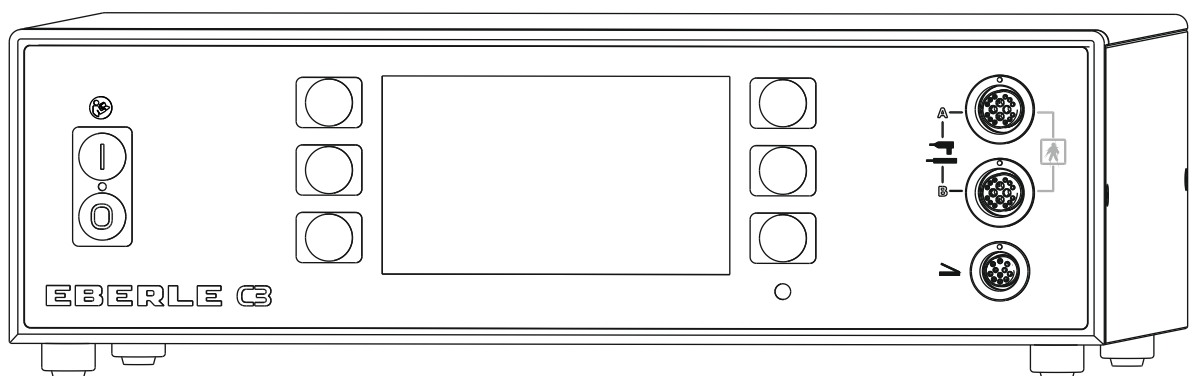




Basic knowledge for operation

The basic functions (main screen) can be set using the softkeys or touchscreen

Note: Settings outside of the basic functions are mainly carried out via the touchscreen

TOUCHSCREEN

Functions are selected by touching the touchscreen

Note: If the touchscreen responds inaccurately or does not respond, a calibration should be carried out (Section 8.4)

SOFTKEY

Functions are selected by lightly pressing the softkeys

Basic functions

- | | |
|---|---|
|  Increases the value for a setting |  Access to the oscillation menu |
|  Decreases the value for a setting |  User-specific allocation (memory) |
|  Access to the main menu |  Save settings |

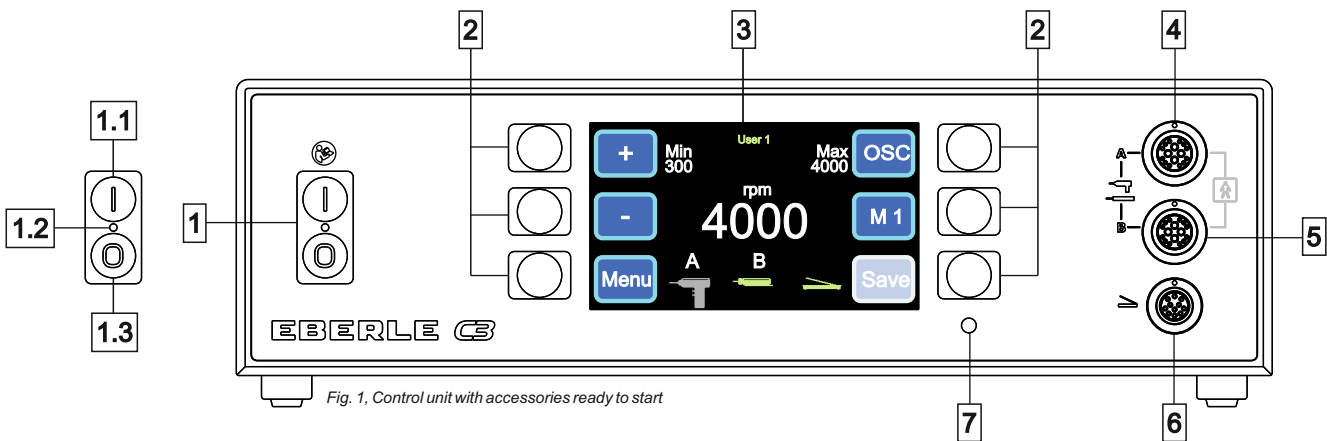


Fig. 1, Control unit with accessories ready to start

- | | |
|-----|------------------------------|
| 1 | Power switch |
| 1.1 | On switch |
| 1.2 | Power switch light |
| 1.3 | Off switch |
| 2 | Softkeys |
| 3 | Touchscreen |
| 4 | Connection socket A |
| 5 | Connection socket B |
| 6 | Connection socket Footswitch |
| 7 | Light sensor |

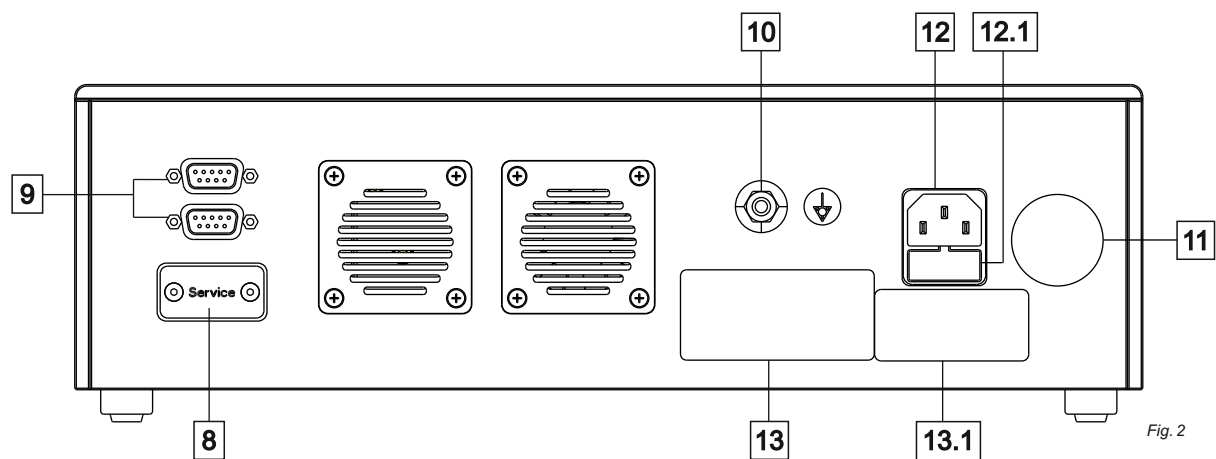


Fig. 2

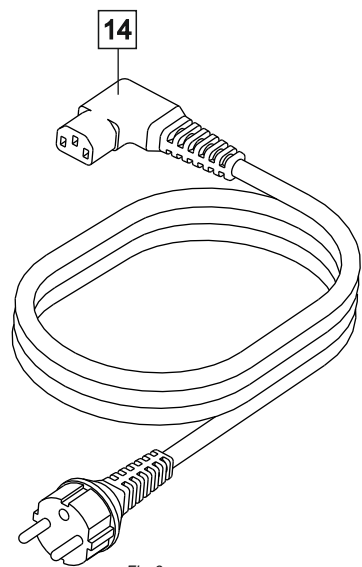


Fig. 3

8	Service communication interface
9	ECB connections
10	Potential equalization
11	Test label
12	Mains connection
12.1	Fuse compartment and fuse holder
13	Type plate
13.1	Type plate
14	Mains power cable

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1. General information, description, and area of use

1.1 Intended purpose

The EBERLE C3 Shaver system, consisting of a Control unit, Handpiece and if applicable a Footswitch, was developed in combination with the accessories for use in the field of joint surgery. It is used for this purpose as a surgical instrument.

