

# STORZ

**KARL STORZ—ENDOSKOPE**

**en**    **Instructions for use**  
**UNIDRIVE Select**



08-2024

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# 1 General information

## 1.1 Read the instructions for use

If the instructions for use are not followed, patients, users, and third parties may be injured or the product may be damaged.

- ▶ Read the instructions for use carefully and follow all the safety notes and warnings.
- ▶ Read the reprocessing instructions carefully and follow all the safety notes and warnings. The reprocessing instructions can be downloaded from [www.karlstorz.com/ifu](http://www.karlstorz.com/ifu) by entering the item number.
- ▶ Keep the instructions for use and reprocessing instructions in a safe place.

## 1.2 Read the instructions for use of compatible products

If the instructions for use of compatible products are not followed, patients, users, and third parties may be injured or the product may be damaged.

- ▶ Read the instructions for use of the compatible products carefully and follow all the safety notes and warnings.
- ▶ Read the reprocessing instructions of the compatible products carefully and follow all the safety notes and warnings.

## 1.3 Scope

This instruction manual is valid for:

### Motor control units

Product name	Item number
UNIDRIVE Select	UM600

## 1.4 General signs and symbols

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

### Practical tip

-  This sign refers to useful and important information.

### Actions to be performed

Action to be carried out by several steps:

- ✓ Prerequisite that must be met before carrying out an action.
- 1. Step 1
  - ⇒ Interim result of an action
- 2. Step 2
  - ⇒ Result of a completed action

Actions in safety notes or in the case of a single step:

- ▶ Step 1

**Lists**

1. Numbered list
  - Unnumbered list, 1st level
  - Unnumbered list, 2nd level

## 1.5 Description of warning messages

To prevent any injury to persons or damage to property, the warnings and safety notes in the instructions for use must be observed. The warnings use the following levels of danger:

**▲ WARNING**

**WARNING**

Designates a possible imminent risk. If this is not avoided, it could lead to death or serious injuries.

**▲ CAUTION**

**CAUTION**

Designates a possible imminent risk. If this is not avoided, it could lead to minor injuries.

**NOTICE**

**NOTICE**

Designates a possibly harmful situation. If this is not avoided, the products could be damaged.

## 1.6 Abbreviations

Abbreviation	Explanation
ARTHRO	Arthroscopy
CT	Computed tomography
GYN	Gynecology
ENT	Ears, nose, and throat medicine
MRT	Magnetic resonance tomograph
NEURO	Neurosurgery
RFID	Radio frequency identification
SPINE	Vertebral column
URO	Urology
OMFS	Oral-maxillofacial surgery
CNS	Central nervous system

## 2 Normal use

### 2.1 Intended use

#### Motor control units

Motor control units are used to regulate and control motors for surgical interventions.

Motor control units do not have body contact.

### 2.2 Indications

The motor control unit is suitable for all application parts which need the energies for successful performance as described in the chapter “technical data” of the respective instruction for use.

### 2.3 Contraindications

The medical devices must not be used for interventions in direct contact with the CNS (central nervous system) and central circulatory system.

Furthermore, there are no contraindications for the use of the medical devices directly associated with the medical devices.

### 2.4 Clinical benefits

Motor control unit KARL STORZ UNIDRIVE Select regulates and controls the use of motors and further application parts for abrasive procedures in minimally invasive surgery. The modern procedures like spine, neuro, craniofacial and ENT surgery do not take place anymore without powered abrasion.

As the regulation and control is not directly situated in the motor but in a separate casing, it permits the user to let the regulation and control be performed by another person. Thereby the user can better concentrate on the procedure and does not have to do the regulation him/herself. Additionally, the motor is smaller as the regulation/control unit has not to be housed in the same casing.

With its two motor connections the motor control unit can be prepared with two motors at once. Thereby the user has just to switch between the motors without waiting for the necessary adjustments. A separate motor control unit helps the user to be more flexible and concentrated on the procedure.

The clinical benefit of subject device is indirect. Without being used with other system components, it is not intended either for diagnosis or for treatment diseases.

### 2.5 Residual risks

No residual risks directly related to the product were identified.

### 2.6 Target user populations

The medical device may only be used by doctors and medical assistants with a relevant specialist qualification.

### 2.7 Patient population

There are no restrictions in terms of patient groups for this product.

The product does not come into direct contact with the patient.



## 2.8 Intended conditions of use

The product may only be used in hospitals and doctors' offices in suitable ambient conditions, see chapter *Ambient conditions* [p. 24].

Condition	Operation
Frequency of use	One or more times a day
Length of use	Several minutes to several hours a day
Place of installation	Positioning on a level, vibration-free surface
Mobility	<ul style="list-style-type: none"><li>- Can be moved if placed on a cart.</li><li>- Can be swiveled if installed on ceiling supply units.</li></ul>

### 3 Safety and warning

#### **▲ WARNING**

##### **Danger due to non-observance of warnings and safety notes**

This chapter contains warnings and safety notes structured according to hazards and risks.

- ▶ Carefully read and observe all warnings and safety notes.
- ▶ Follow the instructions.

#### 3.1 Serious incidents

A 'serious incident' includes incidents which, directly or indirectly, had, could have had or could have any of the following consequences:

- Death of a patient, user, or another person
- Temporary or permanent serious deterioration in the medical condition of a patient, user, or another person
- A serious threat to public health
- ▶ The manufacturer and appropriate authority must be notified of all serious incidents.

#### 3.2 Correct handling and product testing

If the product is not handled correctly, patients, users, and third parties may be injured.

- ▶ Only persons with the necessary medical qualification and who are acquainted with the application of the product may work with it.
- ▶ Check that the product is suitable for the procedure prior to use.
- ▶ Check the product for the following properties, for example, before and after every use:
  - Functionality
  - Damage
  - Changes to the surface

For detailed inspection criteria, see section *Inspecting the product*.

- ▶ Do not continue to use damaged products.
- ▶ Dispose of the product properly; see *Disposing of the product*.

#### 3.3 Product not clean

The product is not clean when delivered. The use of products that have not been cleaned poses a risk of infection for patients, users, and third parties.

- ▶ Reprocess the product in line with the reprocessing instructions before initial use and every subsequent use.

#### 3.4 Combination with other components

The use of unauthorized devices and components or unauthorized changes to the product can result in injuries.

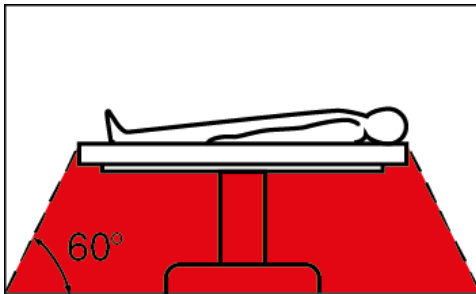
Additional devices connected to medical electrical equipment must comply with the relevant IEC or ISO standards. Furthermore, all configurations must comply with the requirements for medical electrical systems. If additional devices are connected to medical electrical equipment, a medical system is configured that must satisfy the requirements for medical electrical systems. Local regulations take precedence over IEC and ISO standards. If you have any questions, please contact your local KARL STORZ representative or technical customer support.

- ▶ Only combine the product with devices and components that the manufacturer has approved for combined use, see chapter *Possible combinations*.
- ▶ Only use devices and components that have standardized interfaces and do not breach the normal use of the product.
- ▶ Connect only devices that comply with IEC 60601 to signal inputs and signal outputs.
- ▶ Observe the instruction manuals and interface specifications of the devices and components used in combination.
- ▶ Comply with national and local regulations.
- ▶ Only make changes to the product if these changes are approved by KARL STORZ.

### 3.5 Risk of explosion and fire

The product can generate sparks, which cause combustible or flammable gases and liquids to ignite or explode. This may cause injuries to patients, users, and third parties.

- ▶ When using explosive narcotic gases: Operate the product outside of the hazard zone.



- ▶ Do not use the product in the presence of flammable anesthetics.
- ▶ The product must not be operated in oxygenated environments.
- ▶ Only connect or disconnect the power plug to or from the power supply outside explosive atmospheres.

### 3.6 Dangers from electrical current

An improper power supply may cause an electric shock and injure patients, users, or third parties. All electrical installations of the operating room in which the device is connected and used must meet the applicable IEC standards.

- ▶ Use either the power cord supplied by KARL STORZ or a power cord which has the same properties and which bears a national mark of conformity.
- ▶ The product may only be operated with the line voltage stated on the rating plate.
- ▶ Position the product appropriately so that the power cord can be unplugged at any time. The product is only voltage-free when the mains plug has been disconnected.
- ▶ The product's ground line should be installed by a qualified electrician.
- ▶ Ensure potential equalization according to the applicable national rules and regulations.
- ▶ To ensure reliable protective earth grounding, connect the product to a properly installed socket that is approved for use in the operation room.
- ▶ Connect the product to a power supply with protective conductor.

In the case of electrical products, individual components or the product itself may be live. Live parts can cause electric shocks in the event of contact and injure patients, users, and third parties.

- ▶ Do not open the product.
- ▶ Have servicing carried out by KARL STORZ or a company authorized by KARL STORZ.

- ▶ Do not touch the output jacks of the product and the patient at the same time during use
- ▶ Always pull out the mains plug before carrying out any cleaning and maintenance work.

During operations, explosive anesthetic gases are used. If sparks occur, this may trigger explosions.

- ▶ Only connect or disconnect the power plug to or from the power supply outside explosive atmospheres.

### **3.7 Damage due to ingress of liquid in electrical components**

In the case of electrical products, individual components or the product itself may be live. Liquid ingress into an electrical product may result in a short circuit or an unintentional transfer of current. The product is damaged as a result and patients, users and third parties may be injured.

- ▶ Do not store liquids near the product or on the product.
- ▶ If liquid has entered the product, pull out the plug and allow the product to dry completely.

### **3.8 Electromagnetic interference**

Medical electrical devices are subject to special precautions regarding electromagnetic compatibility. If other devices (e.g., MRT, CT, diathermy, electrocautery, or RFID) emit electromagnetic radiation, the product's functionality may be impaired. High-frequency (HF) communication equipment can affect electrical medical devices and impair their performance.

- ▶ During installation and operation of the product, please take note of the information on electromagnetic compatibility, see chapter *Electromagnetic compatibility*.

### **3.9 Failure of products**

The product may fail during use.

- ▶ Have a replacement product ready for each application or plan for an alternative surgical technique.

### **3.10 Observing ambient conditions**

If the device is stored, transported, operated or reprocessed under unsuitable conditions, patients, users or third parties may be injured and the device can be damaged.

- ▶ Observe the ambient conditions listed in the instructions for use and reprocessing.

### **3.11 Functionality of the touch screen**

If the functionality of the touch screen is limited, the product cannot be used correctly. Patients, users, and third parties may be injured.

- ▶ Do not use the product if the touch screen is defective.
- ▶ Do not tap the touch screen in several places at the same time.

## 4 Product description

### 4.1 Description of operation

The KARL STORZ motor system UNIDRIVE Select is universally applicable in the ARTHRO, GYN, HNO, NEURO, SPINE, and URO application areas due to the use of separate brushless high-performance electronic motors or brushless high-performance electronic motors integrated in the handpiece.

All settings and functions can be controlled via the integrated touch screen. The selectable settings and functions appear as "plain text" on the display. Device information, for example, can be displayed by simply activating the relevant menu field. Troubleshooting in the OR is easier since any faults that may occur, a motor fault for example, are displayed automatically.

Two motors can be connected simultaneously via two connections, e.g., two drill handpieces.

