file sequences can be added only in the "My Sequences" dialog.

Adding file(s) from "Systems"

- ✓ The "Systems [→ 38]" dialog is open.
- 1. Select the desired file or files from the file systems.
Procedure:
 - Select an entire file system
and/or
 - one or more file(s) from one or more file systems.
 - ☞ The selection is marked with the "blue circle with plus symbol".
- 2. Press "Add To My Sequences".

3. Add the selection of an existing sequence or a new sequence in "My Sequences".

Procedure:

- Select an existing sequence ("blue circle with plus symbol" when selecting) and press "Add".

Or

- Press "Create Sequence", enter a name, and confirm it with "OK".

↳ Stay in the "My Sequences" dialog. New file(s) are saved under the desired/new sequence.

Adding file(s) from "Sequences"

✓ The "Sequences [-> 39]" dialog is open.

1. Select the desired file or files from "Sequences".

Procedure:

- Select an entire file sequence

and/or

- one or more file(s) from one or more file sequences.

↳ Selection marked with the "blue circle with plus symbol".

2. Press "Add To My Sequences".

3. Add the selection of an existing sequence or a new sequence in "My Sequences".

Procedure:

- Select an existing sequence ("blue circle with plus symbol" when selecting) and press "Add".

or

- Press "Create Sequence", enter a name, and confirm it with "OK".

↳ Stay in the "My Sequences" dialog. New file(s) are saved under the desired/new sequence.

7.4.2 Adding new files/sequences

Add new files and file sequences to the "My Sequences" dialog.

Files / file sequences can be added only in the "My Sequences" dialog.

Adding a new file sequence

✓ The "My sequences [-> 40]" dialog is open.

1. Press "Create Sequence".

2. Assign a name to your sequence.

3. Confirm this name by pressing "OK".

↳ Return to the "My Sequences" dialog. The new sequence (without files) is saved.

Adding a new file


Files that are not in the existing file catalogue of the unit can be added.

WARNING

Improperly selected speeds and torque values can endanger the patient!





Improper settings can cause treatment errors or file fracture.

➤ The files require different working techniques. Always observe the file manufacturer's specifications.





- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press "Create File".
- 2. Assign a name to your file.
Tip: note the desired file name. It cannot be changed later, but the file can be deleted, see more under "Removing files/sequences [-> 50]".
- 3. Confirm this name by pressing "OK".
- 4. Add the new file of an existing sequence or a new sequence.
Procedure:
 - Select an existing sequence ("blue circle with plus symbol") and press "Add".
 - or
 - Press "Create Sequence", enter a name, and confirm it with "OK". Return to the "My Sequences" dialog. The new file is saved under the desired/new sequence.
- 5. "Change the file settings [-> 49]". Observe the file manufacturer's specifications.

7.4.3 Changing/restoring the file settings

Changing the standard file settings

- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press the desired sequence.
 -  The lower level with "Files in this sequence" drops down.
- 2. Press the file to be changed.
 -  The "File setting" window opens.
- 3. Make the desired changes to the setting.
Tip: See more under "File settings under "My sequences" [-> 41]".
- 4. Confirm the change by pressing "Save File".
 -  The "back" icon turns black when values that deviate from the standard are entered.
- 5. Press on the illustrations of the files left/right (if multiple files are present in a sequence) and make further changes to the settings.
- or
- > Press the "X" icon at the top if no further changes are desired.
 -  Return to the "My Sequences" dialog.

Restoring the standard setting of the files

- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press the desired sequence.
 -  The lower level with "Files in this sequence" drops down.
- 2. Press the file to be changed.
 -  The "File setting" window opens.
- 3. Press the black "reset" icon at speed or torque to reset the values.
 -  The values are reset to the standard (marked by a light blue arrow).
- 4. Confirm the change by pressing "Save File".
- 5. Press the "X" icon at the top if no further changes are desired.
 -  Return to the "My Sequences" dialog.



Assign the setting to added files

WARNING

Improperly selected speeds and torque values can endanger the patient!

Improper settings can cause treatment errors or file fracture.

- The files require different working techniques. Always observe the file manufacturer's specifications.

- ✓ The "My sequences [-> 40]" dialog is open.
 - 1. Press the desired sequence.
 - ↳ The lower level with "Files in this sequence" drops down.
 - 2. Press the newly created file.
 - ↳ The "File setting" window opens.
 - 3. Enter the values for direction of rotation, torque, and speed, taking the file manufacturer's specifications into account.
 - 4. Confirm the change by pressing "Save File".
 - 5. Press on the illustrations of the files left/right (if multiple files are present in a sequence) and make further changes to the settings.
- or
- Press the "X" icon at the top if no further changes are desired.
 - ↳ Return to the "My Sequences" dialog.

7.4.4 Removing files/sequences

Remove files and file sequences from "My Sequences".

Removing a file sequence

- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press on the "Recycle bin" icon at the right of the sequence name.
- 2. Confirm by pressing on "Yes".
 - ↳ Return to the "My Sequences" dialog. The sequence is no longer visible under "My Sequences".

Removing a file

- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press the desired sequence.
 - ↳ The lower level with "Files in this sequence" drops down.
- 2. Press the file to be changed.
 - ↳ The "File setting" window opens.
- 3. Press "Delete File".