The EBERLE C3 Shaver system is intended for use in arthroscopic joint surgery for the following joints: Knee, shoulder, hip, elbow, hand, and foot. Use in other areas is not permissible!

1.2 Indications

The EBERLE C3 Shaver system is used to remove soft tissue, cartilage, and bone in different joint areas.

The use of the C3 Shaver system is indicated for any surgical procedure based on the patient's clinical symptoms and on the individual risk-benefit assessment by the treating physician.

1.3 Contraindications

Depending on the patient's disease, there may be contraindications that result from the general condition of the patient or the particular clinical condition.

If use of the EBERLE C3 Shaver system is contraindicated, its application should be weighed up by the treating physician.

Performing a surgical procedure is the responsibility of the treating physician and the decision to do so should be based on an individual risk-benefit assessment.

1.4 Intended user / patient target group

Users without appropriate training and qualification in the area of joint surgery must not use the C3 Shaver system.



The Shaver system C3 shall only be used by skilled and trained expert staff, while permanently monitoring the user's application, in the designated medical facilities!

There are no limitations on the patient target group regarding age, sex, height, weight, or etiology.

Before using the C3 Control unit for the first time, these operating instructions must be read carefully. They contain all the information necessary to ensure the correct connection and operation of the device. The necessary safety instructions and cleaning instructions are also set out and explained here.

These operating instructions must then be stored in a safe location that is easily accessible for the user.



Applying or operating the device in non-conformance to these operating instructions can injure the patient and/or the operator and can damage the components of the Shaver system C3!

1.5 Intended period of use

The period of use of the Control unit corresponds to conventional arthroscopy procedures and is on average 10-45 min with 1-10 applications per day.

1.6 Essential performance characteristics

The C3 Control unit is used to drive Handpieces in the Shaver system

1.7 Reporting requirements in case of serious incidents

All serious incidents that occur in connection with this device must be reported promptly to [comp\(at\)eberle-med.com](mailto:comp(at)eberle-med.com) and to the competent authorities of the Member State in which the user and/or patient resides.

**We thank you for your confidence and wish you much success with the
EBERLE Shaver system C3!**

2. Scope of Delivery

After delivery of the Control unit, at first the packaging should be checked for external damage.

The following parts are included in the delivery of the Control unit C3:

- Control unit EBERLE C3
- Mains power cable 1,8m [14]
- Operating instructions 91-058EN

REF 913055

REF 913035

Should one or several components be damaged or found to be missing, please immediately contact an EBERLE representative or an authorized service or distribution centre.

3. Symbols, explanation of symbols

	This symbol alerts the user to an information that must be observed. Failure to observe this information can result in patient or user injury and / or damage the unit.
	Circular icons with a diagonal bar indicate actions that are prohibited.
	This symbol identifies a medical device.
	This symbol alerts the user that the operating instructions must be followed.
	This symbol on the packaging, operating instructions, and / or the device indicates that this product shall not be treated as consumer waste. The correct disposal will help to prevent health or environmental impacts.
	Catalog/item number
	This symbol indicates a device with one or more applied parts of Type BF
	This symbol on the packaging indicates the upper and lower storage temperature for the device.
	This symbol on the packaging indicates the upper and lower humidity limits for the device.
	This symbol on the packaging indicates that products must be protected from moisture and humidity.
	This circular symbol indicates that damaged packaging can result in unsterile or damaged parts. Damaged parts and parts from damaged sterile packaging must not be used and must be replaced immediately!]
	This symbol in conjunction with a date e.g. 2007-06, shows the usability of the product until the specified date.
	Objects that are not MR safe must not enter the MRI scanner room. Patients with devices that are not MR-safe should not be scanned.
	In accordance with US federal law - sold only directly to trained medical professionals or on their behalf!
	This product is Classified by UL. MEDICAL - GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI ES 60601- 1:2005 + C1:2009 + A2:2010 + A1:2012, IEC 60601-1-6:2010 + A1:2013, CAN/CSA-C22.2 No. 60601-1:2014, CAN/CSA-C22.2 No. 60601-1-6:2011 + A1:2015 E517643

3.1 Safety Instructions and Warnings

	Applying or operating the shaver system not in accordance with these operating instructions can result in the patient and / or the operator being injured and in components of the shaver system being damaged!
	Electrical medical devices and equipment have special requirements, require special measures in terms of electrical safety and electromagnetic interference/environment. The installation of the facilities and devices must comply with the requirements for the applicable standards and national provisions (see also Chap. 13)! To avoid the risk of electric shock, this device may only be connected to a supply network with a protective earth conductor. Check the plugs and cables routinely and do not use them if damaged! The Control unit may only be switched on when all connection cables are fully connected. Check the functionality of the Control unit components and accessories before each use! Remove unused components and accessories from the device! If HF surgery is used, the applied part (AP) of the Control unit (e.g. Handpiece and Shaverblade, Universal handpiece) must be removed from the patient. HF communication equipment such as GSM telephones, RFID readers (including their accessories such as antenna cables and external antennas) can also affect medical electrical devices! Do not operate these in the vicinity of the Shaver system and maintain a minimum distance of 30 cm (12 inches) (see Section 13, Interference Immunity Table)! Place the Control unit on a stable surface out of reach of the patient. The device must be disconnected from the mains before any maintenance, cleaning and disinfection work. The outer surfaces of the Control unit can be cleaned and disinfected with a disinfectant or detergent. It must be ensured that no liquid penetrates the device! (see Section 10.1) The Control unit is used to drive rotating and oscillating instruments. In the event of failure or malfunctions, switch the device off immediately or immediately disconnect any connected applied part (AP) from the Control unit. Besides the clinical functions described, the device does not have any essential performance characteristics within the meaning of the standard. If malfunctions occur, separate the Control unit and operate it away from any possible sources of interference. Have a replacement device or an alternative to supply the patient prepared in the event of a failure of the Control unit (e.g. due to overvoltage)! Please note the permitted environmental conditions for operation! The use of incompatible third-party accessories and cables may result in hazards or injuries to the patient and/or user, impair the performance of the Control unit with regard to electromagnetic interference and cause damage to the Control unit! The use of the Control unit in direct proximity to other devices or together with other devices in a stacked form should be avoided and can lead to malfunctions. If no other type of installation is possible, the devices must be monitored and their proper function checked. The device must not be operated in the vicinity of magnetic resonances (e.g. magnetic resonance imaging, MRI) The respective operating time of the Control unit and the Handpieces should correspond to the usual application cycle (see Section 13). If the Handpiece is operated for a long time, it can reach temperatures of up to 45°C in the handle area. After switching on and before each use of the Control unit, check the set User, in particular the set Key assignment of the Handpiece and the Footswitch, as well as the operating mode. For safety reasons, please adhere to the rotational speed ranges that are stipulated for the accessories. Operating the Shaverblades in the dry state can cause damage! If an AP no longer responds, disconnect it from the Control unit (note any error messages, see Section 12.1). Ensure sufficient aeration at the ventilation inlets and outlets at the back of the Control unit. Insufficient ventilation leads to damage or malfunction of the Control unit!