The motor system is characterized by the following features:

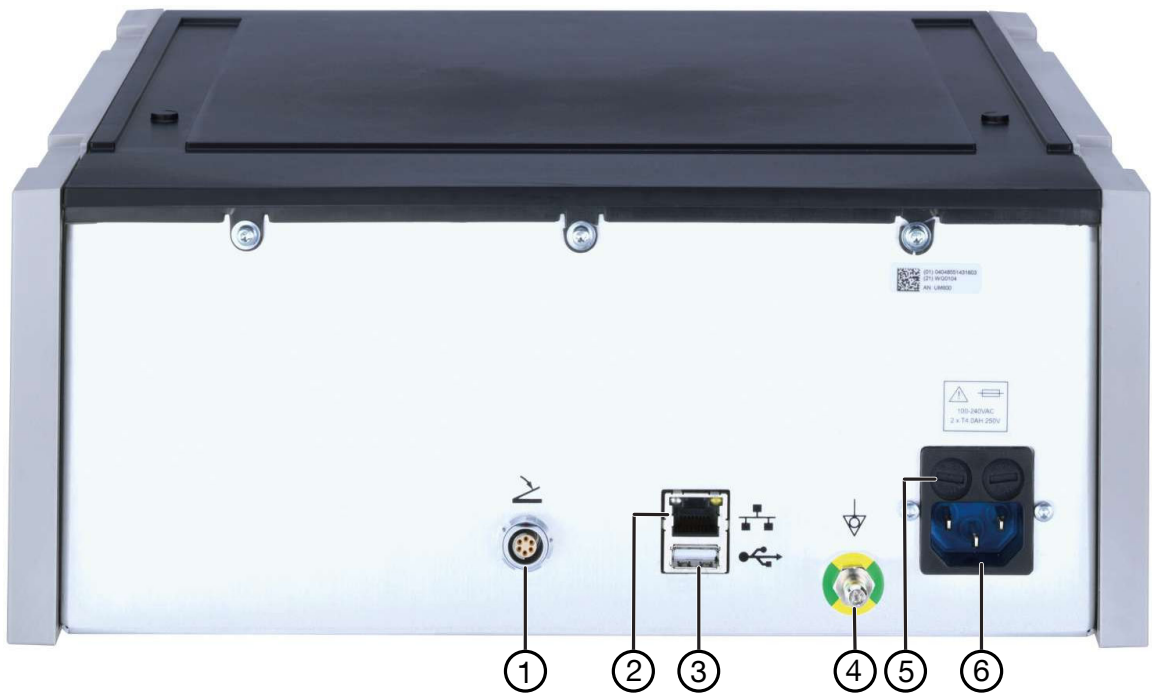
- Automatic detection of connected motors
- Infinitely adjustable speed range
- 2 motor outputs
- Preselectable max. speed
- Constant high motor power over the entire speed range
- Processor-controlled speed and motor torque
- Modular coolant and irrigation pump (ENDOMAT SELECT UP220) with homogenous irrigation efficiency over the entire irrigation power range
- Optimized user control via touch screen
- Easily and clearly readable operating elements with color screen
- Pump can be controlled via footswitch
- 2 footswitch inputs
- Wired and wireless footswitch

## 4.2 Product overview



*UNIDRIVE Select – front view*

- |   |                  |   |   |
|---|------------------|---|---|
| 1 | Standby button   | 3 | Connection sockets for motor and hand-piece |
| 2 | TFT touch screen | 4 | Connection socket for footswitch            |



UNIDRIVE Select – rear view

- |   |   |   |                                  |
|---|---|---|----------------------------------|
| 1 | Connection socket for footswitch                                    | 4 | Potential equalization connector |
| 2 | Ethernet interface (KARL STORZ HIVE) for service and ENDOMAT SELECT | 5 | Line fuse holder                 |
| 3 | USB interface for service and connection to S-PILOT (UP501)         | 6 | Power socket                     |

### 4.3 Possible combinations

It is recommended that the suitability of the products for the intended procedure be checked prior to use. Please note that the described products in this medium may not be available in all countries due to different regulatory requirements.

The product can be combined with the following components:

Product name	Item number
Perforator Handpiece	362640
Software License	UM602
High-Speed Micro Motor, small	20363033
High-Speed Handpiece, angled	362681, 362682, 362683, 362685, 362680
High-Speed Handpiece, straight	362645
Craniotome Attachment	362645
Instruments	see chapter <i>Appendix</i> [p. 59]

Product name	Item number
Software License	UM601, UM602, UM603
High-Speed Micro Motor, large	20362033
High-Speed Handpiece, angled	362681, 362682, 362683, 362685, 362680
High-Speed Handpiece, straight	362645
Craniotome Attachment	362645
Instruments	see chapter <i>Appendix</i> [p. 59]
Software License	UM601, UM602, UM603
INTRA Micro Motor 80k	20261033
INTRA Handpiece	262570, 262572, 262571
Instruments	see chapter <i>Appendix</i> [p. 59]
Software License	UM601
Two-Pedal Footswitch, one-stage	UF201
Two-Pedal Footswitch, one-stage, wireless	UF201W
One-Pedal Footswitch, two-stage	UF102
One-Pedal Footswitch, two-stage, wireless	UF102W
DrillCut-X II Spine Handpiece	28712050
Instruments	41201FD, 41301FD, 41301D
Software License	UM603
DrillCut-X II Shaver Handpiece with shaver blades and sinus burr	40712050, 40712055 see chapter <i>Appendix</i> [p. 59] see chapter <i>Appendix</i> [p. 59]
Software License	UM601
DrillCut-X II-35 Shaver Handpiece with shaver blades and sinus burr	40712035, 40712535 see chapter <i>Appendix</i> [p. 59] see chapter <i>Appendix</i> [p. 59]
Software License	UM601
Micro Ear Burr	460000
Instruments	see chapter <i>Appendix</i> [p. 59]
Software License	UM601
ENDOMAT SELECT with patch cable	UP220 WO10275
DrillCut-X ARTHRO with adaptor with shaver blades and drill	28200DX 28200DXA see chapter <i>Appendix</i> [p. 59]
Software License	UM605
DrillCut-X URO with shaver blades	27702050 27056LM
Software License	UM604
DrillCut-X GYN with shaver blade	26702050 see chapter <i>Appendix</i> [p. 59]
Software License	UM606
S-Pilot	UP501



Product name	Item number
Control Cable	20701071
Software License	UM604

## 4.4 Technical data

UNIDRIVE Select	
Operating voltage (AC)	100–240 V
Operating frequency	50/60 Hz
Mains fuse	2 x T 4.0 AH 250 V, IEC 127 format
Power consumption	200 VA
Electrical protection class	I
Applied part type according to IEC 60601-1	BF
Degree of protection acc. to IEC 60259	IPX1 (protection from dripping water)
Dimensions (L x H x W)	380 x 125 x 305 mm
Weight	4.3 kg
Operating mode (in connection with instrument)	Intermittent duty

INTRA drill handpiece	
Minimum speed	2,000 rpm ( $\pm 10\%$ )
Maximum speed	80,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	80,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

High-speed burr 80k	
Minimum speed	2,000 rpm ( $\pm 10\%$ )
Maximum speed	80,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	80,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

High-Speed Micro Motor, large	
Minimum speed	2,000 rpm ( $\pm 10\%$ )
Maximum speed	80,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	80,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>Perforator handpiece</b>	
Minimum speed	200 rpm ( $\pm 10\%$ )
Maximum speed	1,250 rpm ( $\pm 10\%$ )
Start-up maximum speed	1,250 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>Micro ear burr</b>	
Minimum speed	2,000 rpm ( $\pm 10\%$ )
Maximum speed	12,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	12,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>DrillCut-X II – shaver</b>	
Minimum speed	300 rpm ( $\pm 10\%$ )
Maximum speed	7,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	7,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation

<b>DrillCut-X II – sinus burr 12k</b>	
Minimum speed	300 rpm ( $\pm 10\%$ )
Maximum speed	12,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	12,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>DrillCut-X II-35 – shaver</b>	
Minimum speed	1,500 rpm ( $\pm 10\%$ )
Maximum speed	10,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	10,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation

<b>DrillCut-X II-35 – sinus burr 12k</b>	
Minimum speed	1,500 rpm ( $\pm 10\%$ )
Maximum speed	12,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	12,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>DrillCut-X II-35 – sinus burr 35k</b>	
Minimum speed	1,500 rpm ( $\pm 10\%$ )
Maximum speed	35,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	35,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>DrillCut-X II Spine</b>	
Minimum speed	300 rpm ( $\pm 10\%$ )
Maximum speed	12,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	12,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation

<b>Saws</b>	
Minimum speed	1,000 rpm ( $\pm 10\%$ )
Maximum speed 1	20,000 rpm ( $\pm 10\%$ )
Maximum speed 2	15,000 rpm ( $\pm 10\%$ )
Start-up maximum speed 1	20,000 rpm ( $\pm 10\%$ )
Start-up maximum speed 2	15,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation

<b>Dermatomes</b>	
Minimum speed	1,000 rpm ( $\pm 10\%$ )
Maximum speed	8,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	8,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation

<b>DrillCut-X ARTHRO – shaver</b>	
Minimum speed	500 rpm ( $\pm 10\%$ )
Maximum speed	5,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	5,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation








DrillCut-X ARTHRO – drill	
Minimum speed	1,000 rpm ( $\pm 10\%$ )
Maximum speed	8,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	8,000 rpm ( $\pm 10\%$ )
Rotation mode	Rotation










DrillCut-X URO	
Minimum speed	500 rpm ( $\pm 10\%$ )
Maximum speed	5,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	5,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation

DrillCut-X GYN	
Minimum speed	500 rpm ( $\pm 10\%$ )
Maximum speed	5,000 rpm ( $\pm 10\%$ )
Start-up maximum speed	5,000 rpm ( $\pm 10\%$ )
Rotation mode	Oscillation





## 4.5 Symbols employed


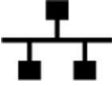


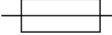
### 4.5.1 Symbols on the packaging

Symbol	Meaning
	Manufacturer
	Date of manufacture
	Medical device
	Article no.
	Serial number
	Number of products in the product packaging
	Unique Device Identifier



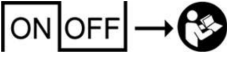



Symbol	Meaning
	Consult the printed or electronic instructions for use
	Note for the user to consult the instructions for use for important cautionary information such as warnings and precautions.
	Fragile, handle with care
	Keep dry
	Temperature limit
	Humidity limit
	Air pressure limit
	Federal (USA) law restricts this device to sale by or on the order of a physician.
	CE marking With this marking, the manufacturer declares the conformity of the product with the applicable EU regulations. A code number after the CE mark indicates the responsible notified body.  The EU regulations relevant to the product can be found in the EU Declaration of Conformity, which can be requested from KARL STORZ.

#### 4.5.2 Symbols on the product

Symbol	Meaning
	Follow the instructions for use. The color may differ on the product. The symbol is black/white on the packaging label.
	Ready/standby button
	Applied part type BF
	Connection socket, e.g., for footswitch




Symbol	Meaning
	Potential equalization connector
	Ethernet
	USB
	Dangerous voltage Danger of an electric shock!
	Fuse

#### 4.5.3 Symbols on the type plate

Symbol	Meaning
	Manufacturer
	Federal (USA) law restricts this device to sale by or on the order of a physician.
	Periodic intermittent operation, see instructions for use
	Prevention of pollution by electronic devices
	Separate collection of electrical and electronic devices. Do not dispose of in household refuse.
	CE marking With this marking, the manufacturer declares the conformity of the product with the applicable EU regulations. A code number after the CE mark indicates the responsible notified body.  The EU regulations relevant to the product can be found in the EU Declaration of Conformity, which can be requested from KARL STORZ.

#### 4.5.4 Symbols on the user interface

Symbol	Meaning
	Forward mode
	Reverse mode
	Oscillation
	Two-pedal footswitch
	One-pedal footswitch
	Settings
	Cancel
	Confirm
	Browse back
	Browse up

Symbol	Meaning
	Browse down
	Increase value
	Decrease value

## 4.6 Ambient conditions

Storage and transport conditions	
Temperature	-15°C ... +60°C (5°F ... 140°F)
Relative humidity (non-condensing)	5–85%
Air pressure	600–1,080 hPa
Average life cycle	5 years

Operating conditions	
Temperature	10°C ... 30°C (50°F ... 86°F)
Relative humidity	30–75%
Air pressure	700–1,080 hPa
Max. operating altitude	3,000 m



## 5 Preparation

### 5.1 Unpacking the product

1. Carefully remove the product and accessories from the packaging.
2. Check the delivery for possible damage.
3. In the case of damage, hidden defects, and short deliveries, document their nature and extent and contact the manufacturer or supplier immediately.
4. Keep packaging for further transport.

### 5.2 Reprocessing the product

- ▶ Reprocess the product in line with the reprocessing instructions before using it.

### 5.3 Testing the product

- ▶ If a software update has been carried out, check the configuration of the product.

### 5.4 Setting up the product

#### **▲ WARNING**

##### **Overheating! Risk of fire!**

Insufficient ventilation can cause an internal build-up of heat, resulting in a safety shut-down. If the product overheats, there is a risk of fire. Patients, users, and third parties may be injured.

- ▶ Ensure that there is sufficient air circulation.
- ▶ Keep air inlets and outlets free.

#### **▲ CAUTION**

##### **Breakable glass! Risk of injury!**

The glass of the screen will break if the product is dropped or sustains a significant impact. Patients, users or third parties can injure themselves on broken glass.

- ▶ Do not touch broken glass.
- ▶ Do not touch the glass parts of the product.
- ▶ Remove small glass parts from the product.
- ▶ Have the glass replaced by qualified service personnel.

This product and connected components may only be used in medical rooms with electrical installations that conform to applicable national regulations.

1. Set the product down on a horizontal, flat surface or a video cart.
2. Install the product out of reach of patients.

## 5.5 Connecting the product

1. Connect the potential equipotential cable.



2. Connect the power cord. Push the power plug fully into the power socket.



⇒ The standby button lights up white.

3. Connect the Ethernet cable for combination with ENDOMAT SELECT (UP220).



4. Connect the footswitch cable to the front or rear of the device. To do this, align the red dot on the cable with the red dot on the footswitch socket.



5. URO applications: Connect the S-PILOT control cable (20701071).



6. Connect the application instrument cables to the motor outputs. To do this, align the red dot on the cable with the red dot on the relevant socket.

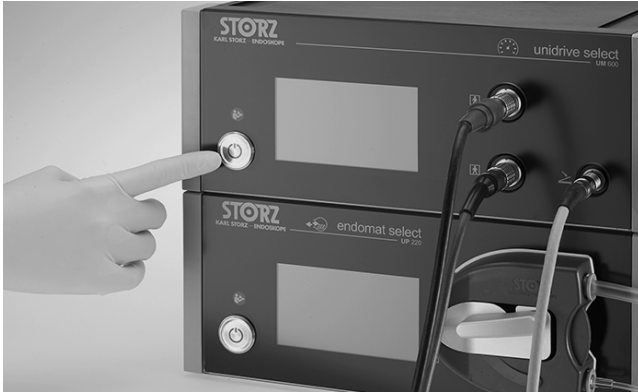


7. To avoid damaging the cables, pull on the plug when removing the cables.

## 5.6 Putting the product into operation

- ✓ The footswitch is connected.
- ✓ An application instrument is connected.
- ✓ Applications for ENT, NEURO, SPINE, ARTHRO, GYN: The ENDOMAT SELECT (UP220) is connected.
- ✓ Applications for URO: The S-PILOT (UP501) is connected.