Important: the file will be immediately and permanently deleted.

 - ↳ If there are multiple files, the deleted file is no longer visible under the sequence when selecting.
- 4. Press the "X" icon at the top if no further changes are desired.
 - ↳ Return to the "My Sequences" dialog. The file is no longer visible in the sequence under "My Sequences".

7.4.5 Changing the order of the files

The illustrated order of the files within the view in the main dialog "Treatment without apex location [-> 27]" or "Treatment with apex location [-> 31]" reflects the order within the file overview in a sequence. The file order of the sequences under "My Sequences" can be personalized.


- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press the desired sequence.
 - ↳ The lower level with "Files in this sequence" drops down.
- 2. Press on the "Up" icon at the right of the desired file.
 - ↳ The file is positioned further up in the overview.
- 3. Press on the "Down" icon at the right of the desired file.
 - ↳ The file is positioned further down in the overview.

7.4.6 Changing the sequence name

- ✓ The "My sequences [-> 40]" dialog is open.
- 1. Press on the "T" icon next to the desired sequence.
 - ↳ The input window opens.
- 2. Correct the name.
- 3. Press on "OK".
 - ↳ Return to the "My Sequences" dialog.

7.5 Changing the file / file sequence during treatment

Changing the file sequence during treatment

- ✓ The "Treatment without apex location [-> 27]" or "Treatment with apex location [-> 31]" dialog is open.
- 1. Press the "File sequence collection" icon.
 - ↳ The window with an overview of the sequences of the "File Sequences" and "My Sequences" categories opens.
- 2. Press the desired category.
 - ↳ The selected category turns orange.
- 3. Press the desired sequence within this category.
 - ↳ Return to the original main dialog with the preferred sequence. The depicted file is the first file in the sequence overview order.

Tip: Under the category "File Sequences", your favorites (marked with a star symbol) are found at the top. See more under "Sequences [-> 39]".

Changing the file during treatment

- ✓ The "Treatment without apex location [-> 27]" or "Treatment with apex location [-> 31]" dialog is open.
- 1. Press on the illustrations of the files left/right (if multiple files are present in a sequence).
- 2. Repeat this step until you reach the desired file within this sequence.

Tip: The illustrated order of the files reflects the order within the file overview in a sequence. The file order of the sequences under "My Sequences" can be personalized. See more under "Changing the order of the files [-> 51]".

7.6 Recommendation for the treatment procedure

WARNING

Infection due to contaminated file clamp / lip clip during treatment

- When the file clamp and the lip clip are removed from the patient, they must be stored under sterile conditions.

WARNING

Risk of file breakage due to fatigue fracture

The patient could inhale broken files and choke.

- To prevent fatigue fracture as much as possible, use only fully intact, undamaged files.

WARNING

Improperly selected speeds and torque values can endanger the patient!

Improper settings can cause treatment errors or file fracture.

- The files require different working techniques. Always observe the file manufacturer's specifications.

WARNING

Broken or falling files!

Risk of choking

- Place a dental dam in the patient's mouth to prevent the risk of choking.

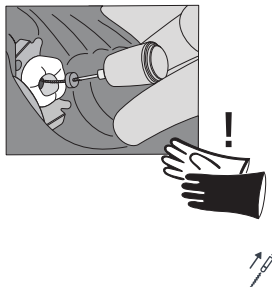
WARNING

Incorrect measurement!

Tissue damage and infection due to incorrect measurement!

- When using the apex locator function, use only endodontic files with metal shafts to ensure a proper apex length determination. Using files without a metal shaft may lead to an incorrect apex length determination and therefore to an under or over instrumentation with risk of injury for the patient.

- The different file systems require different working techniques. Always observe the file manufacturer's specifications.
- Work without exerting any pressure on the file.
- The apex locator function assists preparatory work for root canal treatment. The number of X-rays can be reduced with X-Smart Pro+. However, you must always take at least one X-ray image to determine the depth for preparatory work. A clinical evaluation



including knowledge of the anatomy of root canals is important for interpreting the results.

- When performing the apex location, wear non-conductive gloves. This will prevent inaccurate measurements caused by undesired leakage currents. During the measurement, the contra-angle handpiece must not come into contact with the patient's mucosa, metallic dental restorations, or the lip clip.
- If the file stops moving, remove the file by gently pulling it toward the coronal end.

IMPORTANT

Inspect the file for damage or deformation (untwisting) and then replace it if necessary.

7.7 Calibrating the drive

⚠ WARNING

Danger of a defective file due to incorrect motor calibration.

Perform a system calibration before every treatment and every time a contra-angle handpiece is changed.

Interval:

- Before each patient

Cal Cal

- ✓ The unit is switched on and the contra-angle handpiece is attached to the motor.
1. In the main menu, select one of the main dialogs with the calibration icon.
 2. Press the calibration icon. Calibration must be confirmed in a window.
 3. When calibration has been completed successfully, a green check mark can be seen next to the icon.

7.8 Using the finger switch

To be able to start and stop the motor using the finger switch, the finger switch option must be set in the settings menu. [→ 43]

The finger switch functions as a button.