Do not operate the Control unit in potentially explosive areas. There is a risk of explosion if flammable narcotic gases are used in the immediate vicinity of the Control unit or if the Control unit is used in environments with high oxygen concentrations.

Do not open the device! Risk of electric shock! Unauthorized opening, repair or modification of the device releases us from any liability for the operational safety of the device and results in the forfeiture of all claims during the warranty period!

4. Connection and Start-Up of the Control unit C3



A damaged packaging can lead to unsterile or damaged parts. Damaged parts and parts from damaged sterile packaging must not be used and replaced immediately!



The sequence for connecting and starting the device, shown below, must always be observed.

- All components should again be visually checked for any signs of damage before connecting and starting the Control unit.
- Press the Off switch [1.3] on the Control unit
- Plug the mains power cable [14] into the connection socket [12] on the rear of the device, now establish a connection to the power supply
- Establish potential equalization [10] (if necessary, through qualified personnel)
- Connect the connector plug of the Handpiece to the connector socket [4] or [5] on the front of the Control unit housing, paying attention to the markings
- Connect the connector plug of the Footswitch to the connector socket [6] on the front of the Control unit housing, paying attention to the markings
When using a Handpiece with manual operation, the use of a Footswitch is not necessary
- Press the On switch [1.1] on the Control unit



Fig. 4

The EBERLE logo appears during the Control unit self-diagnosis (Fig. 4)

Notes:

- Do not press any keys on the Control unit or on the plugged-in accessories during this period!
- When the Control unit is switched on for the first time, the factory settings are loaded

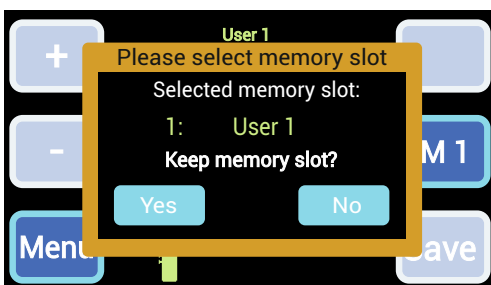


Fig. 5

Select User (Fig. 5)

- **Yes:** Confirm User
or
- **No:** Change of User

Change of user (Fig. 6)

- Select the desired User

Note:

- For safety-related reasons, confirmation of the memory slot is required at every start

The Shaver system is now ready for use!

Note:

- Check the function of the controls

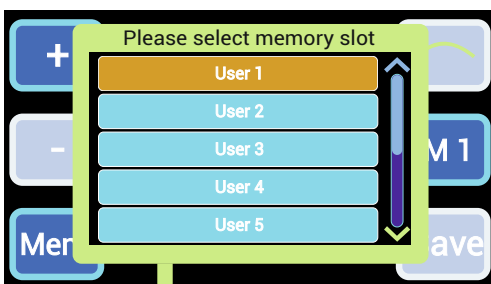
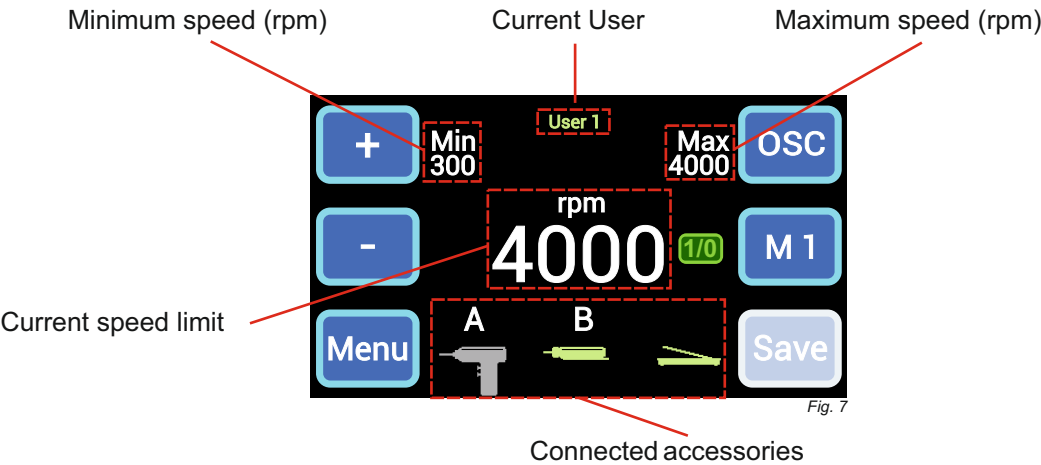


Fig. 6

4.1 Device-specific explanation of symbols (Fig. 7)



Note:
Ready-to-start (initialized) accessories illuminated green

Symbols not shown	
	Universal handpiece
	Shaver handpiece
	Footswitch
	Start/Stop operation
	Thread cutting operation
	Unknown/defective Handpiece Unsupported device combinations
	Counterclockwise rotation on
	Counterclockwise rotation off

5. Operation of the accessories

- Before connecting and operating the Handpieces and the Footswitch, they should be visually checked to ensure that they are intact
- Connect the connector plug of the accessory to the respective connector socket [4, 5, 6] on the front of the Control unit housing, paying attention to the markings

Notes:

- A waiting symbol appears while the accessories are being checked 
- The accessories can be initialized via:
 - Controls on the Handpiece and Footswitch
 - Touchscreen

5.1 Handpiece with manual operation

- Activation via manual operation or Footswitch keys (user-specific allocation)
- Automatic detection of certain Shaverblades (enables higher speeds)

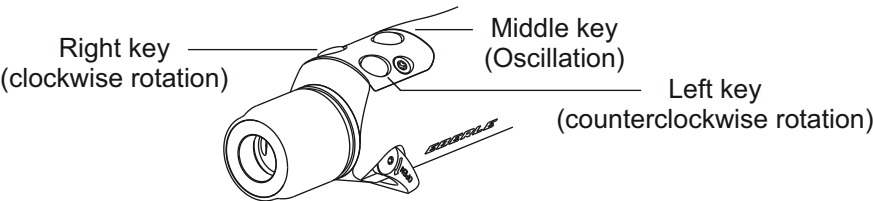


Fig. 8, standard allocation of the controls



Operating mode:

The dead-man mode software is activated as standard for manual operation

You can find more information on this in Section 8.7

5.2 Handpiece

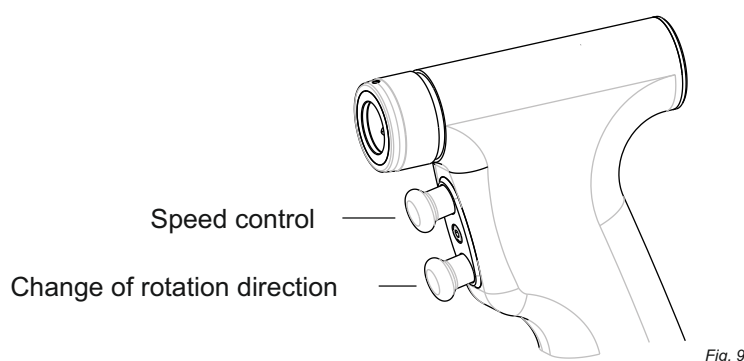
- Activation via Footswitch keys
- Automatic detection of certain Shaverblades (enables higher speeds)