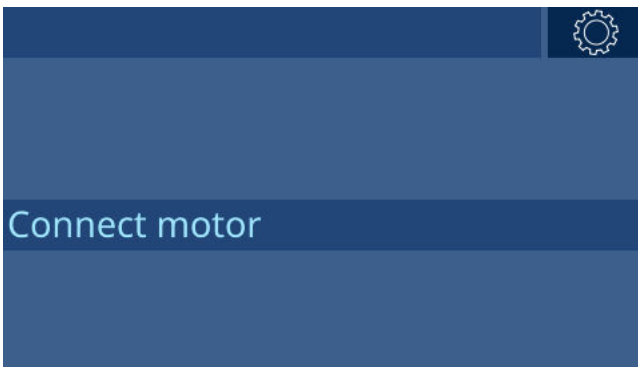
1. Press the standby button to switch the device to ready mode.



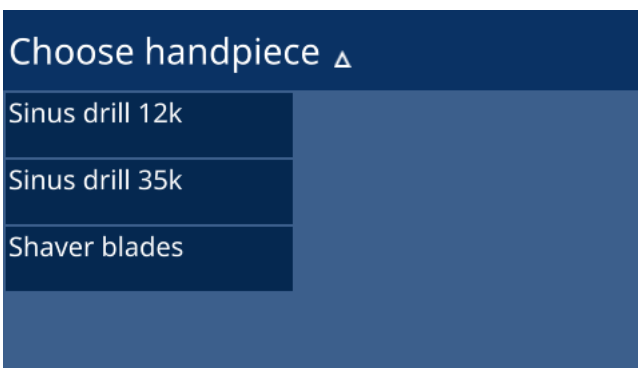
- ⇒ The standby button lights up green; after 40 to 50 seconds a signal sounds and the following start screen appears:



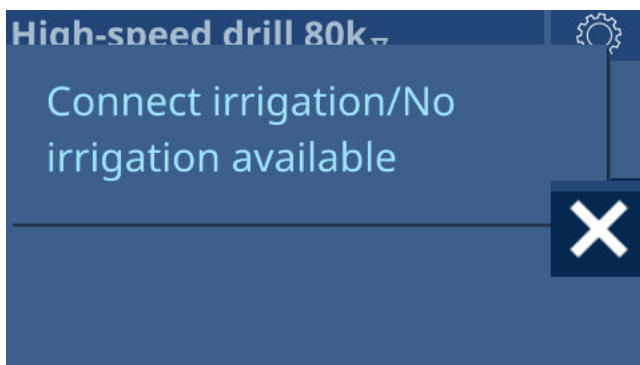
- ⇒ If no application instrument or motor is connected, the following start screen appears:



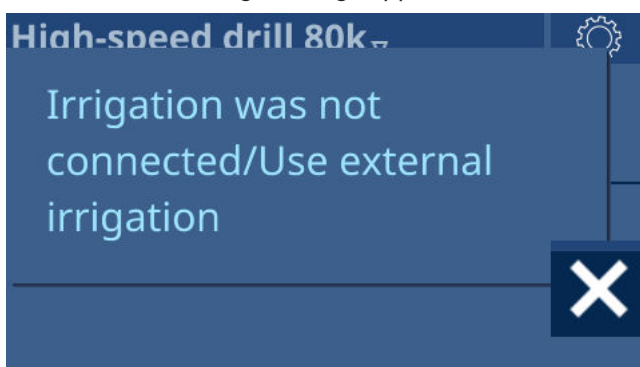
- ⇒ If an application instrument/motor is connected, a screen appears prompting you to select the handpiece. For the DrillCut-X II-35, for example, this appears:



2. Tap the **Arrow** to expand the handpiece selection.
3. Select the desired handpiece.  
⇒ The following message appears:



4. Put the ENDOMAT SELECT (UP220) into operation, see chapter *Putting the pump into operation* [p. 29].
5. Tap the **Arrow** symbol again to collapse the handpiece selection.  
⇒ The selected handpiece appears as a presetting when the handpiece selection is expanded again.
6. If a KARL STORZ pump is not being used, close the message.  
⇒ The following message appears:



7. Put the pump used into operation.
8. Change the language, see chapter *Setting the language* [p. 44].

## 5.7 Putting the pump into operation

### **⚠ WARNING**

#### **Non-sterile product! Risk of infection!**

Reusable cartridges and tubes are not supplied sterile. The use of non-sterile products poses a risk of infection for patients, users, and third parties.

- ▶ Inspect the product for visible contamination before use.
- ▶ Reprocess the product before initial use and before and after all subsequent applications. Use validated methods.
- ▶ Do not use contaminated products.

**⚠ WARNING****Disposable products! Risk of infection!**

The reprocessing of disposable products can lead to infections in patients, users and third parties as well as damage to the product.

- ▶ Never reprocess disposable products.
- ▶ Dispose of disposable products in accordance with the applicable regulations.

**⚠ WARNING****Expiry date passed! Risk of infection!**

- ▶ Check the expiry date.
- ▶ Check the packaging for damage.
- ▶ Never use products that have passed the expired expiry date or have damaged or accidentally opened packaging but dispose of them properly.

✓ The UNIDRIVE SELECT is switched on and connected to the ENDOMAT SELECT (UP220).

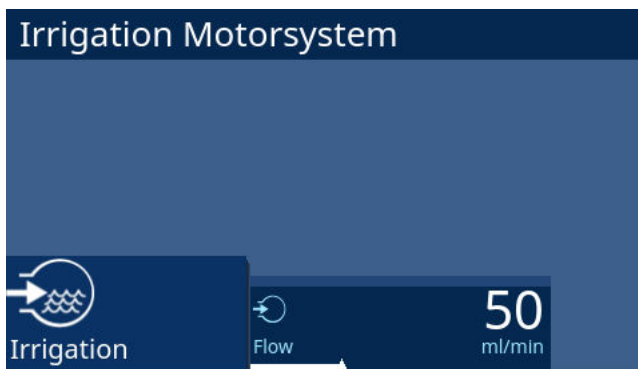
1. Install the tubing set on the ENDOMAT SELECT (UP220). Make sure that the pump tubes are not crushed.



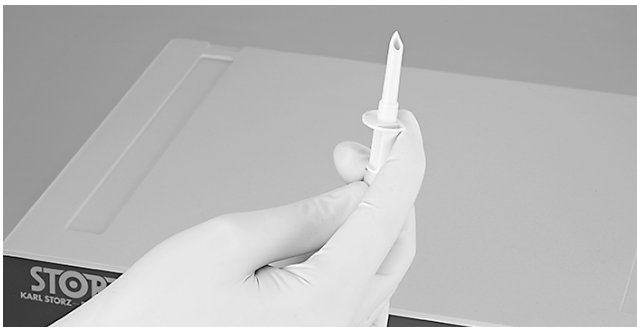
2. Turn the pump lever of the tubing set counterclockwise.



⇒ The following screen appears on the ENDOMAT SELECT:



3. Connect the tubing ends with the irrigation bag (puncture needle) or with the irrigation connector on the instrument (LUER lock).



4. To remove the tubing set, turn the pump lever clockwise to the 9 o'clock position.

## 6 Application

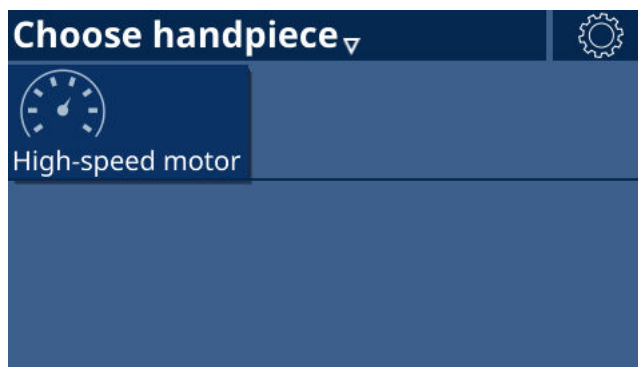
### 6.1 Selecting the handpiece

In the following, selected examples are used to illustrate how handpieces are selected. Other handpieces can be chosen accordingly.

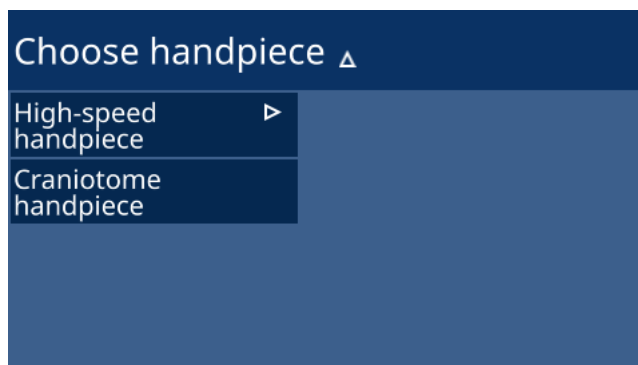
#### 6.1.1 High-speed micro motor

1. Connect the motor, see chapter *Connecting the product* [p. 26].

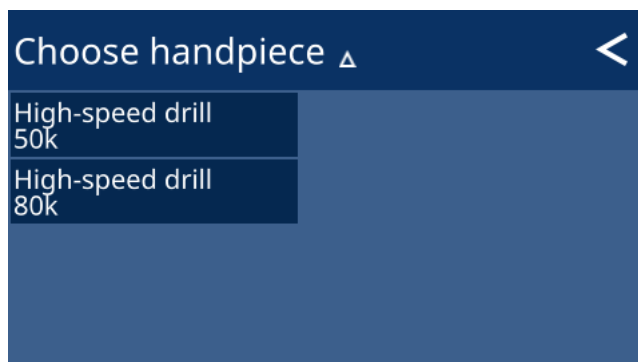
⇒ The following screen appears:



2. Tap on the **Arrow** to expand the handpiece selection.



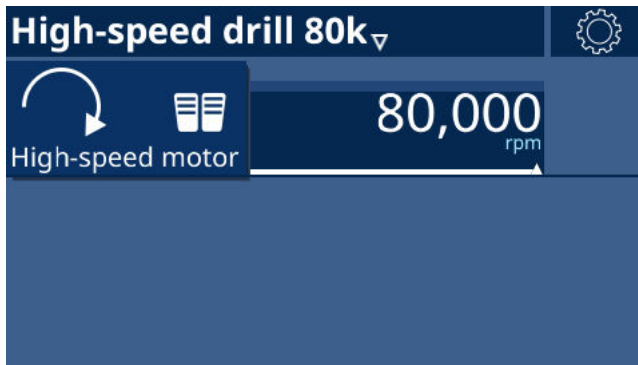
3. Select the **High-speed handpiece** to call up the high-speed burr selection.





- Select the desired burr, e.g. **High-speed burr 80 k**.

⇒ The following screen appears:



- Set the speed, see chapter *Setting the speed* [p. 38].

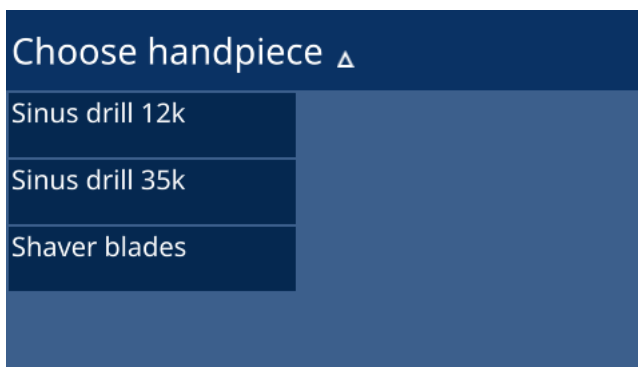
### 6.1.2 DrillCut-X II-35

- Connect the motor, see chapter *Connecting the product* [p. 26].

⇒ The following screen appears:

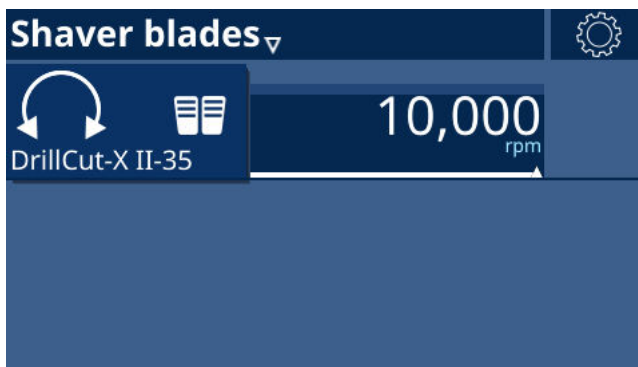


- Tap on the **Arrow** to expand the handpiece selection.