- Press button briefly: the motor starts
- Press button briefly again: the motor stops

Additional functionality of the finger switch in combination with the LED function, see "LED functionality [→ 55]".

7.9 Operating the foot control

The foot control functions as a pedal:

- Press the foot control down: the motor starts
- Release the foot control: the motor stops

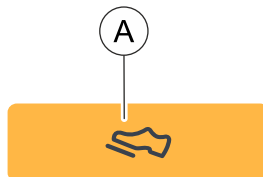
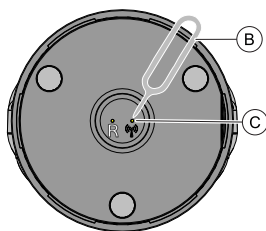
Additional functionality of the foot control in combination with the LED function, see "LED functionality [-> 55]".

7.9.1 Charging the foot control

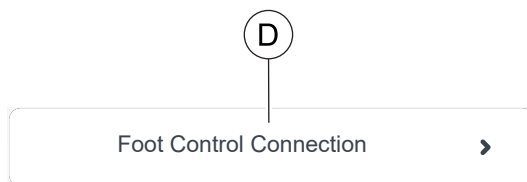
- ✓ A USB charger is at hand.
1. Plug the charging cable into the USB charger.
 2. Plug the charging cable into the charging socket of the foot control.
 - ↳ The LED lights up orange. For more on the LED display, see "Description of foot control".
 - ↳ When the LED goes out, the battery is charged.

7.9.2 Pairing the foot control with the unit

- ✓ The foot control is charged prior to initial operation.
1. Go to "Settings" of the X-Smart Pro/Pro+ and select the operating mode "Foot Control"(A).



2. Press the pin (B) onto the pairing button (C) on the back of the foot control for three seconds.
 - ↳ The status LED switches from flickering to flashing. The foot control is ready for pairing.
3. Go to "Settings" of the X-Smart Pro/Pro+ and select "Foot Control Pairing".



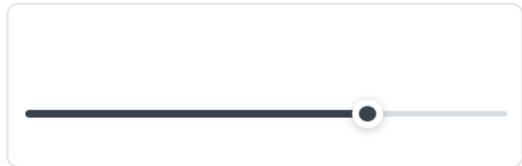
- ↳ A new page opens.
4. Click on the "Foot Control Connection" button.
 - ↳ The pairing of the two devices is started.
 5. When pairing is successful, the serial number of the foot control is shown on the monitor. A blue frame around the serial number indicates that pairing was successful.
 6. Press the foot control and test the connection.

7.10 LED

7.10.1 Adjusting the brightness

The brightness of the LED is continuously adjustable.

To adjust the LED, move the slider in the Settings/General settings menu to the desired position.



To switch off the LED, move the slider to the far left position.

If a contra-angle handpiece is attached to the handpiece while setting, the current LED brightness can be checked directly.

7.10.2 LED functionality

If the LED is not switched off, the following functions are available:

- LED is lit while motor is running
- LED remains lit
- LED is lit without the motor running

LED is lit while motor is running

When the motor is started, the LED is also automatically switched on.

LED remains lit

After the motor is stopped, the LED remains lit for 5 seconds.

LED is lit without the motor running

The LED can also be switched on without starting the motor at the same time. There is a difference whether the finger switch or the foot control is used.

- Finger switch: to enable it to light up without starting the motor, the finger switch must be pressed longer than 1 second.
- Foot control: to enable it to light up without starting the motor, the foot control must be pressed lightly, not all the way down.

The LED is lit as long as the finger switch / foot control is held and then remains lit for 5 seconds.

7.11 Conducting a cable test

Interval:

- Before each patient
- ✓ You are in the "Settings"/"Cable Check" dialog
- > Follow the instructions on the display.
- ✚ In all categories, a successful test is indicated by a green check mark.
- ✚ If the test is unsuccessful, go back one level in the dialog and repeat the cable test. If there are difficulties conducting tests, look for potential interference, see more at "Troubleshooting and repair [→ 71]".

7.12 Using the apex locator

The apex locator can be used to determine the working length of the root canal file for endodontic treatments using electrical impedance.

The apex locator can be used as follows:

- For apex location using a file clamp
- For apex location during treatment with the motor for endodontic treatment

CAUTION

Under or over instrumentation due to electromagnetic interference!

The apex locator can be affected by electromagnetic fields. This may lead to measurement errors. Strong influence is indicated by red flashing of the distance display.

- > Ensure that there are no sources of electromagnetic interference close to the device.

When the apex locator detects a defect, an error message is displayed.

For more settings of the apex locator and simulation of the distance display, see "Settings / Apex locator [→ 42]".

For more information about the distance display, see "Distance display [→ 57]".

7.12.1 Connecting the apex locator set

For treatment with apex location

- ✓ File clamp and lip clip incl. cable are sterilized and ready.
- 1. Connect the apex locator adapter cable to the unit (A).
- 2. Attach the lip clip to the lip clip cable.
- 3. Insert the lip clip cable into the apex locator adapter.