5.3 Small joint handpiece

- Activation via Footswitch keys

5.4 Universal handpiece

- Activation via the Speed control key (clockwise rotation)
- Activation of counterclockwise rotation by pressing the Change of rotation direction key and the Speed control key simultaneously
- If the Handpiece is not active, it is possible to change the speed limit using the Footswitch



5.5 Footswitch

- User-specific allocation of the controls, see Section 8.7

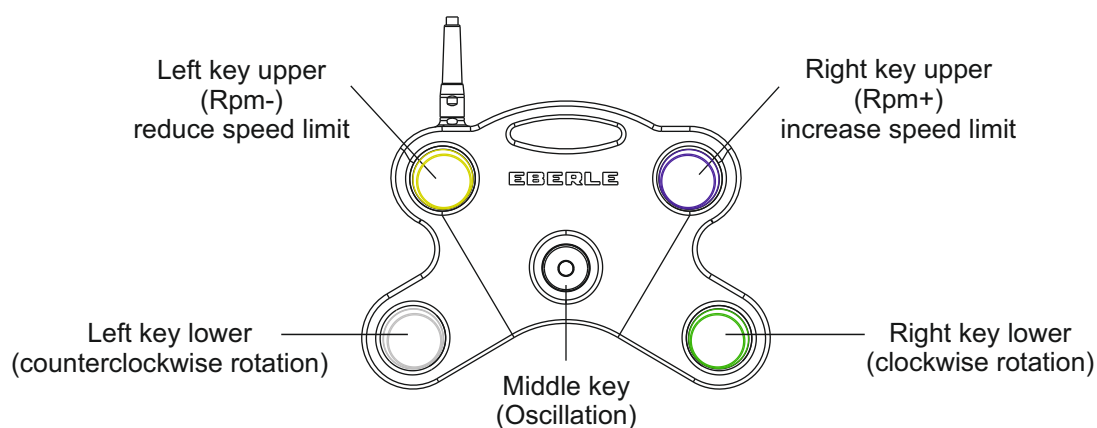


Fig. 10, standard allocation of the controls

6. Settings on the Shaver handpiece

Speed limit

-  Increase speed limit in rpm
-  Decrease speed limit in rpm

Oscillation

- Press 
-  Switch between rotation and frequency
-   Increase/decrease rotation and frequency

7. Settings on the Universal handpiece

Speed limit

-  Increase speed limit in %
-  Decrease speed limit in %

Activate thread cutting operation

- Press  icon (green if activated) to deactivate press icon again

Counterclockwise rotation lock

- counterclockwise rotation lock activated 

Change function by pressing the icon

- counterclockwise rotation lock deactivated 

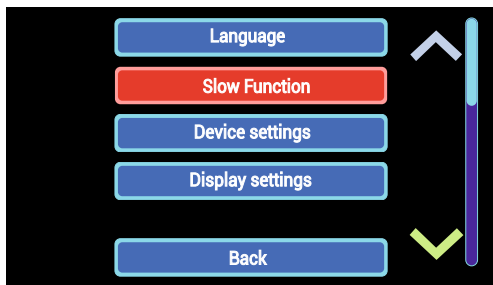


Fig. 11

8. Menu navigation

Various settings can be made in the menu (Fig. 11/12/13)

Access to the menu:

- Press **Menu**

Navigating the menu:

- Press  or 

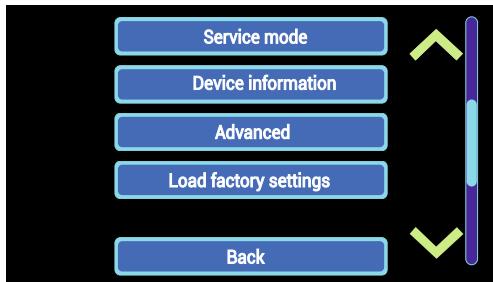


Fig. 12

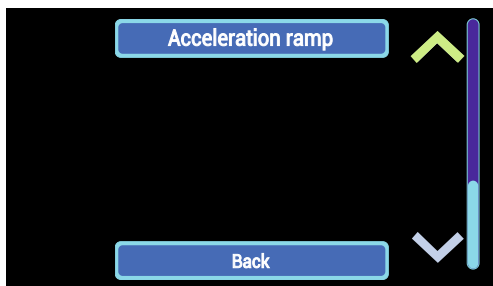


Fig. 13

8.1 Language

Setting the system language

- Press **Language**

The following languages are available:

- | | |
|----------------------|--------------------------|
| • Deutsch / German | • Nederlands / Dutch |
| • English / English | • Polskie / Polish |
| • Français / French | • Português / Portuguese |
| • Italiano / Italian | • Svenska / Swedish |
| • Español / Spanish | • Čeština / Czech |

8.2 Slow Function

Function for positioning the inner blade, for example to: set an open or closed cutting window

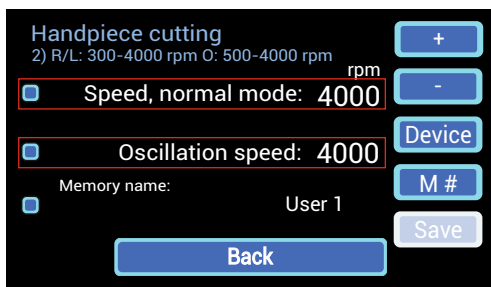


Fig. 14

8.3 Device settings

Setting the speed limits (Fig. 14)

- Press **Device settings**
- Press **M #** until the desired user is displayed
- Press **Device** until the desired Handpiece is displayed

The following Handpieces are available:

- 1) Small joint handpiece
- 2) Handpiece 8k cutting or milling
- 3) Handpiece 10k cutting or milling
- 4) Universal handpiece

- Select the operating mode
- Change the limit using the **+** **-** keys
- There are two options for saving:
 - options 1:** Press **Save**
 - options 2:** Press **Back**
 - Confirm query „Save changes“ by pressing **Yes**
 - Discard changes by pressing **No**

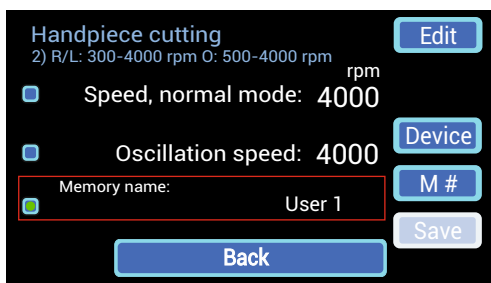


Fig. 15

Edit memory name (Fig. 15/16)

- Press **Memory name: User 1**
- Press **Edit**

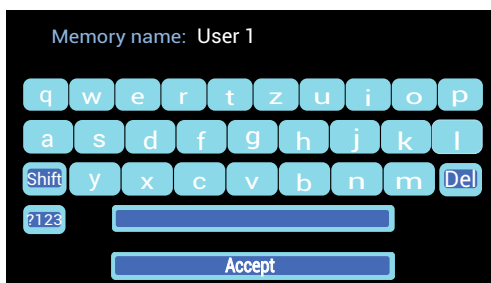


Fig. 16

- Enter new memory name
- Exit the entry screen by pressing **Accept**
- Save entry by pressing **Save** or, **Back**
 - confirm query „Save changes“ by pressing **Yes**
- Exit with no changes made press to **Back**
 - discard entry, confirm query „Save changes“ by pressing **No**