3. Select the desired handpiece.

⇒ The following screens appear:



4. Set the speed, see chapter *Setting the speed* [p. 38].

### 6.1.3 INTRA motor

1. Connect the motor, see chapter *Connecting the product* [p. 26].  
⇒ The following screen appears:



2. Tap on the **Arrow** to expand the handpiece selection.

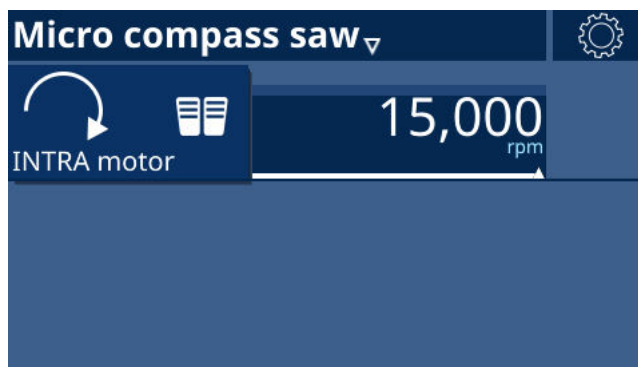


3. Select the **Micro saws** to call up the saw selection.



- Select the desired saw, e.g. **Micro compass saw**.

⇒ The following screen appears:



- Set the speed, see chapter *Setting the speed* [p. 38].

#### 6.1.4 Micro ear burr

- Connect the motor, see chapter *Connecting the product* [p. 26].

⇒ The following screen appears:

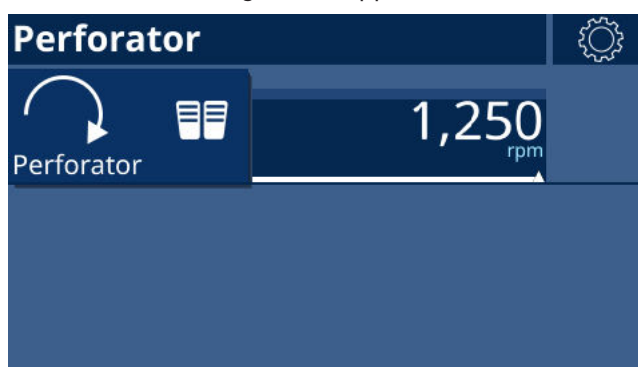


- Set the speed, see chapter *Setting the speed* [p. 38].

#### 6.1.5 Perforator

- Connect the motor, see chapter *Connecting the product* [p. 26].

⇒ The following screen appears:



- Set the speed, see chapter *Setting the speed* [p. 38].

### 6.1.6 DrillCut-X ARTHRO

1. Connect the adaptor (28200DXA) to the DrillCut-X ARTHRO (28200DX).
2. Connect the motor to the UNIDRIVE Select using the adaptor (28200DXA).  
⇒ The following screen appears:



3. Select the desired mode.
4. Set the speed, see chapter *Setting the speed* [p. 38].

### 6.1.7 DrillCut-X II URO

1. Connect the motor, see chapter *Connecting the product* [p. 26].  
⇒ The following screen appears:



2. Select the **Urology** discipline.
3. Set the speed, see chapter *Setting the speed* [p. 38].

### 6.1.8 DrillCut-X II GYN

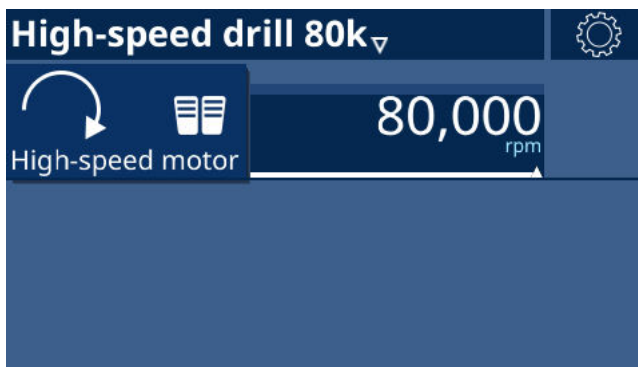
1. Connect the motor, see chapter *Connecting the product* [p. 26].  
⇒ The following screen appears:



2. Select the **Gynecology** discipline.
3. Set the speed, see chapter *Setting the speed* [p. 38].

## 6.2 Setting the speed

1. Select the handpiece, e.g., **High-speed burr 80k**, see chapter *Selecting the handpiece* [p. 32].  
⇒ The handpiece screen appears with the maximum speed value:



2. Tap the speed value.  
⇒ The **Minus** button appears:



3. Tap the **Minus** button to reduce the speed value.

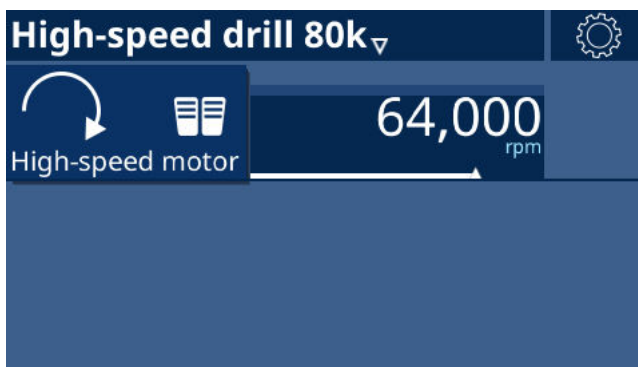
⇒ The **Plus** button appears:



4. Set the desired speed value using the buttons.
5. Alternatively, hold the speed value down and use the slider to set the speed value.



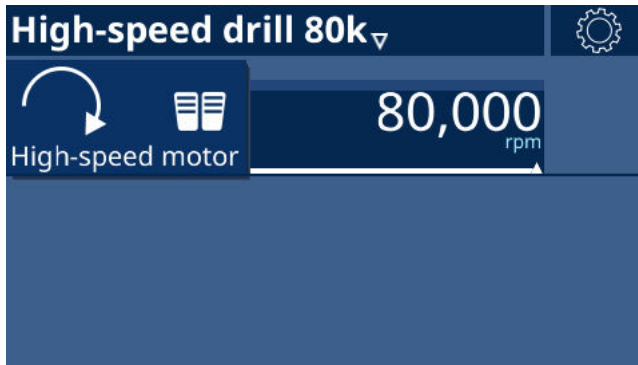
6. Release the slider.
- ⇒ The set speed value appears on the screen after a few seconds.



## 6.3 Changing the direction of rotation

1. Select the handpiece, e.g., **High-speed burr 80k**, see chapter *Selecting the handpiece* [p. 32].

- The handpiece screen appears:

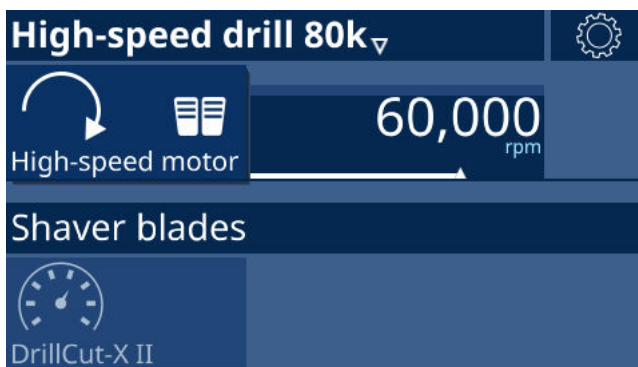


- Tap on the **Forward** button to change the direction of rotation.

## 6.4 Selecting the motor connection

Two application instruments operated within various speed ranges can be connected up to the device. You can switch between the motor connections during application.

- Two connecting application instruments, see chapter *Connecting the product* [p. 26].
- Select the first handpiece, e.g. **High-speed burr 80k**, see chapter *Selecting the handpiece* [p. 32].
  - ⇒ The speed setting of the selected handpiece appears. The second handpiece is shown below.



- Tap on the button of the second handpiece.
  - ⇒ The second motor connection is active.
  - ⇒ The speed setting of the second handpiece appears.
- Alternatively, press the button on the footswitch for longer than 2 seconds to switch between the two motor connectors, see chapter *Operating the two-pedal footswitch* [p. 41].

## 6.5 Setting the irrigation flow

### **▲ WARNING**

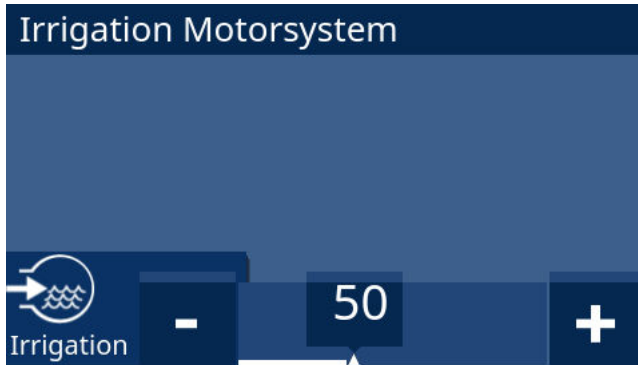
#### **Insufficient irrigation! Risk of injury!**

When rotary instruments are used, the instruments may smear, clog or move erratically if not irrigated sufficiently. As a result, increased heat may be generated, causing injury to patients, users or third parties.

- ▶ Please ensure sufficient irrigation.



- ✓ The pump has been connected and put into operation.
- 1. Tap on the irrigation flow value on the ENDOMAT SELECT screen.
  - ⇒ The value appears as a slide bar:



- 2. Move the slide bar to set the desired value.
- 3. Alternatively, set the irrigation flow using the footswitch, see chapter *Operating the two-pedal footswitch* [p. 41].

## 6.6 Operating the footswitch

The footswitches have different functions depending on the discipline, see chapter *Footswitch functions according to discipline* [p. 67].

### 6.6.1 Operating the two-pedal footswitch



*Two-pedal footswitch, wired*



*Two-pedal footswitch, wireless*

1. Press the left pedal for longer than 2 seconds.  
⇒ The irrigation flow starts with the preset value.
2. Release the left pedal.  
⇒ The irrigation flow stops.
3. Press the left pedal briefly.  
⇒ The irrigation flow is either increased or reduced, depending on the setting see chapter *Setting the pedal control* [p. 45].
4. Press the right pedal.  
⇒ This speed varies depending on the pedal position.  
⇒ The handpiece is started and the pump runs with the defined irrigation flow rate.



## 6.6.2 Operating the one-pedal footswitch



*One-pedal footswitch, wired*

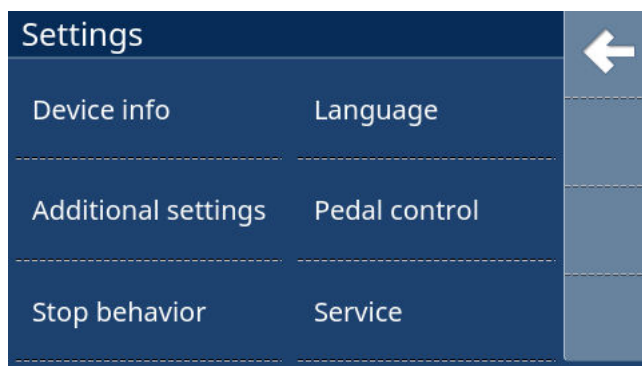


One-pedal footswitch, wireless

1. Press the pedal until you feel some initial resistance.
  - ⇒ The irrigation flow starts with the preset value.
2. Press the pedal beyond the point of resistance.
  - ⇒ The irrigation flow continues with the preset flow rate.
  - ⇒ The instrument starts with the preset mode and speed.

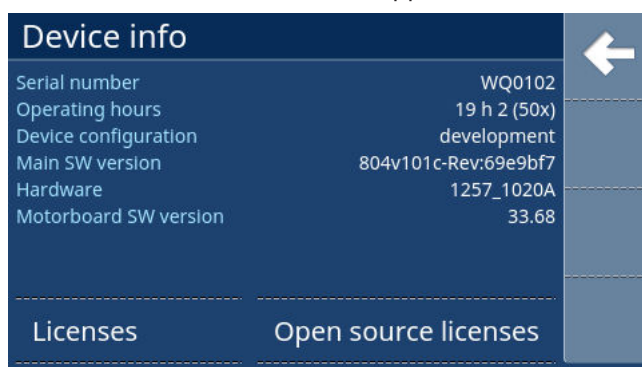
## 6.7 Settings

1. Tap on the **Settings** button on the top right of the touchscreen.
  - ⇒ The **Settings** screen appears with the following sub-menus:



### 6.7.1 Device information

1. In the **Settings** screen, tap on the **Device info** sub-menu.
  - ⇒ The **Device info** screen appears:



2. Browse back through the screen with the **Arrow**.  
⇒ The **Settings** screen appears.

### 6.7.2 Setting the language

The language is set to English as the default.

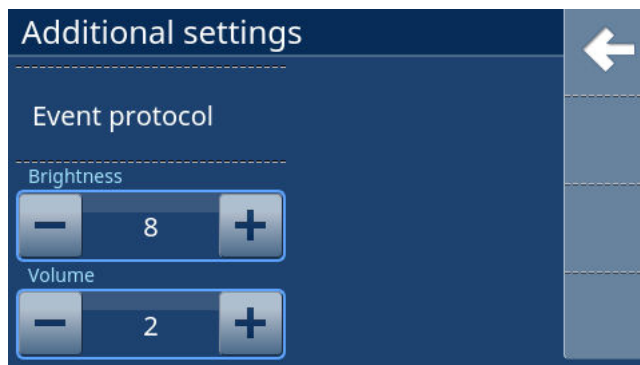
1. In the **Settings** screen, tap on the **Language** sub-menu.  
⇒ The **Language** screen appears:



2. Tap on the language you want to use.  
⇒ The language is saved.
3. Browse back through the screen with the **Arrow**.  
⇒ The **Settings** screen appears.