For manual apex location

- ✓ File clamp and lip clip incl. cable are sterilized and ready.
- ✓ The apex locator adapter is connected to the unit.
- ✓ The lip clip is connected.
- 1. Insert the file clamp into the apex locator adapter.
- 2. Press on the button of the file clamp and clamp a file firmly.

7.12.2 Check apex locator system

Before starting apex location, a functional test can be conducted by shorting the electrodes.

- Short the electrical system. Hold the inserted files directly against the lip clip.
 - ☞ If the test was successful, a green check mark is displayed between the lip clip and contra-angle handpiece / file clamp.
 - ☞ If a green symbol does not appear, check the electrical connections for damage. See the "Troubleshooting and repair [-> 71]" section for other measures.



7.12.3 Distance display

Treatment progress is shown in the distance display on the user interface. This shows the distance from the root canal file to the physiological apex (apical foramen). The root canal is divided into three colored regions in the distance display.

⚠ WARNING

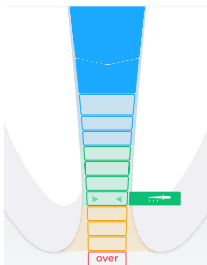
The distance display is not a metric specification of length.

The ApexLocator should be used as an additional aid to supplement the usual root canal treatment measures. It does not replace the radiological determination of the working length. To determine the exact length, also make the relevant X-ray images.

Colored regions of the distance display

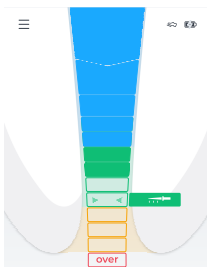
Blue region

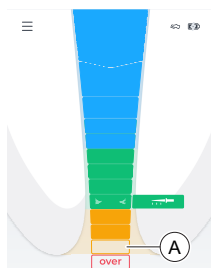
Corresponds to the coronal/medial section. The tip of the root canal file is near the entrance to the canal.



Green region

Corresponds to the apical region. The tip of the root canal file has reached the apical region, but not yet reached the mid-apical region (two green arrows, see below).



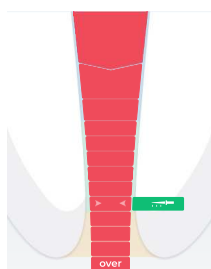


Orange region

Corresponds to the apical region. The tip of the root canal file has reached the apical region, and has passed the mid-apical region (two green arrows, see below).

Tip: If a 3-color scale (blue, green, red) for the distance display is preferred, it is possible to display the orange region as green. To do this, change the setting under "Settings"/„Apex Locator Settings". If the 4-color scale is deselected, displaying the "Doctor's Choice" symbol in orange is also omitted.

The last level of the apical region (A) before the "Over" level corresponds to the apical foramen.



Red region

Corresponds to reaching the "Over" level. The tip of the root canal file has reached the apex. Over instrumentation is indicated.

Two green arrowheads

The two green arrowheads indicate the mid-apical region.



Doctor's Choice

Set your preferred endodontic workflow by setting the working length ("Doctor's Choice"), see more under "Setting working length and function when it is reached [→ 58]".

The working length ("Doctor's Choice") has an effect on the "Signal tones [→ 61]".

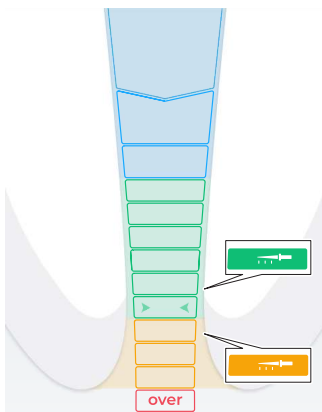


7.12.4 Setting working length and function when it is reached

If the sound is not switched off, see "Changing the volume [→ 61]", apex signal tones will sound in addition to the graphic distance display. The intervals between the beeps vary according to the measured distance to the set working length.

Set working length

- ✓ The "Settings/Apex Locator Settings/Doctor's Choice" dialog is displayed.
- Use the "up" or "down" arrow keys to set the desired working length. Please note that the distance values are not a metric length measurement!



- ✦ The set distance is shown with a "file icon". If the file is within the green or yellow region, the file is displayed in the color of the corresponding region. Learn more about the colors in section "Distance display [-> 57]".
- ✦ A **beep** sounds when the file approaches the apex or the set working length during manual/motor-driven treatment, see more under "Signal tones [-> 61]".
- ✦ A **continuous beep** sounds when the file has reached or exceeded the apex or the set working length during manual/ motor-driven treatment.
- ✦ Apex settings ("Doctor's Choice") are stored permanently.

Setting function when working length is reached

It can be set so that when reaching the working length ("Doctor's Choice"), the motor:

- Automatically rotates in the reverse or non-cutting direction until the Finger Switch is pressed in order to stop the motor.
- Activate this function by tapping on the *Reverse* key, see more under "Automatically changing the direction of rotation [-> 37]".



The function when the working length is reached can be combined with the torque reverse function, see "Switching torque reverse function on/off [-> 60]".

7.12.5 Performing apex location using a file clamp

For an endodontic examination, apex location can be performed using the file clamp and a file.

⚠ WARNING

Incorrect measurements!