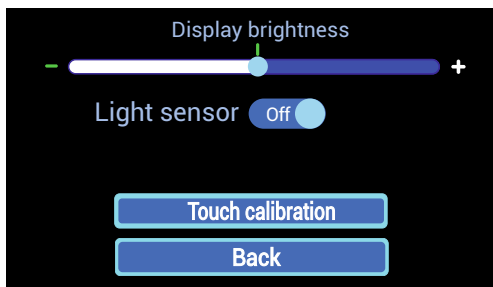


Fig. 17

8.4 Display settings

Change of Display brightness (Fig. 17)

- Press **Display settings**
- Brightness adjustment using  

Light sensor

The Light sensor automatically adjusts the Display brightness to the ambient light

- Press **Display settings**
- Press the blue switch icon  to switch the sensor on and off
- Adjustment of the max. Display brightness is also possible using  

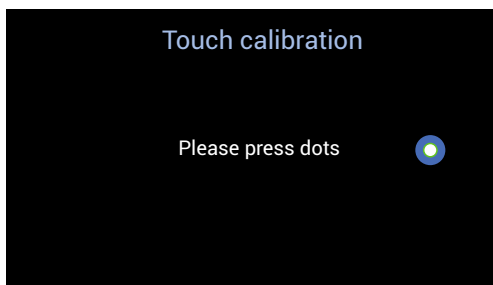


Fig. 18

Touch calibration (Fig. 18)

If the touchscreen responds inaccurately, a touch calibration should be carried out

- Press **Touch calibration**
- Press all blue dots  until the calibration is complete

Note:

If the touchscreen does not work, please proceed as follows:

- Switch the Device off and on again
- During the start-up phase of the device, press the 3 softkey buttons to the left of the touchscreen simultaneously
- Press all blue dots  until the calibration is complete

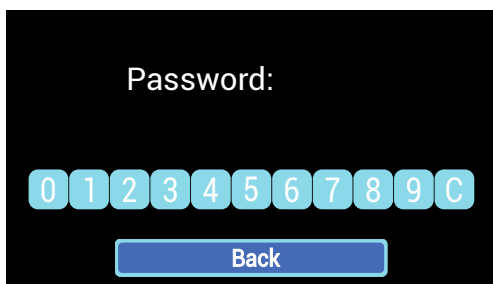


Fig. 19

8.5 Service mode

Service mode

Only accessible to service employees (Fig. 19)



Fig. 20

8.6 Device information

Device information The current revision status is displayed here (Fig. 20)

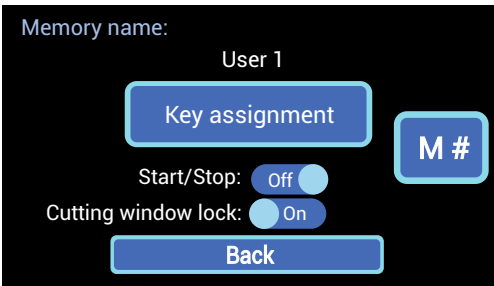


Fig. 21

8.7 Advanced

Start/Stop operation (Fig. 21)

Dead-man mode software:

The Handpiece works as long as a key on the Footswitch or on the Handpiece is being pressed

Start/Stop operation:

Start: press any key on the Handpiece

Stop: press any key on the Handpiece/Footswitch

- Press **Advanced**
- Press **M #** and select the desired user
- Press the blue switch icon **Off** to switch the Start/Stop operation on and off

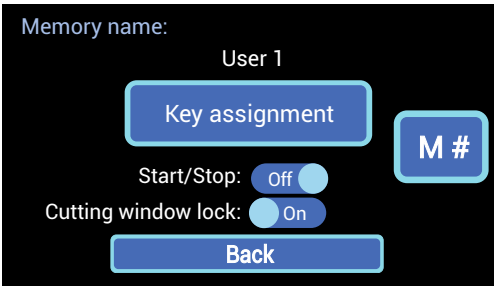


Fig. 22

Cutting window lock (Fig. 22)

The cutting window lock ensures that the starting position of the inner blade is aimed for again when it stops.

- Press **Advanced**
- Press **M #** and select the desired user
- Press the blue switch icon **On** to switch the Cutting window lock on and off

Note:

- Pre-positioning can be made easier with the help of the Slow Function (see Section 8.2)

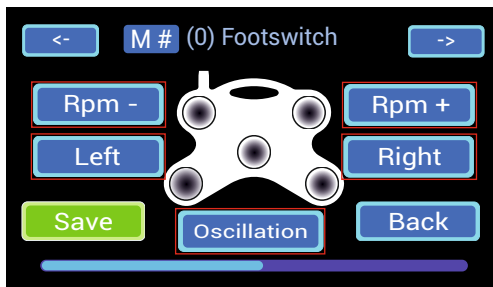


Fig. 23

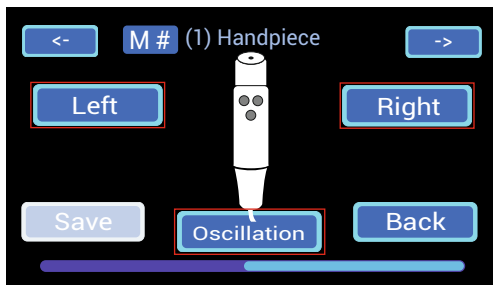


Fig. 24

Change Key assignment on the Footswitch and Handpiece with manual operation (Fig. 23/24)

- Press **Advanced**
- Switch between Footswitch and Handpiece using the keys **<-** **->**
- Press **M #** and select the desired user
- The function changes by repeatedly touching the key
- Press **Back** changes are valid until the next system start
- Press **Save** to save the changes

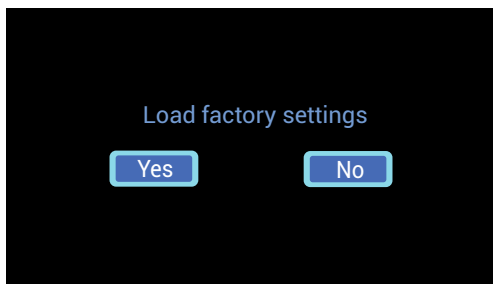


Fig. 25

8.8 Load factory settings

Load factory settings The Control unit is reset to its factory settings upon confirmation (Fig. 25)

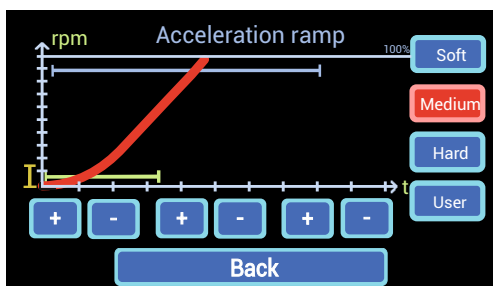


Fig. 26

8.9 Acceleration ramp

Predefined Acceleration ramps (Fig. 26)

- Soft: The Shaver handpiece gently accelerates
- Medium: The Shaver handpiece moderately accelerates
- Hard: The Shaver handpiece accelerates at the maximum

Note:

Changing the Acceleration ramp changes the starting torque in parallel

It is possible to define an individual Acceleration ramp (Fig. 27)

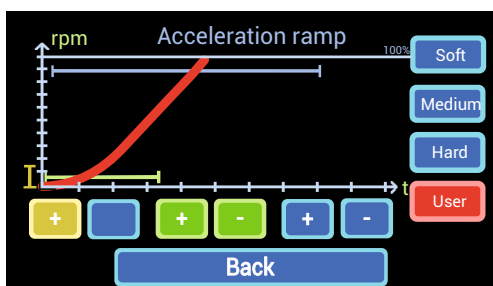


Fig. 27

- **orange:** Starting torque
- **green:** Starting acceleration
- **blue:** Ending acceleration
- Change values using the **+** **-** keys
- Press **Back**, current settings are saved

9. Connections

	Never touch the connections and the patient at the same time. This can result in hazards.
	The service connection [8] is used for device diagnosis and may only be used by authorized specialists and only for service purposes.
	The ECB connection [9] is used for mutual control of EBERLE devices! Only use the devices and connection cables approved by EBERLE for connecting to the ECB.