### 6.7.3 Setting the brightness and volume

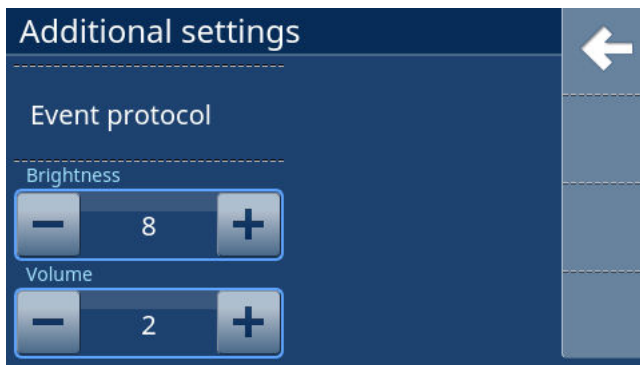
1. In the **Settings** screen, tap on the Further settings sub-menu.  
⇒ The **Further settings** screen appears:



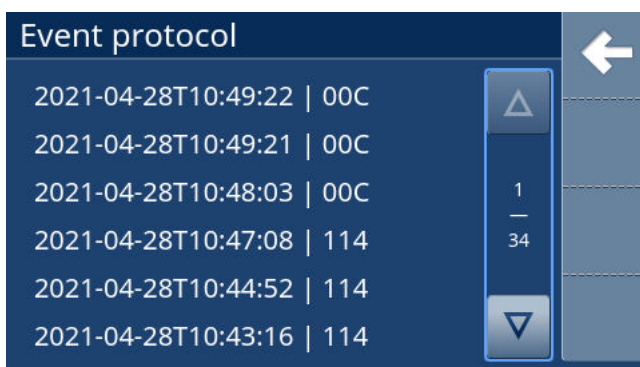
2. Adjust the **Brightness** and the **Volume** with the **Plus** and **Minus** buttons.
3. Browse back through the screen with the **Arrow**.  
⇒ The **Settings** screen appears.

### 6.7.4 Calling up the event log

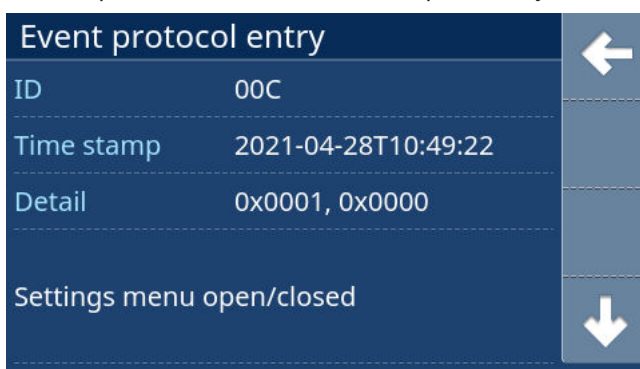
- In the **Setting** screen, tap on the **Further settings** sub-menu.  
⇒ The **Further settings** screen appears:



- Tap on the **Event log** sub-menu.  
⇒ The **Event log** screen appears:



- Tap on the desired line to call up the entry on the event.

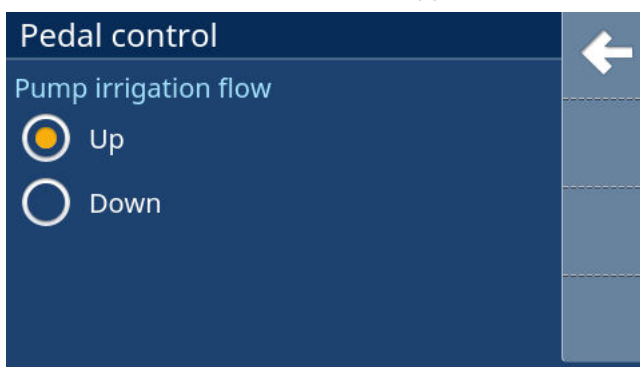


### 6.7.5 Setting the pedal control

The pedal control determines how the set irrigation flow behaves when the left pedal is pressed briefly.

1. In the **Settings** screen, tap on the **Pedal control** sub-menu.

⇒ The **Pedal control** screen appears:



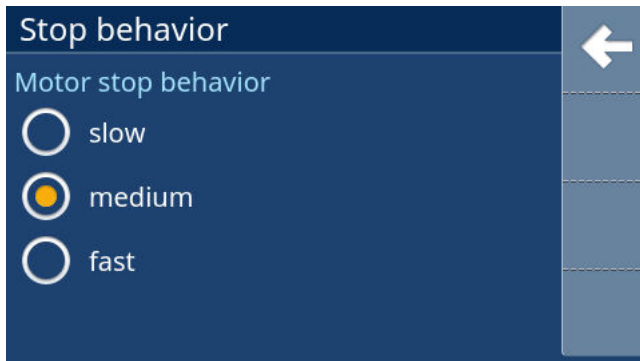
2. Set the pedal control as follows:

- **Up:** The value is increased by 10 ml/min up to the maximum value and starts again with the lowest setting 10 ml/min.
- **Down:** The value is reduced by 10 ml/min down to the lowest value and starts again with the highest setting.

### 6.7.6 Setting the motor stop behavior

1. In the **Settings** screen, tap on the **Stop behavior** sub-menu.

⇒ The **Stop behavior** screen appears:



2. Set the stop behavior of the motor.
  3. Browse back through the screen with the **Arrow**.
- ⇒ The **Settings** screen appears.

### 6.7.7 Service

The Service area is password-protected and can only be accessed by the KARL STORZ technical customer service or authorized persons.

## 6.8 Switching off the product

- ▶ Switch off the product with the stand-by button.



## 7 Maintenance, servicing, repairs, and disposal

### 7.1 Maintaining the product

**⚠ WARNING**

**Risk of injury due to product degradation!**

Patients, users and third parties may be injured as a result of product and accessory degradation.

- ▶ Shut down the product.
- ▶ Have the deficiencies repaired by persons authorized by KARL STORZ.

If they are not described in more detail here, maintenance activities may only be performed by KARL STORZ or by a company authorized by KARL STORZ.

#### 7.1.1 Maintenance

The following maintenance intervals are recommended:

Interval	Activity	To be performed by
annually	Safety test	KARL STORZ service technicians

### 7.2 Changing a fuse

**⚠ WARNING**

**Undesired current flow! Risk of injury!**

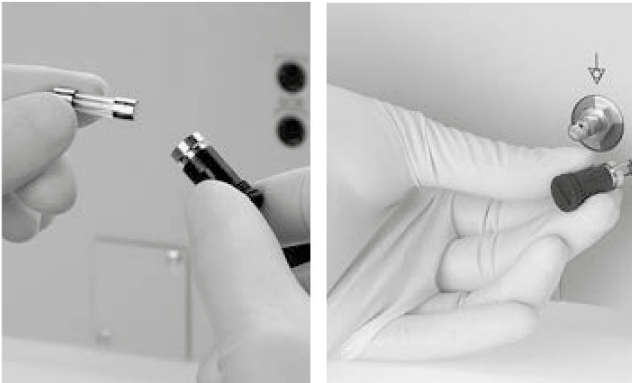
Live parts of the equipment can cause severe injuries due to electric shock.

- ▶ Do not open the housing.
  - ▶ Make sure that the connection to the power supply is disconnected.
  - ▶ Request a KARL STORZ service technician for service work.
- ✓ The product is switched off.
  - ✓ The power cord is disconnected from the product.
1. Remove the screw inserts on the power fuse holder with a screwdriver.





2. Remove the defective fuse.



3. Insert the new fuse. Only use fuses with the same fuse ratings, see chapter *Technical data* [p. 17].
4. Introduce the screw inserts into the power fuse holder again.
5. Connect the power supply again.



6. Switch on the product and check that it is working correctly.



## 7.3 Safety inspection in accordance with IEC 62353

### **⚠ WARNING**

#### **Risk of injury due to product degradation!**

Patients, users and third parties may be injured as a result of product and accessory degradation.

- ▶ Shut down the product.
- ▶ Have the deficiencies repaired by persons authorized by KARL STORZ.

Regardless of the national accident prevention regulations and testing intervals for medical devices, for this device safety checks must be performed as repeat inspections according to IEC 62353 and recorded by a qualified electrician at least once a year. Detailed specifications regarding the scope and execution of the safety inspection can be found in the service manual.

### 7.3.1 Visual inspection

1. Check the product and accessories for any mechanical damage.
2. Check labels for readability.

### 7.3.2 Electric measurements

**i** Limit values for electrical measurements can be found in the current IEC 62353.

1. Measure the protective ground resistance.
2. Measure the earth leakage current.
3. Measure the touch current.
4. Measure the patient leakage current.

### 7.3.3 Functional test

- ▶ Check the following components:
  - Power switch
  - Handpiece
  - Pump
- ▶ Check the following functions:
  - Footswitch detection
  - Handpiece detection
  - Change in the direction of rotation
  - Reading out of system information
- ▶ Document the results of the safety test.

## 7.4 Repairing the product

Repair work may only be performed by KARL STORZ or by a company authorized by KARL STORZ. The interventions described in this instruction manual are exempt from this rule.

- ▶ Please contact your local KARL STORZ subsidiary or authorized dealer (see the list of subsidiaries).

Contaminated devices may not be shipped. To prevent contact infections and airborne infections, products must first be decontaminated. KARL STORZ reserves the right to send back contaminated products.

## 7.5 Disposing of the product

The product meets the requirements of the Directive on Waste Electrical and Electronic Equipment (WEEE).

Within the scope of application of this directive, KARL STORZ SE & Co. KG is responsible for the proper disposal of this product.

1. The product must be disposed of in accordance with the applicable national laws and regulations at a suitable collection point for the reprocessing of electrical and electronic equipment.
2. Contact KARL STORZ SE & Co. KG, a KARL STORZ branch or an authorized dealer to find out the address of the collection point in your area.

## 8 Accessories and spare parts

### 8.1 Accessories

#### Cables and adaptors

Item	Order no.
Power cord, length 300 cm	400A
Power cord, US version, 200 cm	400B
Potential equipotential cable, 5 m	20010270
Potential equalization cable, 200 cm	20010370
Potential equalization cable, 150 cm	20010570
Potential equipotential cable, 1 m	20010670
Ethernet cable, (OR1) patch cable, CAT6a, length 2.0 m, UL-listed	WO10275

#### Footswitches

Article	Order no.
One-pedal footswitch, two-stage	UF102
One-Pedal Footswitch, two-stage, wireless, comprising: footswitch, receiver, power supply unit	UF102W
Two-pedal footswitch, one-stage	UF201
Two-pedal footswitch, one-stage, wireless, comprising: footswitch, receiver, power supply unit	UF201W

### 8.2 Spare parts

Article	Order no.
Mains fuse, 100 – 240 V, T 4.0 AH 250 V AC, IEC 127 format	2027690
Perforator Motor, without cable	362641
Perforator connecting cable for connection to the perforator motor 362641	362642
High-speed micro motor without cable	20362133
Cable for high-speed micro motor, large	20362233
High-speed micro motor without cable	20363133
Cable for high-speed micro motor, small	20363233
INTRA motor 80k, without cable	20261133
INTRA Connecting Cable	20261233


## 9 Electromagnetic compatibility

### 9.1 General notes on the operating environment

#### Special environment

The product is suitable for use in close proximity to an active HF electrosurgical device in professional healthcare facility environments. Professional healthcare facility includes physician offices, dental offices, limited care facilities, freestanding surgical centers, freestanding birth centers, multiple treatment facilities, hospitals (emergency rooms, patient rooms, intensive care, surgical rooms, outside the RF shielded room of an ME system for MRT).

 This product has been evaluated for compatibility with high-frequency surgical equipment.

 The emission characteristics of this product make it suitable for use in industrial areas and hospitals (CISPR 11 Class A) and other professional healthcare environment. If it is used in a residential environment (for which CISPR 11 Class B is normally required), this equipment might not offer adequate protection to radio communication service. The user might need to take mitigation measures, such as relocating or re-orienting equipment.

#### **WARNING**

#### **Electromagnetic interferences! Malfunction!**

Use of this product adjacent to or stacked with other equipment could result in improper operation.

- ▶ This situation should be avoided.
- ▶ If such use is necessary: Verify that this equipment and the other equipment are operating normally.



#### **CAUTION**

#### **MR unsafe!**

This product is MR unsafe.

- ▶ Keep the product away from the Magnetic Resonance Imaging (MRI) Scanner Room and mobile MRI scanner.

### 9.2 Accessories, transducers, and cables

#### **WARNING**

#### **Reduced immunity! Malfunction!**

The use of an accessory, transducers and cables with the product other than those specified in this manual may result in increased emissions or decreased immunity.

- ▶ Preferably use the accessories specified in the manual.
- ▶ When using other than those specified in this manual, it becomes the responsibility of the user to determine compliance with IEC 60601-1-2.

**⚠ WARNING**
**Degradation of performance! Malfunction!**

Portable RF communications equipment (including peripherals such as antenna cables and external antennas) could result in degradation of the performance of the product.

- ▶ Use portable communications equipment no closer than 30 cm (12 inches) to any part of the product, including cables.