- Prevent incorrect measurements! Wear non-conductive gloves during apex location to avoid measurement errors caused by unwanted leakage current. During the measurement, the root canal file must not come into contact with the patient's mucosa, metallic tooth restorations, or the lip clip.

⚠ WARNING

Broken or falling files!

Risk of choking

- Place a dental dam in the patient's mouth to prevent the risk of choking.

- ✓ The unit is prepared for apex location using the file clamp, see Connecting the apex locator set [-> 56].
- ✓ You are in the main dialog "Manual apex location [-> 30]".

1. Attach a root canal file to the file clamp.
2. Before starting apex location, a functional test can be conducted by shorting the electrodes. Hold the inserted files directly against the lip clip.



- ↳ If the test was successful, a popup symbol with a green check mark appears, see more at "Testing the measurement system [→ 57]".
 - ↳ If no green symbol appears, check the electrical connections for signs of damage. See the "Troubleshooting and repair [→ 71]" section for other measures.
3. Place the lip clip in the patient's mouth and perform the apex location.
 - ↳ The current root canal depth is shown in the distance display. For more information, see "Distance display". [→ 57]



Tip: The two green arrowheads indicate the medial apical region. For more information, see "Distance display". [→ 57]

7.13 Switching the torque reverse function on/off

When the torque reverse function is switched on, the file automatically switches to the opposite/non-cutting direction of rotation when the set torque value is reached. When the pressure on the file is reduced, the motor automatically switches back to the cutting direction.

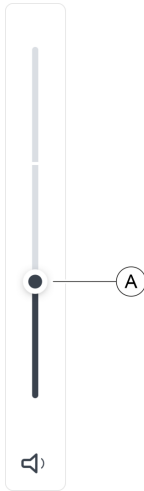
The torque reverse function can be combined with the function when reaching the working length, see "Setting apex distance and function when reached [→ 58]".

- ✓ The "Treatment with apex location [→ 31]" main dialog is displayed.
- Tap on the *T Reverse* key.
 - ↳ If the key is marked orange, the torque reverse function is switched on.



7.14 Changing the volume

Changing the volume of the unit



1. Press the key with the sound icon.
2. Change the volume in three stages by putting your finger on the controller (A) and moving it up or down.
 - ↳ The higher up, the louder the volume selected.
 - ↳ The further down, the lower the volume selected.
 - ↳ At the lowest level, the sound is switched off.

7.15 Signal tones

Apex signal tones

In addition to the graphical distance display on the user interface, the position of the file in the root canal can also be indicated as an acoustic signal.

- Beeps with very long intervals are played when the file is 8 to 9 display levels away from the apex.
- Beeps with long intervals are played when the file is 5 to 7 display levels away from the apex.
- Beeps with short intervals are played when the file is 2 to 4 display levels away from the apex.
- Beeps with very short intervals are played when the file reaches the "Doctor's Choice" set by the user or is one display level away from the apex.
- A continuous beep is played when the file has reached or passed the apex.

You can also switch off the beeps, see "Changing the volume [-> 61]".

Additional beeps

The following additional beeps are played and are not switched off even if the sound is switched off:

- A beep sounds when the set torque value is reached.
- A beep sounds when the motor rotates in reverse direction.
- A beep sounds when 75% of the set torque (Ncm) is reached/exceeded.

Sounding the beep when 75% of the set torque is reached can be switched off, see under "Settings" / "General Settings".

7.16 Perform an update

New updates can be found in the QR code under "Settings" / "Online resources [-> 43]" or at www.dentsplysirona.com.

- ✓ The unit is not connected to the power supply system.
 - ✓ The USB stick is in FAT 32 format.
1. Save the software update on the USB stick. Make sure that there are no other data on the USB stick.
 2. Loosen the screw on the underside of the unit base with a PZ1 wrench and remove the cover. The screw used to fasten the cover is a Torx screw.
 3. Remove the battery if the USB stick does not fit next to it. To do this, you must also detach the handpiece cable.
 4. Connect the USB stick to the USB interface on the unit.
 5. Connect the unit to the power supply system.
 6. Switch on the unit.
 7. Go to "Settings" and tap on the "Update" button.
 - 🔊 A new window opens.
 8. Confirm implementation.
 - 🔊 The update starts and may take several minutes.
 9. The unit restarts after the update.
 10. Switch the unit off and disconnect the power plug.
 11. Remove the USB stick.
 12. If you removed the battery, insert it by swiveling it into the housing until it engages.
 13. Plug the handpiece cable back in.
 14. Fasten the cover firmly back on the unit base with the same screw.

Tip: Note the cable and the corresponding cable routing on the unit base.

7.17 Replacing the battery

7.17.1 Battery of the unit

- ✓ The unit is switched off.
- 1. Loosen the screw on the underside of the unit base with a PZ1 wrench and remove the cover.
- 2. Detach the handpiece cable.
- 3. Remove the battery already there.
- 4. Insert the new battery by swiveling it into the housing until it engages.
- 5. Plug the handpiece cable back in.
- 6. Fasten the cover firmly back on the unit base with the same screw.
Tip: Note the cable and the corresponding cable routing on the unit base.
- 7. Connect the unit to the power supply.

IMPORTANT

The battery is in protection mode and must be charged to activate it prior to initial use.