Equipotential bonding [10]

Generally, the Control unit is earthed by the 3-pin safety plug, if it is connected – as stipulated - to an earthed power cable. When this device is operated in rooms of application group 2 according to DIN VDE 0107 it is indispensable that the device is connected to the stationary equipotential bonding of the room or of the medical device cart by a corresponding cable. The device has an according plug connector for this (according to DIN 42801).

Mains connection socket [12]

The plug of the mains power cable is connected to this cold-device mains connection [12]. Use only the supplied standard mains power cable [14]. The device fuses are located in the fuse holder [12]. Only use the fuses specified on the type plate [13]!

10. Preparation of the Control unit and of accessories

The Control unit is to be cleaned prior to initial use according to chapter 10.1. It cannot be sterilized.

The cleaning and sterilization methods apply that are listed in these or in other instructions that may possibly be included in the delivery of the Control unit or of the accessories. This does not apply to accordingly designated, disposable articles that come in sterile packing.

Inadequate cleaning, disinfection and/or sterilization can lead to infection of the patient and/or the user. The operator is responsible for these processes and their results.

10.1 Cleaning of the Control unit

The outer surfaces of the Control unit can be cleaned and disinfected with a disinfectant or detergent for spray and wipe disinfection. Always observe the specifications of the disinfectant manufacturer as well as the country-specific specifications for concentration and exposure times.

Cleaning agents and application: Bacillol®AF, BODE Chemie GmbH, Hamburg
Spray and wipe disinfection, Undiluted, 5 min.

	Disconnect the device from the mains supply prior to any cleaning and disinfecting procedure!
	When cleaning the device please pay attention that no liquid enters the casing!

11. Service, Maintenance, Inspection and Disposal



Defective devices may only be repaired by authorized and qualified persons and only by using original parts.

The mains fuse can be exchanged by local qualified personnel as described below:

- Switch off power switch  [1.3] at the front of casing
- Disconnect the mains power cable [14] and potential equalization [10] from the device
- Use a flat-head screwdriver or other suitable tool to unfasten the mains fuse holder from the mains fuse compartment [12.1], remove defective fuses and insert new fuses according to the type plate [13]
- Insert the mains fuse holder in the mains fuse compartment [12.1]
- Connect power plug [14] and equipotential bonding [10]
- Switch on the power switch  [1.1]

Regular maintenance can help to detect defects and malfunctions at an early stage and thus to possibly extend the service life of the Control unit; however, it is not compulsory.

Independent of the country-specific safety regulations (e.g. accident prevention regulation, inspection interval regulations), we recommend a yearly function and safety inspection according to EN 62353; VDE 0751-1 by an authorized service centre. This inspection should be shown on the rear of the device by means of a sticker.

National regulations are to be observed, should it become necessary to dispose of the Control unit. Devices that are defective or can no longer be used may be returned to the manufacturer for disposal.

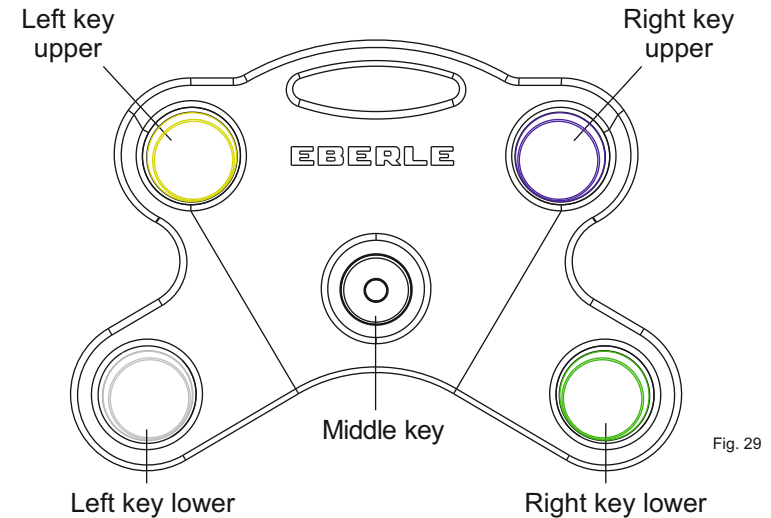
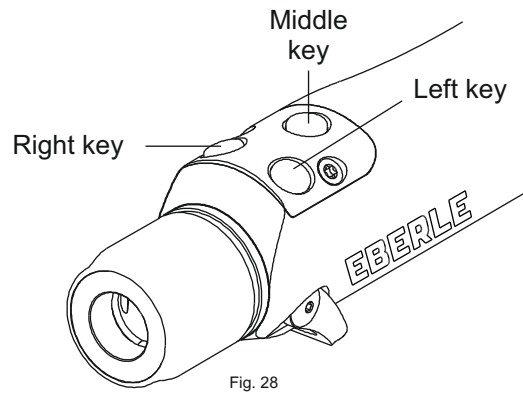
A device that is returned must be accompanied by proof of disinfection!

12. Trouble Shooting

Symptom	Possible cause	Remedy
Malfunction of device - out of operation - power switch on - power switch light is off	- Mains supply failed - Check mains supply - Mains fuse defective	- Check mains supply - Replace the fuse on the device as per Section 11
Nothing appears in the display - power switch on - power switch light on	- Display defective - Electronics defective	- ➡ Contact Service Team
- Touchdisplay does not respond - Touchdisplay detects incorrect entries	- Incorrect touch calibration - Electronics defective	- Carry out touch calibration as per Section 8.4 - The device continues to show errors ➡ Contact Service Team
Device does not accept any entry - Error message is displayed	- Error message is displayed	- Wait until the error message is no longer displayed
Motor does not stop - No key pressed	- Start/Stop mode active	- Press a key on the active Handpiece or Footswitch to stop the motor - Deactivate Start/Stop mode

Device failures do not lead to an unacceptable risk for the patient (see also notes in Section 3.1 / Section 13).