The following accessories and cables are defined for EMC compliance.

Accessories and cables for EMC compliance				
Type	Shield	Length [m]	Ferrite	Use
High-performance EC micro motor, DrillCut-X II hand-piece with connecting cable	Yes	3	No	Energy transfer to motor
Footswitch with connecting cable	Yes	3	No	Equipment control
Wireless footswitch including receiving unit	Yes	–	No	Equipment control
Power cord	No	3	No	Connection of equipment to AC mains
OR1 Patch Cable	Yes	2	No	Service, connectivity to other KARL STORZ equipment

## 9.3 Test-Tables

### 9.3.1 Table 1 – Compliance level for immunity tests

Interference immunity tests	EN/IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) acc. to IEC 61000-4-2	± 8 kV contact discharge ± 15 kV air discharge	± 8 kV contact discharge ± 15 kV air discharge	The relative humidity should be at least 30%.
Electrical fast transients/bursts acc. to IEC 61000-4-4	± 2 kV for power lines ± 1 kV for input and output lines 100 kHz repetition	± 2 kV/± 1 kV for power lines ± 1 kV for input and output lines 100 kHz repetition	The power supply quality should be that of a typical commercial or hospital environment.
Surges acc. to IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to ground	± 1 kV line(s) to line(s) ± 2 kV line(s) to ground	The power supply quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and fluctuations of the power supply acc. to IEC 61000-4-11	<u>Voltage dip:</u> Dip to 0% for 1 cycle @ 0° phase angle	<u>Voltage dip:</u> Dip to 0% for 1 cycle @ 0° phase angle	The power supply quality should be that of a typical commercial or hospital environment.

Interference immunity tests	EN/IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
	<p>Dip to 70% for 25/30 cycles @ 0° phase angle</p> <p>Dropout to 0% for 0.5 cycles @ 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° phase angles</p> <p><u>Voltage interruption:</u> 100% for 250/300 cycles</p>	<p>Dip to 70% for 25/30 cycles @ 0° phase angle</p> <p>Dropout to 0% for 0.5 cycles @ 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° phase angles</p> <p><u>Voltage interruption:</u> 100% for 250/300 cycles</p>	<p>If the user of the equipment requires continued operation in the event of interruptions to the power supply network, it is recommended that the equipment be powered from an uninterruptible power supply or a battery.</p>
Magnetic field at the supply frequency (50 Hz/60 Hz) acc. to IEC 61000-4-8	30 A/m at 50 Hz/60 Hz	30 A/m at 50 Hz/60 Hz	If image distortion occurs, it may be necessary to position the equipment further from sources of power frequency magnetic fields or to install magnetic shielding. Before installing the device, the electromagnetic field should be measured to ensure that it is sufficiently low.
Immunity test acc. to IEC 61000-4-3 for high-frequency electromagnetic fields	<p>3 V/m 80 MHz to 2.7 GHz</p> <p>see chapter <i>Table 2 – Test levels for proximity fields from RF wireless communications equipment</i> [p. 56] for wireless HF near field test levels</p>	3 V/m 80 MHz to 2.7 GHz	-
Immunity to conducted disturbances, induced by radio-frequency fields acc. to IEC 61000-4-6	<p>3 V<sub>rms</sub> on 150 kHz to 80 MHz</p> <p>1 kHz 80% AM modulation</p> <p>6 V<sub>rms</sub> in ISM frequency bands between 0.15 MHz and 80 MHz</p>	<p>3 V<sub>rms</sub> on 150 kHz to 80 MHz</p> <p>1 kHz 80% AM modulation</p> <p>6 V<sub>rms</sub> in ISM frequency bands between 0.15 MHz and 80 MHz</p>	-
Magnetic field in close proximity, IEC 61000-4-39	<p>8 A/m @ 30 kHz (CW modulation)</p> <p>65 A/m @ 134.2 kHz (pulse modulation)</p> <p>7.5 A/m @ 13.56 kHz (pulse modulation)</p>	<p>8 A/m @ 30 kHz (CW modulation)</p> <p>65 A/m @ 134.2 kHz (pulse modulation)</p> <p>7.5 A/m @ 13.56 kHz (pulse modulation)</p>	-

### 9.3.2 Table 2 – Test levels for proximity fields from RF wireless communications equipment

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

If necessary to achieve the immunity test level, the distance between the transmitting antenna and the product may be reduced to 1 meter. The 1 meter test distance is permitted by IEC 61000-4-3.

<sup>a)</sup> For some radio services, only the uplink frequencies are included.

<sup>b)</sup> The carrier shall be modulated using a 50% duty cycle square wave signal.

<sup>c)</sup> As an alternative to FM modulation, the carrier may be pulse modulated using a 50% duty cycle square wave signal at 18 Hz. While it does not represent actual modulation, it would be worst case.



**9.3.3 Table 3 – Emission class and group**

<b>Emission measurements</b>	<b>Compliance</b>	<b>Electromagnetic environment – guidance</b>
RF emissions as per CISPR 11	Group 1	The product uses RF energy only for its internal function. The customer or user of the product should make sure that it is used in such an environment. Therefore, its RF emissions are very low and are not likely to cause interference in nearby electronic product.
RF emissions as per CISPR 11	Class A	The product is suitable for use in all establishments other than domestic and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions as per IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions as per IEC 61000-3-3	Complies	

## 10 Errors and messages

### 10.1 Troubleshooting

Fault	Possible causes	Actions
Application instrument not functional	Power supply failure	▶ Check power supply
Product failed		▶ Contact Service
Power switch lamp does not light up	Power supply failure	▶ Check power supply
	Defective fuse	▶ Changing a fuse
	Power switch lamp defective	▶ Contact Service
Power switch lamp lights up: – No rotation – No reaction when footswitch is pressed – No reaction when tapping on the touch screen – Speed cannot be regulated	Faulty motor control electronics	▶ Contact Service
	Connection to motor interrupted	
	Faulty handpiece	▶ Connect another handpiece
	Handpiece blocked or jammed	▶ Clean handpiece
Tubing set connectors do not fit in the pump	Tubing set installed incorrectly	▶ Check the connection side (upper and lower connectors are different sizes)
	Connectors secured incorrectly to the tube	▶ Replace tubing set
No irrigation fluid	Irrigation bag empty	▶ Use new irrigation liquid bag
	Tubing clamp impedes flow	▶ Loosen tubing clamp
	Kinked tubing	▶ Change run of tubing
	Irrigation bottle not ventilated	▶ Ventilate the irrigation bottle
	Pump deactivated	▶ Activate pump

### 10.2 Software messages

Message	Possible causes	Actions
Motor not supported	Motor cannot be used with available license	–
Motor defective	Connector problems	▶ Contact Service
Product defective	Motorboard defective	▶ Contact Service
Footswitch defective	Pedal defective	▶ Contact Service
	Pedal cannot be calibrated	

## 11 Appendix

### 11.1 Appendix: Possible combinations – UNIDRIVE Select

For DrillCut-X II-35 Shaver Handpiece (40712050, 40712055, 40712035, 40712535)

#### Shaver blades, sterilizable

Shaver Blade, straight	Shaver Blade, curved 35°/40°	Shaver Blade, curved 65°
41201KN	41202KN	41203KNF
41201KK	41204KKF	41203KNB
41201GN	41204KKB	41203KKF
41201LN	41204KKFA	41203KKB
41201SN	41204KKBA	41203KKFA
41201KSA		41203KKBA
41201KKSA		41203GNF
41201KKSB		41203GNB
41201LSA		

#### Shaver blades, sterile, single-use products, pack of 5

Shaver Blade, straight	Shaver Blade, curved 35°/40°	Shaver Blade, curved 65°	Larynx Shaver Blade
41301KN	41302KN	41303KNF	41301LX
41301KK	41304KKF	41303KNB	41301LXA
41301GN	41304KKB	41303KKF	
41301LN	41304KKFA	41303KKB	
41301SN	41304KKBA	41303KKFA	
41301KSA		41303KKBA	
41301KKSA		41303GNF	
41301KKSB		41303GNB	
41301LSA			

#### Sinus burrs, sterile, single-use products, pack of 5

Sinus Burr 35k	Sinus Burr 12k
41335W	41304W
41335RN	41303WN
41335DW	41305RN
41335DT	41305DN

Sinus Burr 35k	Sinus Burr 12k
41335DS	41305D
	41305DW
	41303DT

For DrillCut-X ARTHRO (28200DX)

ARTHRO instruments, reusable

Working length 70 mm	Working length 120 mm
28206DA	28205AB
28206DB	28205AC
	28205AD
	28205AK
	28205BC
	28205CC
	28205CK
	28205DB
	28205DC
	28205DD
	28205DK
	28205MK
	28205NK
	28205FC
	28205GE
	28205HC
	28205HD
	28205HE

ARTHRO instruments, sterile, single-use products, pack of 6

Working length 70 mm	Working length 120 mm	Working length 180 mm
28206AAS	28205ABS	28208BKS
28206ABS	28205ACS	28208DCS
28206CAS	28205ADS	28208EHS
28206CBS	28205AKS	28208IDS
28206DAS	28205BCS	
28206DBS	28205CBS	
28206FAS	28205CCS	
28206FBS	28205CDS	

Working length 70 mm	Working length 120 mm	Working length 180 mm
	28205CKS	
	28205DBS	
	28205DCS	
	28205DDS	
	28205DKS	
	28205EGS	
	28205EHS	
	28205MKS	
	28205MDS	
	28205NKS	
	28205NDS	
	28205FCS	
	28205FDS	
	28205GDS	
	28205GES	
	28205HCS	
	28205HDS	
	28205HES	

**For DrillCut-X II Shaver Handpiece GYN (26702050)**
**Shaver blades, straight, sterilizable**

Product name	Item number
Shaver Blade, 3 mm, laterally opened	26205SA
Shaver Blade, 3 mm, distally opened	26205SB
Shaver Blade GYN	26208SA
Shaver Blade GYN	26208SB

**For DrillCut-X II Morcellator Handpiece URO (27702050)**

Product name	Item number
Morcellator Blade, Ø 4 mm, length 40 cm	27056LM

**High-speed burs, in connection with high-speed handpieces (362680, 362681, 362645)**

Article	Order no.
High-speed diamond burr, Ø 1.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360210ES
High-speed diamond burr, Ø 2.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360220ES
High-speed diamond burr, Ø 2.5 mm, 70 mm, 80,000 rpm, single-use product, sterile	360225ES
High-speed diamond burr, Ø 3.1 mm, 70 mm, 80,000 rpm, single-use product, sterile	360231ES
High-speed diamond burr, Ø 4.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360240ES
High-speed diamond burr, Ø 5.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360250ES
High-speed diamond burr, rough, Ø 2.3 mm, 70 mm, 80,000 rpm, single-use product, sterile	360323ES
High-speed diamond burr, rough, Ø 3.1 mm, 70 mm, 80,000 rpm, single-use product, sterile	360331ES
High-speed diamond burr, rough, Ø 4.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360340ES
High-speed standard burr, Ø 2.3 mm, 70 mm, 80,000 rpm, single-use product, sterile	360123ES
High-speed standard burr, Ø 3.1 mm, 70 mm, 80,000 rpm, single-use product, sterile	360131ES
High-speed standard burr, Ø 4.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360140ES
High-speed standard burr, Ø 5.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360150ES
High-speed standard burr, Ø 6.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360160ES
High-speed standard burr, Ø 7.0 mm, 70 mm, 80,000 rpm, single-use product, sterile	360170ES

**High-speed burs, in connection with high-speed handpiece (362682)**

Article	Order no.
High-speed diamond burr, Ø 1.0 mm, 95 mm, 80,000 rpm, single-use product, sterile	360210S
High-speed diamond burr, Ø 2.3 mm, 95 mm, 80,000 rpm, single-use product, sterile	360223S
High-speed diamond burr, Ø 3.1 mm, 95 mm, 80,000 rpm, single-use product, sterile	360231S
High-speed diamond burr, rough, Ø 4.0 mm, 95 mm, 80,000 rpm, single-use product, sterile	360340S
High-speed diamond burr, rough, Ø 5.0 mm, 95 mm, 80,000 rpm, single-use product, sterile	360350S

Article	Order no.
High-speed standard burr, Ø 2.3 mm, 95 mm, 80,000 rpm, single-use product, sterile	360123S
High-speed standard burr, Ø 3.1 mm, 95 mm, 80,000 rpm, single-use product, sterile	360131S
High-speed standard burr, Ø 4.0 mm, 95 mm, 80,000 rpm, single-use product, sterile	360140S
High-speed standard burr, Ø 5.0 mm, 95 mm, 80,000 rpm, single-use product, sterile	360150S

**High-speed burrs, in connection with high-speed handpiece (362683)**

Article	Order no.
High-speed standard burr, Ø 2.3 mm, 125 mm, 80,000 rpm, single-use product, sterile	360123M
High-speed standard burr, Ø 3.1 mm, 125 mm, 80,000 rpm, single-use product, sterile	360131M
High-speed standard burr, Ø 4.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360140M
High-speed standard burr, Ø 5.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360150M
High-speed standard burr, Ø 6.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360160M
High-speed diamond burr, Ø 1.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360210M
High-speed diamond burr, Ø 2.3 mm, 125 mm, 80,000 rpm, single-use product, sterile	360223M
High-speed diamond burr, Ø 3.1 mm, 125 mm, 80,000 rpm, single-use product, sterile	360231M
High-speed diamond burr, Ø 4.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360240M
High-speed diamond burr, rough, Ø 3.1 mm, 125 mm, 80,000 rpm, single-use product, sterile	360331M
High-speed diamond burr, rough, Ø 4.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360340M
High-speed diamond burr, rough, Ø 5.0 mm, 125 mm, 80,000 rpm, single-use product, sterile	360350M