NOTICE

Risk of fire and burns.

Do not open, crush, heat above 80°C (176°F) or incinerate the battery.

7.17.2 Foot control battery

When the loading cycles of the battery deteriorate, send the medical device to an authorized Dentsply Sirona service partner.

NOTICE

Defect or worn out batteries may be replaced only by an authorized Dentsply Sirona service partner.

7.18 Replacing the motor

- ✓ The unit is switched off.
- 1. Loosen the screw on the underside of the unit base with a PZ1 wrench and remove the cover.
- 2. Unplug the connected motor cable.
- 3. Plug the new motor cable into the socket.
- 4. Fasten the cover firmly back on the unit base with the same screw.
Tip: Note the cable and the corresponding cable routing on the unit base.

8 After use

8.1 After each treatment session

NOTICE

Perform reprocessing immediately after treatment, after 1 hour at the latest.

IMPORTANT

Cable inspection

Inspect the cable of the charger, the handpiece, the lip clip, and the file clamp before and after each use. If you detect wear or tear of the cables, contact the service center.

NOTICE

Use only Dentsply Sirona T1 Spray.

- ✓ Wear suitable protective clothing.
- 1. Remove the file with tweezers.
- 2. Detach the contra-angle handpiece from the handpiece sleeve.
- 3. Detach the handpiece sleeve from the handpiece.
- 4. Detach the lip clip cable and file clamp from the apex locator adapter.
- 5. Detach the lip clip from the lip clip cable.
- 6. Perform the "Reprocessing [-> 65]".

8.2 At the end of the work day

- > Lubricate the contra-angle handpiece with spray [-> 68].

NOTICE

Do not leave a contra-angle handpiece on the straight handpiece overnight to prevent oil from leaking into the electric motor. Never lubricate the electric motor.

8.3 Once per work week

- ✓ The motor has been conditioned.
- > Lubricate the lock washer [-> 70].

9 Reprocessing

9.1 Overview of the parts to be reprocessed

	Cleaning and disinfection			Sterilization
	Manual		Automated	wrapped
	Brush (only cleaning)	Wipe	Washer-disinfectant*	
Housing	–	x	–	–
Handpiece holders	–	x	–	–
User interface	–	x	–	–
Handpiece cable	–	x	–	–
Instruments				
Contra-angle handpiece	x	–	x	x
Handpiece sleeve	x	–	x	x
Apex Locator				
Apex locator adapter	–	x	–	–
Silicone insulation sleeve	–	–	–	x
File clamp (including cable)	x	–	–	x
Lip clip	x	–	–	x
Lip clip cable	x	–	–	x

* Cleaning and disinfection equipment

x: Possible reprocessing steps

9.2 Reprocessing methods

9.2.1 General reprocessing instructions

The general reprocessing instructions apply to the unit in general provided there are no other product-specific reprocessing instructions in the instructions for use.

NOTICE

Inappropriate care and cleaning of the unit can result in malfunction or damage. Qualified personnel must be trained in reprocessing medical devices.

Use only care, cleaning, and disinfecting agents approved by the manufacturer.

Reprocessing involves the following steps:

- Cleaning
- Disinfection
- Sterilization if applicable

Perform reprocessing immediately after treatment, after 1 hour at the latest.

Wear suitable protective clothing.

NOTICE

Never clean in an ultrasonic bath!

NOTICE

Never immerse in disinfectants!

9.2.2 Cleaning and disinfection

IMPORTANT

Perform automated reprocessing. Manual reprocessing may be possible in exceptional cases in compliance with the respective national/local requirements.

Manual cleaning with a brush

1. Thoroughly brush the product under running water (<38°C, <100°F, at least drinking water quality) at least 10 seconds.
2. Use a soft, clean and disinfected brush for thorough cleaning.
3. Check at good lighting (min. 500 lux) if the product is clean after reprocessing.
4. If there is any contamination, repeat the process.
5. Subsequently, if applicable, disinfect/sterilize the product.

Manual wipe cleaning and disinfection

NOTICE

Disinfectants

All disinfectants must be approved in your country and have proven bactericidal, fungicidal and virucidal properties. Use only disinfectants with **no** protein-fixing properties.

Do not use agents containing hydrogen peroxide (H₂O₂) or chlorine.

We recommend disinfectant cloths FD366 Sensitiv from Dürr.

1. For thorough wipe cleaning and disinfection, observe the disinfectant manufacturer's instructions.
2. Check at good lighting (min. 500 lux) if the product is clean after reprocessing.
3. If there is any contamination, repeat the process.
4. Wipe off the disinfectant with a dry, clean and lint-free cloth after it has taken effect.
5. If necessary, perform a sterilization afterwards.



Automated reprocessing with a washer-disinfector

NOTICE

If the unit has not been cleaned in a washer-disinfector, it is essential to conduct manual care and cleaning (see "Manual maintenance [→ 68]").

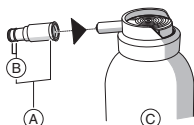
The washer-disinfector must be approved by its manufacturer for cleaning and disinfecting these products and comply with ISO 15883-1/-2, e.g. 93 °C (200 °F) and 10 min holding time. Refer to the instructions for use of the device for the respective use. After the process, check in good lighting (min. 500 lux) whether the product is clean. If there is any contamination, repeat the process. If necessary, perform a sterilization afterwards.