12.1 Error Messages



Error Messages	Error	Requirement
AP no voltage	Electronic fault in the device	- Remove AP (applied part) individually until the error message disappears - The device continues to show errors ➡ Contact Service Team
Motor controller Error	Fault in the Motor controller	- Restart device - The device continues to show errors ➡ Contact Service Team
Unknown device Socket: A/B/ Footswitch	Device not compatible with Control unit or defective device	- Remove AP individually until the error message disappears - ➡ Contact Service Team

Error Message	Error	Requirement
Any key pressed Socket: A/B	Key on Handpiece was pressed for more than 2 seconds in Start/Stop operation or it is defective	1. Release key, wait 3 seconds 2. The device continues to show errors 3. Remove AP individually until the error message disappears 4. The device continues to show errors, restart device 5. The device continues to show errors ➡ Contact Service Team
Left key pressed Socket: A	Left/Middle key on Handpiece pressed or defective	
Right key pressed Socket: A	Right key on Handpiece pressed or defective	
Left key pressed Socket: B	Left/Middle key on Handpiece pressed or defective	
Right key pressed Socket: B	Right key on Handpiece pressed or defective	
Left key lower pressed Socket: Footswitch	Left key lower/Middle key on Footswitch pressed or defective	
Right key lower pressed Socket: Footswitch	Right key lower on Footswitch pressed or defective	
Left key upper pressed Socket: Footswitch	Left key upper/Middle key on Footswitch pressed or defective	
Right key upper pressed Socket: Footswitch	Right key upper on Footswitch pressed or defective	

Error Message	Error	Requirement
Left key upper pressed Socket: A/B Socket: Footswitch	Connection of a Handpiece and Left key upper on the Footswitch is pressed	1. Release key, wait 3 seconds 2. The device continues to show errors 3. Remove AP individually until the error message disappears 4. The device continues to show errors, restart device 5. The device continues to show errors ➡ Contact Service Team
Right key upper pressed Socket: A/B Socket: Footswitch	Connection of a Handpiece and Right key lower on the Footswitch is pressed	
Left key lower pressed Socket: A/B Socket: Footswitch	Connection of a Handpiece and Left key lower on the Footswitch is pressed	
Software incompatible	Software versions not compatible	- Contact Service Team
Communication error Motor controller Communication error Mainboard	Software system communication problem	- Restart device - The device continues to show errors ➡ Contact Service Team
Ext. Flash is empty.	No language file in memory	- ➡ Contact Service Team
Ext. Flash data and software incompatible	Language file not compatible with software version	- ➡ Contact Service Team
 Symbol instead of a device symbol on the display	Symbol without message: Device combination is not supported by the system Symbol with message "Unknown device" Device not compatible with the Shaver system or defective device	Symbol without message: - Remove AP individually until the symbol disappears Symbol with message: "Unknown device" - Remove AP individually until the error message disappears - ➡ Contact Service Team

Error Message	Error	Requirement
Motor controller Overtemperature	Motor controller Overtemperature	1. Let the Motor controller cool down, error message disappears when the operating temperature is reached 2. Do not press any Handpiece or Footswitch keys 3. Reduce the Handpiece load when using it again 4. The device continues to show errors, restart device 5. The device continues to show errors ➡ Contact Service Team
Motor controller Overcurrent/undervoltage	Electronic fault in the device	1. Do not press any Handpiece or Footswitch keys, error message disappears when the operating state is reached 2. Reduce the Handpiece load when using it again 3. The device continues to show errors, restart device 4. The device continues to show errors ➡ Contact Service Team
Motor controller Hall position	Electronic fault in the AP One-time error message which disappears after a short period, the Control unit operates the AP in spite of the existing error, not all functions may be available. If the message occurs repeatedly, there is a defect	1. Do not press any Handpiece or Footswitch keys 2. The error message automatically disappears after a short period 3. Initiate the start-up process again for the Handpiece concerned 4. If the error message reappears after changing the socket or restarting the Control unit, plug the Handpiece into the other device socket and start up 5. The device continues to show errors ➡ Contact Service Team

Error Message	Error	Requirement
Invalid input Handpiece Socket: A/B	A key combination was pressed on the Handpiece which is not supported by the Control unit	1. Release all keys, wait 3 seconds 2. The device continues to show errors 3. Remove AP individually until the error message disappears and connect to the Control unit gain 4. The device continues to show errors, restart device 5. The device continues to show errors ➡ Contact Service Team
Line break Handpiece Socket: A/B Left key	The electrical cable of the left key of the Handpiece in socket A/B is defective	1. Release all keys, wait 3 seconds 2. The device continues to show errors 3. Remove AP individually until the error message disappears 4. The device continues to show errors, restart device 5. The device continues to show errors ➡ Contact Service Team
Line break Handpiece Socket: A/B Right key	The electrical cable of the right key of the Handpiece in socket A/B is defective	
Line break Handpiece Socket: A/B Middle key	The electrical cable of the middle key of the Handpiece in socket A/B is defective	

13. Technical Data

Safety classification, IEC 601-1	Protective class Applied part	I Typ BF
Classification MDR 2017/745/EU	Risk class	Ila
Electrical data	Supply voltage Mains frequency Mains fuse max. input power	100-240 VAC 50/60 Hz 2 x T2AH250 V, Littelfuse 0215002 240 VA
Possible EM or other interferences Interference emission/immunity	IEC 60601-1-2 Group/Class IEC 60601-1-2 Classification IEC 61000-3-2 Class	I/B Environment: professional med. care institutions A
Protection system	Dust / humidity	IP30
Application cycle	1-10 uses of the Control unit per day for a usage time of 10-45 min	
Accessory	see compatibility list (chapter 14)	
Speed ranges	REF 913065SJ Small joint handpiece	cutting 500-6000 min ⁻¹ milling 500-6000 min ⁻¹ oscillation 500-4000 min ⁻¹
	REF 913066 Handpiece 8k REF 913068 Handpiece 8k, stainless steel REF 913067 Handpiece 8k, manual operation REF 913069 Handpiece 8k, manual operation, stainless steel	cutting 300-4000 min ⁻¹ milling 500-8000 min ⁻¹ oscillation 500-4000 min ⁻¹
	REF 913070 Handpiece 10k REF 913080 Handpiece 10k, stainless steel REF 913071 Handpiece 10k, manual operation REF 913081 Handpiece 10k, manual operation, stainless steel	cutting 500-4000 min ⁻¹ milling 500-10000 min ⁻¹ oscillation 500-4000 min ⁻¹

Speed ranges	REF 913075 Universal handpiece	0-1500 min ⁻¹
Airborne noise emitted Handpieces	1m directed, cumulative exposure time, -83dBA sound pressure, pulse- / impact noise, -140dB	<73dBA <86dB
Operating conditions	Temperature relative humidity Maximum height above sea level min. pressure	15°C to 30°C 30%-75% non-condensing 2000 m 795 hPa
Storage, transport conditions	Temperature relative humidity Shelf life	-10°C to 70°C 30%-75% non-condensing Storage time without use max. 2 years
Mechanical data	Dimensions Weight	111x350x320mm 7300g
Packaging (collapsible box with inlay)	Dimensions Weight	365x470x470mm 2300g



If the device is not in use for a prolonged period of time, at least every 2 years, connect the device to an acceptable power supply and switch it on for at least 30 minutes.

Guidelines and Manufacturer's Declaration - Immunity / Electromagnetic Emissions

The Control unit C3 is intended for operation in electromagnetic environments as stated below. The customer or user of the Control unit C3 shall ensure that it is operated in such an environment.