**High-speed burs, in connection with high-speed handpiece (362684)**

Article	Order no.
High-speed diamond burr, Ø 1.0 mm, 150 mm, 80,000 rpm, single-use product, sterile	360210L
High-speed diamond burr, Ø 1.8 mm, 150 mm, 80,000 rpm, single-use product, sterile	360218L
High-speed diamond burr, Ø 3.1 mm, 150 mm, 80,000 rpm, single-use product, sterile	360231L
High-speed diamond burr, Ø 4.0 mm, 150 mm, 80,000 rpm, single-use product, sterile	360240L
High-speed diamond burr, rough, Ø 3.1 mm, 150 mm, 80,000 rpm, single-use product, sterile	360331L
High-speed diamond burr, rough, Ø 4.0 mm, 150 mm, 80,000 rpm, single-use product, sterile	360340L
High-speed diamond burr, rough, Ø 5.0 mm, 150 mm, 80,000 rpm, single-use product, sterile	360350L
High-speed standard burr, Ø 3.1 mm, 150 mm, 80,000 rpm, single-use product, sterile	360131L
High-speed standard burr, Ø 4.0 mm, 150 mm, 80,000 rpm, single-use product, sterile	360140L
High-speed standard burr, Ø 5.0 mm, 150 mm, 80,000 rpm, single-use product, sterile	360150L

**Craniotome burs, in connection with high-speed handpiece (362645) and craniotome attachments**

Article	Order no.
High-speed craniotome burr, short, 10 mm, 80,000 rpm, single-use product, sterile, in combination with craniotome attachment (362646)	362640S
High-speed craniotome burr, medium, 15 mm, 80,000 rpm, single-use product, sterile, in combination with craniotome attachment (362647)	362640M
High-speed craniotome burr, long, 25 mm, 80,000 rpm, single-use product, sterile, in combination with craniotome attachment (362648)	362640L

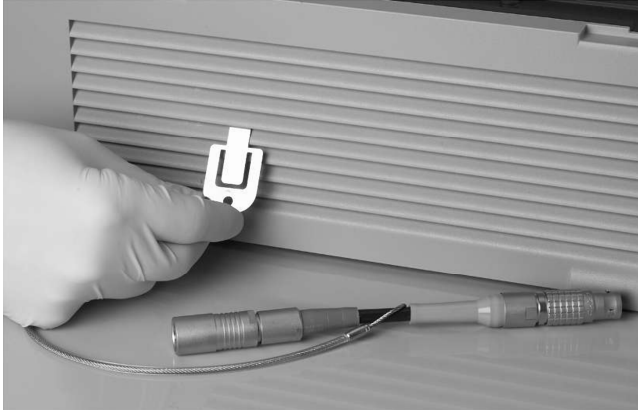


**Micro ear burrs, in connection with micro ear burr (460000)**

Article	Order no.
Tungsten carbide micro ear burr, Ø 0.5 mm, reusable, sterile, 12,000 rpm	460805
Tungsten carbide micro ear burr, Ø 0.6 mm, reusable, sterile, 12,000 rpm	460806
Tungsten carbide micro ear burr, Ø 0.7 mm, reusable, sterile, 12,000 rpm	460807
Tungsten carbide micro ear burr, Ø 0.8 mm, reusable, sterile, 12,000 rpm	460808
Tungsten carbide micro ear burr, Ø 1.0 mm, reusable, sterile, 12,000 rpm	460810
Tungsten carbide micro ear burr, Ø 1.4 mm, reusable, sterile, 12,000 rpm	460814
Tungsten carbide micro ear burr, Ø 1.8 mm, reusable, sterile, 12,000 rpm	460818
Tungsten carbide micro ear burr, Ø 2.3 mm, reusable, sterile, 12,000 rpm	460823
Diamond micro ear burr, Ø 0.6 mm, reusable, sterile, 12,000 rpm	460206
Diamond micro ear burr, Ø 0.7 mm, reusable, sterile, 12,000 rpm	460207
Diamond micro ear burr, Ø 0.8 mm, reusable, sterile, 12,000 rpm	460208
Diamond micro ear burr, Ø 1.0 mm, reusable, sterile, 12,000 rpm	460210
Diamond micro ear burr, Ø 1.2 mm, reusable, sterile, 12,000 rpm	460212
Diamond micro ear burr, Ø 1.4 mm, reusable, sterile, 12,000 rpm	460214
Diamond micro ear burr, Ø 1.8 mm, reusable, sterile, 12,000 rpm	460218
Diamond micro ear burr, Ø 2.3 mm, reusable, sterile, 12,000 rpm	460223
Diamond micro ear burr, Ø 0.35 mm, reusable, sterile, 12,000 rpm	460203

## 11.2 Attaching the adaptor (28200DXA)

1. With the narrow end pointing up, push the attachment plate for the adaptor between the slats in the lower and front area of the right side panel until you hear a click.



⇒ The adaptor is now correctly attached to the motor system.

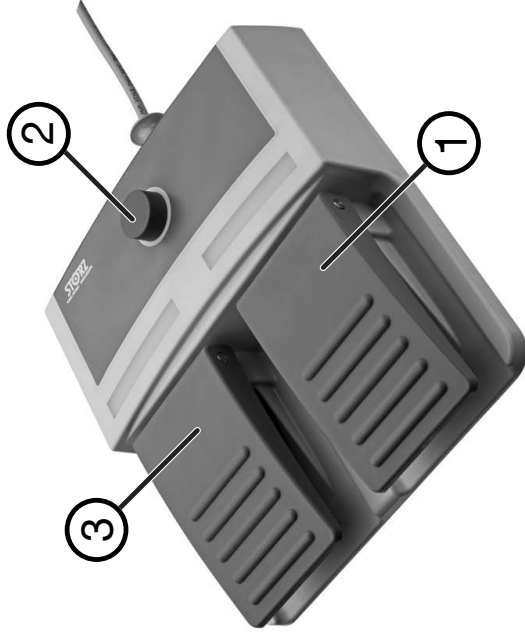


2. During servicing, remove the keychain from the attachment plate and replace the adaptor.



### 11.3 Footswitch functions according to discipline

Two-Pedal Footswitch (UF201, UF201W)

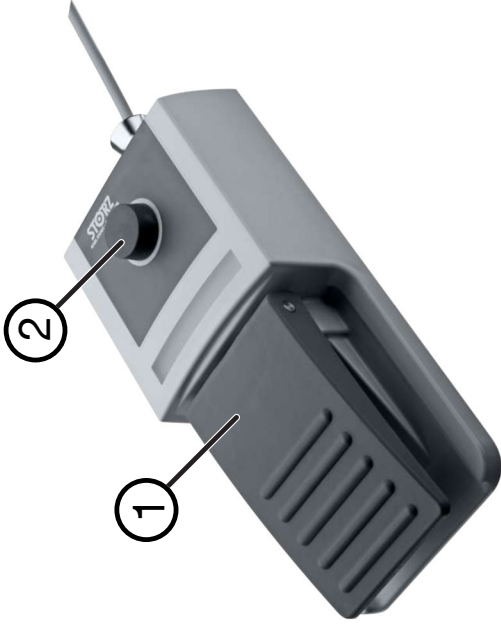


Function	Activate motor	Start pump	Window setting	Change mode	Change connection sockets	Set speed	Set pump flow rate	Set direction of rotation
<b>Discipline/item</b>								
<b>ENT</b>								
DrillCut-X II 40712035, 40712535 40712050, 40712055	Button 1	Button 1 or button 3 (pump only)	Button 2 (tap)	Button 1 + button 3 (hold for more than 2 s)	Button 2 (hold for more than 3 s)	-	Button 3 (tap)	-

Function	Activate motor	Start pump	Window setting	Change mode	Change connection sockets	Set speed	Set pump flow rate	Set direction of rotation
<b>Discipline/item</b>								
INTRA Micro Motor 80k 20261033	Button 1	Button 1 or button 3 (pump only)	–	–	Button 2 (hold for more than 3 s)	–	–	Button 2 (tap)
Micro Ear Burr 460000	Button 1	–	–	–	Button 2 (hold for more than 3 s)	–	–	–
<b>ENT/NEURO/SPINE</b>								
High-Speed Micro Motor 20362033, 20363033	Button 1	Button 1 or button 3 (pump only)	–	Button 2 (tap)	Button 2 (hold for more than 3 s)	–	Button 3 (tap)	–
<b>NEURO</b>								
Perforator 362640	Button 1	–	–	–	Button 2 (hold for more than 3 s)	–	–	–
Craniotome 362646, 362647, 362648	Button 1	–	–	Button 2 (tap)	Button 2 (hold for more than 3 s)	–	–	–

Function	Activate motor	Start pump	Window setting	Change mode	Change connection sockets	Set speed	Set pump flow rate	Set direction of rotation
<b>Discipline/item</b>								
<b>SPINE</b>								
DrillCut-X II SPINE 28712050	Button 1	Button 1 or button 3 (pump only)	Button 2 (tap)	Button 1 + button 3 (hold for more than 2 s)	Button 2 (hold for more than 3 s)	-	Button 3 (tap)	-
<b>ARTHRO</b>								
DrillCut-X ARTHRO 28200DX	Button 1 (clockwise) or button 3 (counterclockwise)	-	Button 2 (tap)	Button 1 + button 3 (hold for more than 2 s)	-	1. Button 2 (hold for more than 3 s) 2. Button 1 (increase) or button 3 (reduce) 3. Button 3 (tap)	-	-






One-Pedal Footswitch (UF102, UF102W)



Function	Activate motor	Start pump	Window setting	Change mode	Change connection sockets	Set speed	Set pump flow rate	Set direction of rotation
<b>Discipline/item</b>								
<b>URO</b>								
DrillCut-X II URO 27702050	Button 1 Stage 2	Button 1, stage 1 and stage 2	Button 2 (tap)	-	-	-	-	-
<b>GYN</b>								
DrillCut-X II GYN 26702050	Button 1 Stage 2	Button 1, stage 1 and stage 2	Button 2 (tap)	-	-	-	-	-

## 12 Overview of mitigating warnings

The original English warning text is as follows:

 WARNING	<p>To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.</p>
 WARNING	<p>Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the [ME EQUIPMENT or ME SYSTEM], including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.</p>
 WARNING	<p>Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.</p>
 WARNING	<p>Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.</p>
 WARNING	<p>No modification of this equipment is allowed.</p>

## 13 Subsidiaries

**KARL STORZ SE & Co. KG**

Dr.-Karl-Storz-Straße 34, 78532 Tuttlingen/Germany  
Postfach 230, 78503 Tuttlingen/Germany  
Phone: +49 7461 708-0, Fax: +49 7461 708-105  
E-Mail: info@karlstorz.com

**KARL STORZ Endoskope Berlin GmbH**

Scharnhorststr. 3, 10115 Berlin/Germany  
Phone: +49 30 30 69090, Fax: +49 30 30 19452

**KARL STORZ Endoscopy Canada Ltd.**

7171 Millcreek Drive, Mississauga, Ontario L5N 3R3 Canada  
Phone: +1 905 816-4500, Fax: +1 905 816-4599  
Toll free phone: 1-800-268-4880 (Canada only)  
Toll free fax: 1-800-482-4198 (Canada only)  
E-Mail: info-canada@karlstorz.com

**KARL STORZ Endoscopy-America, Inc.**

2151 East Grand Avenue, El Segundo, CA 90245-5017, USA  
Phone: +1 424 218-8100, Fax: +1 424 218-8525  
Toll free phone: 800 421-0837 (USA only)  
Toll free fax: 800 321-1304 (USA only)  
E-Mail: communications@ksea.com

**KARL STORZ Veterinary Endoscopy-America, Inc.**

1 South Los Carneros Road, Goleta, CA 93117, USA  
Phone: +1 805 968-7776, Fax: +1 805 685-2588  
E-Mail: info@karlstorzvet.com

**KARL STORZ Endoscopia Latino-America, Inc.**

815 N. W. 57th Avenue, Suite 480, Miami, FL 33126-2042, USA  
Phone: +1 305 262-8980, Fax: +1 305 262-8986  
E-Mail: info@ksela.com

**KARL STORZ Endoscopia México S.A. de C.V.**

Av. Ejercito Nacional No. 453 Piso 2, Colonia Granada, Alcaldia Miguel Hidalgo,  
C.P. 11520 Ciudad de México  
Phone: +52 (55) 1101 1520  
E-Mail: mx-info@karlstorz.com

**KARL STORZ Marketing América Do Sul Ltda.**

Rua Joaquim Floriano, nº. 413, 20º andar – Itaim Bibi, CEP-04534-011 São Paulo,  
Brasil  
Phone: +55 11 3526-4600, Fax: +55 11 3526-4680  
E-Mail: br-info@karlstorz.com

**KARL STORZ Endoscopia Argentina S.A.**

Zufriategui 627 6º Piso, B1638 CAA - Vicente Lopez, Provincia de Buenos Aires,  
Argentina  
Phone: +54 11 4718 0919, Fax: +54 11 4718 2773  
E-Mail: info@karlstorz.com.ar