9.2.3 Manual maintenance

9.2.3.1 Maintenance of mechanical parts

Intervals

- Before each sterilization
- After every thermal disinfection without integrated lubrication



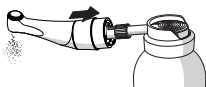
- A Spray adapter
B O-rings for spray adapter
C Dentsply Sirona T1 Spray

NOTICE

Use only Dentsply Sirona T1 Spray.

Procedure

- ✓ The spray adapter is disinfected.
 - ✓ The O-ring on the spray adapter is intact.
1. Fit the spray adapter onto the nozzle of the spray can.
 2. Insert the contra-angle handpiece until it clicks into place and hold it firmly.
 3. Spray into the contra-angle handpiece for 1-2 seconds.
IMPORTANT: Hold the spray can upright.
 4. Wipe any spray that comes out with a suitable cloth.
 5. Repeat the process until the spray that comes out of the contra-angle handpiece is clear.



9.2.3.2 Care of the push button chuck

Use Dentsply Sirona T1 Spray on the push-button chuck to remove deposits and ensure proper functioning of the clamping system.

Interval

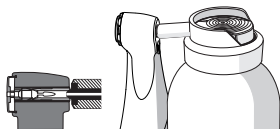
- At least once a week



A	Black nozzle insert
B	Dentsply Sirona T1 Spray

Procedure

- ✓ The contra-angle handpiece is clean and disinfected.
1. Press the contra-angle handpiece head with the chuck firmly against the spray can nozzle.
 2. Spray the chuck for 1-2 seconds.
IMPORTANT: Hold the spray can upright.
 3. Wipe any spray that comes out with a suitable cloth.



9.2.4 Sterilization

Wrapped sterilization

The product must be cleaned/disinfected according to the table "Overview of the parts to be reprocessed [-> 65]" prior to sterilization.

The contra-angle handpiece is lubricated according to section "Manual maintenance [-> 68]".

The product is packed in packaging suitable for sterilization and storage, e.g. paper/laminate packaging or ISO 11607 compliant container.

Steam sterilizers that comply with the requirements of EN 13060, Class B or EN 13060 Class S and are also suitable for the sterilization of these products are approved.

Temperature: 134 °C (274 °F)

Holding time: 3 min

Overpressure 2.04 bar (29.59 psi)

Drying time: 30 minutes

NOTICE

Do not exceed 140 °C (284 °F) even during the drying phase.

After sterilizing

1. Remove the contra-angle handpiece and accessories from the steam sterilizer immediately.
CAUTION! The contra-angle handpiece and accessories are hot.
Risk of burns!
NOTICE! Do **not** attempt to accelerate the cooling process by immersing the contra-angle handpiece in cold water. This will damage the contra-angle handpiece.
2. Store the contra-angle handpiece and accessories where they are protected against contamination.
3. Sterilize again once the storage period has elapsed.

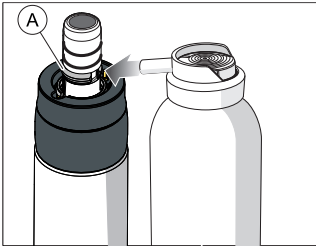
9.3 Inspection, maintenance and testing

Unless otherwise specified in these instructions for use, test all components of the unit for proper functioning on a regular basis and carry out a visual inspection for damage and wear. Replace damaged components if necessary.

Inspect all parts after the cleaning, disinfection and/or sterilization processes. If parts have visible damage after these processes, they must be disposed of and replaced. Signs of visible damage may include discoloration, corrosion, cracks, and other forms of damage.

10 Maintenance

10.1 Lubricate the lock washer



Interval

- 1x weekly

Procedure

1. Spray some Dentsply Sirona T1 Spray on the stop spring ring (A).
2. Turn the lock washer to distribute the Dentsply Sirona T1 Spray.

10.2 Replacing O-rings

NOTICE

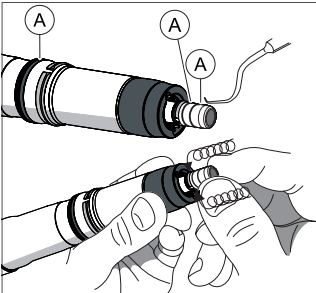
Do not use any sharp tools and do not stretch the **new** O-rings.

If the handpiece coupling leaks, the O-rings must be replaced.

1. Remove the defective O-rings (A).
2. Insert the O-rings one after another. Start with the first groove.
3. Lightly oil the O-ring with Dentsply Sirona T1 Spray.

NOTICE

Do **not** use Vaseline or silicone grease on the O-rings.



11 Interference

11.1 Error messages

Contact your service technician if one of the following error messages appears on your unit:

- MO_001: Serious motor error
- AP_001: Serious apex error
- MC_001: Serious media controller error

In case of error messages for the insulation test, refer to section "Troubleshooting and repair [→ 71]".

11.2 Troubleshooting and repair

11.2.1 For error messages related to insulation test

For error messages related to insulation test



If a dialog with a combined mode is selected (with apex function), the endodontic unit automatically conducts an internal function test. If the apex insulation in the contra-angle handpiece is faulty, the left symbol appears.

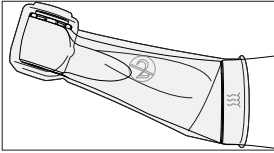
The outer surface of the handpiece is electrically insulated from the apex path of the motor file. After sterilization, liquid may accumulate in the handpiece and bridge the insulation. This results in the apex values being incorrectly displayed when the contra-angle handpiece comes in contact with the patient in the oral cavity.

The following steps can remedy this potential source of interference:

1. Remove the contra-angle handpiece from the handpiece.
2. Remove the file from the contra-angle handpiece.
3. Press compressed air into the file opening with a Sprayvit (or a spray air jet on the treatment center) 3 times for 3 seconds each.

If the yellow symbol is still displayed, put a silicone sleeve on the contra-angle handpiece, for more information, see "Fitting and removing an insulation sleeve [→ 72]".

11.2.1.1 Fitting and removing an insulation sleeve



WARNING

Risk of cross contamination!

The insulation sleeve is not sterile! To avoid cross-contamination Sterilize the insulation sleeve before use.



NOTICE

The insulation sleeve is intended for single use. Dispose of the insulation sleeve after each patient.

Fitting an insulation sleeve

- ✓ You have sterilized the insulation sleeve.
 - ✓ The motor is at a standstill.
 - ✓ A file is **not** clamped in place.
1. Pull the insulation sleeve fully over the instrument by gently turning it from one side to the other.
 2. Insert the file [→ 47].
 3. Attach the contra-angle handpiece to the motor.

Removing an insulation sleeve

- ✓ The motor is at a standstill.
1. Pull the contra-angle handpiece off of the motor.
 2. Remove the file.
 3. Remove the insulation sleeve.
 4. Dispose of the insulation sleeve.

11.2.2 Remedy for pairing problems with the foot control

Remedy for pairing problems with the foot control

- Remove metallic objects between the foot control and the drive handpiece.
- Change the position of the foot control.
- Eliminate any sources of interference (e.g. brushed motors, mobile phones, wireless devices, WLAN. etc.).
- Press the reset button of the foot control with the pin and "Pair again [→ 54]".

If the pairing problem cannot be solved by the remedy, it must be checked by an authorized Dentsply Sirona service partner.

12 Storage and transport conditions

Dispatch Clean and disinfect the contra-angle handpiece or accessory part used on the patient before sending it in.

WARNING

Risk of cross contamination!

> Before sending the unit for repairs, all parts must be properly processed (cleaned/disinfected/sterilized).



Up



Keep dry



Fragile; handle with care



Temperature during storage and transport



Relative humidity during storage and transport



Air pressure during storage and transport



Stack limit, do not stack more than 4 units on top of each other

13 Disposal



In accordance with Directive 2012/19/EU and national disposal regulations regarding old electrical and electronic devices, please be advised that such items must be disposed of in a special way within the European Union (EU). These regulations require the environmentally friendly recycling/disposal of old electrical and electronic devices. Such items must not be disposed of as domestic refuse. This is indicated by the printed icon of the "crossed out trash can".

Disposal procedure

We feel responsible for our products from the first idea to their disposal. For this reason, we give you an option to return our old electronic and electrical devices.

If you wish to dispose of your equipment, please proceed as follows:

In Germany

To initiate return of the electrical equipment, please send a disposal request to enretec GmbH. You have the following options for this:

- Tel.: +49 800 805 432 1
- Email: services@enretec.de

You can arrange the transport to enretec GmbH yourself or commission enretec GmbH with the organization.

Prepare the device for transport in accordance with the "Important regulations for the return of old electrical equipment". Available online at (www.enretec.de).

In accordance with the national disposal regulations regarding old electrical and electronic devices (ElektroG), we as the manufacturer assume the costs for disposing of the electrical and electronic devices in question that were purchased from us on or after August 13, 2005. Disassembly, transport and packaging costs shall be borne by the owner/operator.

By using this return option, we jointly ensure that any substances harmful to the environment and health contained in the devices are disposed of in compliance with the law and that the equipment is recycled in the best possible way.

If your unit is movable, it will be collected from the practice. If it is permanently installed, it will be picked up curbside at your address by appointment.

WARNING

Before disassembling and disposing of the device, all parts must be properly prepared (cleaned, disinfected, sterilized).

Other countries

For country-specific information on disposal, contact your local dental dealer.

IMPORTANT

Operators of equipment with storage functions for customer and patient data are responsible for deleting all personal data before disposing of the equipment.

13.1 Batteries



Please dispose the batteries according to the disposal regulations and legal requirements applicable in your country.

Prior to disposal, remove the following batteries:

- Batteries in the foot control
- Lithium battery in the X-Smart Pro/Pro+

13.2 Accessories

Contra-angle handpiece and handpiece sleeve incl. touch button of the finger switch can be disposed of in household waste.

Disinfect or sterilize the parts prior to disposal.

We reserve the right to make any alterations which may be required due to technical improvements.

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