**KARL STORZ Endoskopi Norge AS**

Stamveien 1, 1483 Hagan, Norway  
Phone: +47 6380 5600, Fax: +47 6380 5601  
E-Mail: post@karlstorz.no

**KARL STORZ Endoskop Sverige AB**

Storsätragränd 14, 127 39 Skärholmen, Sweden  
Phone: +46 8 505 648 00  
E-Mail: kundservice@karlstorz.se

**KARL STORZ Endoscopy Suomi OY**

Taivaltie 5, 01610 Vantaa, Finland  
Phone: +358 (0)96824774, Fax: +358 (0)96824775  
E-Mail: asiakaspalvelu@karlstorz.fi

**KARL STORZ SE & Co. KG**

Representative Office  
Žalgirio St. 94, LT9300 Vilnius, Lithuania  
Phone: +370 5 272 0448, Mobile: +370 685 67 000  
E-Mail: info-lt-lv@karlstorz.com

**KARL STORZ Endoskopi Danmark A/S**

Skovlytoften 33, 2840 Holte, Denmark  
Phone: +45 45162600, Fax: +45 45162609  
E-Mail: marketing@karlstorz.dk

**KARL STORZ Endoscopy (UK) Ltd.**

415 Perth Avenue, Slough, Berkshire, SL1 4TQ, United Kingdom  
Phone: +44 1753 503500, Fax: +44 1753 578124  
E-Mail: info-uk@karlstorz.com

**KARL STORZ Endoscopie Nederland B. V.**

Displayweg 2, 3821 BT Amersfoort, Netherlands  
Phone: +31 (0)33 4545890  
E-Mail: info-nl@karlstorz.com

**KARL STORZ Endoscopy Belgium N. V.**

Phone: +31 (0)33 4545890  
E-Mail: info-be@karlstorz.com

**KARL STORZ Endoscopie France S. A. S.**

12, rue Georges Guynemer, Quartier de l'Europe, 78280 Guyancourt, France  
Téléphone: +33 1 30484200, Fax: +33 1 30484201  
E-Mail: marketing-fr@karlstorz.com

**KARL STORZ Endoskop Austria GmbH**

Landstraßer Hauptstr. 148/1/G1, 1030 Wien, Austria  
Phone: +43 1 71 56 0470, Fax: +43 1 71 56 0479  
E-Mail: storz-austria@karlstorz.com

**KARL STORZ Endoscopia Ibérica S. A.**

Parque Empresarial San Fernando, Edificio Munich – Planta Baja, 28830 Madrid,  
Spain  
Phone: +34 91 6771051, Fax: +34 91 6772981  
E-Mail: info-es@karlstorz.com

**KARL STORZ Endoscopia Italia S. r. l.**

Via dell'Artigianato, 3, 37135 Verona, Italy  
Phone: +39 045 8222000, Fax: +39 045 8222001  
E-Mail: info-ita@karlstorz.com

**KARL STORZ Croatia d.o.o.**

Capraška 6, 10000 Zagreb, Croatia  
Phone: +385 1 6406 070, Fax: +385 1 6406 077  
E-Mail: info-hrv@karlstorz.com

**KARL STORZ Endoskopija d.o.o.**

Cesta v Gorice 34b, 1000 Ljubljana, Slovenia  
Phone: +386 1 620 5880, Fax: +386 1 620 5882  
E-Mail: pisarna@karlstorz.si

**KARL STORZ Polska Sp. z o.o.**

ul. Hołubcowa 123, 02-854 Warszawa, Poland  
Phone: +48 22 2458 200, Fax: +48 22 2458 201  
E-Mail: info-pl@karlstorz.com

**KARL STORZ Endoszkóp Magyarország Kft.**

Toberek utca 2. fsz. 17/b, HU-1112 Budapest, Hungary  
Phone: +36 195 096 31, Fax: +36 195 096 31  
E-Mail: info-hu@karlstorz.com

**KARL STORZ Endoscopia Romania srl**

Str. Prof. Dr. Anton Colorian, nr. 74, Sector 4, 041393 Bukarest, Romania  
Phone: +40 (0)31 4250800, Fax: +40 (0)31 4250801  
E-Mail: info-ro@karlstorz.com

**KARL STORZ Endoskope Greece M.E.P.E.\***

Patriarhou Grigoriou E' 34, 54248 Thessaloniki, Greece  
Phone: +30 2310 304868, Fax: +30 2310 304862  
E-Mail: info-gr@karlstorz.com

\*Repair & Service Subsidiary

**KARL STORZ Industrial\*\***

Gedik Is Merkezi B Blok, Kat 5, D 38-39, Bagdat Cad. No: 162, Maltepe Istanbul,  
Turkey  
Phone: +90 216 442 9500, Fax: +90 216 442 9030

\*\*Sales for Industrial Endoscopy



## 000 KARL STORZ Endoscopy – WOSTOK

Derbenyevskaya nab. 7, building 4, 115114 Moscow, Russia  
Phone: +7 495 983 02 40, Fax: +7 495 983 02 41  
E-Mail: Info-ru@karlstorz.com

## TOV LLC KARL STORZ Ukraine

Avenue Geroyiv Stalingrada Str. 2D, office 717 Kyiv, 04210/Ukraine  
Phone: +38 095 000-895-0, +38-097-000-895-0, +38 073 000-895-0  
E-Mail: marketing@karlstorz.com.ua

## KARL STORZ SE &amp; Co. KG Representation Office

Sabit Orudschow 1184, apt. 23, 1025 Baku, Azerbaijan  
Phone: +99 450 613 30 60  
E-Mail: info-az@karlstorz.com

## KARL STORZ ENDOSKOPE – East Mediterranean and Gulf (Offshore) S.A.L.

Spark Tower 1st floor Charles Helou St., Horch Tabet – Sin El Fil, Beirut, Lebanon  
Phone: +961 1 501105, Fax: +961 1 501950  
E-Mail: info@karlstorz-emg.com

## KARL STORZ Endoscopy (South Africa) (Pty) Ltd.

P.O. 6061, Roggebaai, 8012 Cape Town, South Africa  
Phone: +27 21 417 2600, Fax: +27 21 421 5103  
E-Mail: info@karlstorz.co.za

## T00 KARL STORZ Endoscopy Kasachstan

Saryarka, 6, BC "Arman", off. 910, 010000 Astana, Republic of Kazakhstan  
Phone: +7 7172 552-549, 552-788, Fax: -444  
E-Mail: info@karlstorz.kz

## KARL STORZ ENDOSKOPE East Mediterranean &amp; Gulf (branch)

Building West Side 7A – Unit 7WA – 3008, Dubai Airport Free Zone, P.O. Box 54983, Dubai - United Arab Emirates  
Phone: +971 (0)4 2958887, Fax: +971 (0)4 3205282  
Service Hotline: +971 (0)4 3415882  
E-Mail: info-gne@karlstorz-emg.com

## KARL STORZ Endoscopy India Private Limited

11th Floor, Dr. Gopal Das Bhawan, 28, Barakhamba Road, New Delhi 110001, India  
Phone: +91 11 4374 3000, Fax: +91 11 4374 3010  
E-Mail: corporate@karlstorz.in

## KARL STORZ SE &amp; CO. KG

Interchange 21 Tower, Level 32, Unit 3230, 399 Sukhumvit Road, North Klongtoey, Wattana, 10110 Bangkok, Thailand  
Phone: +66 2 660 3669  
E-Mail: info-th@karlstorz.com

## KARL STORZ SE &amp; Co. KG

Resident Representative Office  
14th Floor, MPlaza Saigon, 39 Le Duan, District 1, Ho Chi Minh City, Vietnam  
Phone: +84 28 3823 8000, Fax: +84 28 3823 8039  
E-Mail: infovietnam@karlstorz.com

## KARL STORZ Endoscopy China Ltd.

Room 2503-05, 25F AXA Tower, Landmark East, No. 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong, People's Republic of China  
Phone: +852 28 65 2411, Fax: +852 28 65 4114  
E-Mail: inquiry@karlstorz.com.hk

## KARL STORZ Endoscopy (Shanghai) Ltd., Beijing Branch

Room 1805-1807, Building B, 18F Beijing IFC, No. 8, Jianguomenwai Street, Chaoyang District, 100022, Beijing, People's Republic of China  
Phone: +86 10 5638188, Fax: +86 10 5638199  
E-Mail: info@karlstorz.com.cn

## KARL STORZ Endoscopy (Shanghai) Ltd., Shanghai Branch

Room 701A Building 5 & Room 501 Building 7, No. 3000 Longdong Avenue, Pilot Free Trade Zone, 201203, Shanghai, People's Republic of China  
Phone: +86 21 60339888, Fax: +86 21 60339808  
E-Mail: info@karlstorz.com.cn

## KARL STORZ Endoscopy (Shanghai) Ltd., Chengdu Branch

Room 803-805, 8F Jin Jiang International Building, No. 1 West Linjiang Road, Wuhou District, 6100414, Chengdu, People's Republic of China  
Phone: +86 28 86587977, Fax: +86 28 86587975  
E-Mail: info@karlstorz.com.cn

## KARL STORZ Endoscopy (Shanghai) Ltd., Shenyang Branch

Room 2001-2005, 20F N-MEDIA International Center, No. 167 Youth Avenue, Shenhe District, 110014, Shenyang, People's Republic of China  
Phone: +86 24 23181118, Fax: +86 24 23181119  
E-Mail: info@karlstorz.com.cn

## KARL STORZ Endoscopy (Shanghai) Ltd., Guangzhou Branch

Room 02B & 03 & 04A, 35F Teem Tower, No. 208 Tianhe Road, Tianhe District, 510620, Guangzhou, People's Republic of China  
Phone: +86 20 87321281, Fax: +86 20 87321286  
E-Mail: info@karlstorz.com.cn

## KARL STORZ Endoscopy Asia Marketing Pte Ltd.

No. 8 Commonwealth Lane #03-02, Singapore 149555, Singapore  
Phone: +65 69229150, Fax: +65 69229155  
E-Mail: infoasia@karlstorz.com

## KARL STORZ Endoscopy Singapore Sales Pte Ltd

No. 8 Commonwealth Lane #03-02, Singapore 149555, Singapore  
Phone: +65 69229150, Fax: +65 69229155  
E-Mail: infoasia@karlstorz.com

## KARL STORZ SE &amp; Co. KG Representative Office Indonesia

Sinarmas MSIG Tower Level 37, Jl. Jend. Surdirman No. Kav. 21, Jakarta Selatan DKI Jakarta 12920  
E-Mail: infoindonesia@karlstorz.com

## KARL STORZ Endoscopy Korea Co. Ltd.

9F Hyowon-Building, 97, Jungdae-ro, Songpa-gu, 05719 Seoul, Korea  
Phone: +82-70-4350-7474, Fax: +82-70-8277-3299  
E-Mail: infokorea@karlstorz.com

## KARL STORZ Endoscopy Taiwan Ltd.

12F, No. 192, Sec. 2, Chung Hsin Rd., Sindian District, New Taipei City, Taiwan  
Phone: +886 933 014 160, Fax: +886 2 8672 6399  
E-Mail: info-tw@karlstorz.com

## KARL STORZ Endoscopy Philippines Inc. Representative Office Philippines

1901 Picadilly Star Bldg., 4th Avenue, BGC, Taguig City 1636, Philippines  
Phone: +63 2 317 45 00, Fax: +63 2 317 45 11  
E-Mail: philippines@karlstorz.com

## KARL STORZ Endoscopy Japan K. K.

Stage Bldg. 8F, 2-7-2 Fujimi, Chiyoda-ku, Tokyo 102-0071, Japan  
Phone: +81 3 6380-8622, Fax: +81 3 6380-8633  
E-Mail: info-jp@karlstorz.com

## KARL STORZ Endoscopy New Zealand

Ltd. 31 Morningside Drive Mt Albert Auckland, 1025, New Zealand PO Box 56 511, Dominion Rd Auckland, 1446, New Zealand  
Phone: +64 9 846 6044  
Toll free: +64 508 84 84 84 (New Zealand only)  
E-Mail: sales-nz@karlstorz.com

## KARL STORZ Endoscopy Australia Pty. Ltd.

Suite 1, 68-72 Waterloo Road, Macquarie Park NSW 2113, Australia, PO Box 50 Lane Cove NSW 1595, Australia  
Phone: +61 (0)2 9490 6700, Fax: +61 (0)2 9420 0695  
Toll free: 1800 996 562 (Australia only)  
E-Mail: karlstorz@karlstorz.com.au

## KARL STORZ Endoscopy (UK) Limited

415 Perth Avenue, Slough, Berkshire, SL1 4TQ, United Kingdom  
Phone: +44 (0)1753 503500  
E-Mail: info-uk@karlstorz.com

www.karlstorz.com





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PCC270 • EN • V2.1 • 08-2024 • IFU • CE-MDR



**KARL STORZ SE & Co. KG**

Dr.-Karl-Storz-Straße 34  
78532 Tuttlingen

Postfach 230  
78503 Tuttlingen  
Germany

Phone: +49 7461 708-0  
Fax: +49 7461 708-105  
E-mail: [info@karlstorz.com](mailto:info@karlstorz.com)  
[www.karlstorz.com](http://www.karlstorz.com)