Emissions measurements	Conformities	Electromagnetic environment – guidelines
HF emissions as per CISPR 11	Group 1	The Control unit C3 uses HF energy exclusively for its internal functioning. For that reason, HF emissions are very slight and it is unlikely that the device will disrupt neighboring electronic devices. The Control unit C3 is suitable for use in facilities other than residential areas and ones that are connected directly to the PUBLIC MAINS SUPPLY which also supplies buildings that are used for residential purposes.
HF emissions as per CISPR 11	Class B	
Harmonics as per IEC 61000-3-2	Class A	
Voltage fluctuations / flicker as per IEC 61000-3-3	In conformity	

Guidelines and Manufacturer's Declaration - Immunity / Electromagnetic radiation

The Control unit C3 is intended for operation in environments as stated below. The customer or user of the Control unit C3 shall ensure that it is operated in such an environment.

Immunity test	IEC 60601 / test level	Compliance level	Electromagnetic environment - guidance
ESD IEC 61000-4-2 IEC 61000-4-2	± 8 kV contact ± 15 kV air	± 8 kV contact ± 15 kV air	Floors shall be made out of wood or concrete or shall be covered with ceramic tiles. If the floor is covered with synthetic material the relative humidity must amount to at least 30 %.
Bursts IEC 61000-4-4	± 2 kV power supply lines 100 kHz repetition frequency ± 1 kV input/output	± 2 kV power supply lines 100 kHz repetition frequency ± 1 kV input/output	The quality of the supply voltage shall correspond to a typical environment as is found in commercial or hospital locations.
Surges IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	The quality of the supply voltage shall correspond to a typical environment as is found in commercial or hospital locations.
Voltage drops, short interruption and fluctuations of the supply voltage IEC 61000-4-11	0 % UT; 0,5 Periode dip in UT; 0,5 cycle 0 % UT; 1 Periode dip in UT; 1 cycle 70 % UT; 25/30 Perioden dip in UT; 25/30 cycles 0 % UT; 250/300 Perioden dip in UT; 250/300 cycles	0 % UT; 0,5 Periode dip in UT; 0,5 cycle 0 % UT; 1 Periode dip in UT; 1 cycle 70 % UT; 25/30 Perioden dip in UT; 25/30 cycles 0 % UT; 250/300 Perioden dip in UT; 250/300 cycles	The quality of the supply voltage shall correspond to a typical environment as is found in commercial or hospital locations. If the user of the Control unit C3 requires continued functioning also in the event the power supplies are interrupted, it is advisable to energize the Control unit C3 with an USV or a battery.

Immunity test	IEC 60601 / test level	Compliance level	Electromagnetic environment - guidance
Supply frequency magnetic fields at (50/60) Hz IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields shall correspond to a typical environment as is found in commercial or hospital locations.
Conducted RF disturbances IEC 61000-4-6	3 V eff.* 150 kHz – 80 Mhz (*6 V eff. in ISM bands)	3 V eff.* 150 kHz – 80 Mhz (*6 V eff. in ISM bands)	Portable and mobile communication devices shall not be used in closer proximity to the Control unit C3 or its cables than the recommended safety distance: d = 1,17 √ P 150 kHz – 80 Mhz
Radiated RF disturbances IEC 61000-4-3	3 V/m 80 MHz – 2,7 GHz	3 V/m 80 MHz – 2,7 GHz	d = 1,2 √ P 80 MHz - 800 Mhz d = 2,3 √ P 800 MHz - 2,7 GHz The field strength of stationary transmitters, as determined by a field survey, shall be less than the compliance level for all frequencies. Disturbances are possible in the close proximity of devices showing the following symbol. 



Test criterion: No impairment of the housing or the Handpieces, loss of function permitted. Handpiece must not start up without being activated when the Control unit is switched on, in "power on mode"

Test determinations for INTERFERENCE IMMUNITY of ENCASEMENTS against high-frequency wireless communication devices						
Test frequency Mhz	Frequency band ^a Mhz	Radio service ^a	Modulation ^b	Maximum Output W	Distance m	INTERFERENCE IMMUNITY TEST LEVEL V/m
385	380 to 390	TETRA 400	Pulse modulation ^b 18 Hz	1,8	0,3	27
450	430 to 470	GMRS 460, FRS 460	FM ^c ± 5 kHz deviation 1 kHz sinus	2	0,3	28
710	704 to 787	LTE band 13, 17	Pulse modulation ^b 217 Hz	0,2	0,3	9
745						
780						
810	800 to 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE band 5	Pulse modulation ^b 18 Hz	2	0,3	28
870						
930						
1 720	1 700 to 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE band 1, 3, 4, 25; UMTS	Pulse modulation ^b 217 Hz	2	0,3	28
1 845						
1 970						

Test frequency Mhz	Frequency band ^a Mhz	Radio service ^a	Modulation ^b	Maximum Output W	Distance m	INTERFERENCE IMMUNITY TEST LEVEL V/m
2 450	2 400 to 2 570	Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE band 7	Pulse modulation ^b 217 Hz	2	0,3	28
5 240	5 100 to 5 800	WLAN 802.11 a/n	Pulse modulation ^b 217 Hz	0,2	0,3	9
5 500						
5 785						

NOTE: If necessary, the distance between the transmitting antenna and the ME DEVICE or ME SYSTEM may be reduced to 1 m in order to reach the INTERFERENCE IMMUNITY TEST LEVEL. The 1 m test distance is allowed according to IEC 61000-4-3.

^a For some radio services, only the frequencies for the radio connection from the mobile communication device to the base station (uplink) were included in the table.

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

^c As an alternative to frequency modulation (FM), a pulse modulation with 50 % duty cycle with 18 Hz may be used since this, if not the actual modulation as well, would constitute the worst case.

Recommended safety distances between portable and mobile RF telecommunication devices and the Control unit C3

The Control unit C3 is intended for use in an electromagnetic environment, in which RF disturbances are controlled. The user (customer) of the Shaver system may help to prevent electromagnetic disturbances by observing the minimum distance between portable and mobile RF telecommunication devices (transmitters) and the Control unit C3 – dependent on the output power of the communication device as stated below.

Nominal power of transmitter W	Safety distance dependent on transmitter frequency m		
	150 kHz – 80 MHz $d = 1,17\sqrt{P}$	80 MHz - 800 MHz $d = 1,2\sqrt{P}$	800 MHz - 2,7 GHz $d = 2,3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,37	0,38	0,73
1	1,17	1,2	2,3
10	3,70	3,8	7,3
100	11,7	12	23

If the nominal power of certain transmitters is not stated in above table, the protective distance d in meters (m) can be determined using the equation given in the respective column. Here, P is the maximum nominal power of the transmitter in watt (W) according to the details given by the manufacturer of the transmitter.

Note 1: For 80 MHz and 800 MHz the higher frequency range applies.

Note 2: These guidelines may not be applicable for all cases.

The propagation of electromagnetic factors is influenced by the absorption and reflection of buildings, objects, and humans.

14. Compatibility

Please only use the EBERLE components listed in below table for operation on the EBERLE Control unit C3!

REF	Designation
913057	Footswitch, cable length 3 m
913065SJ	Small Joint Handpiece, cable length 4 m
913066	Handpiece 8k, cable length 4 m
913067	Handpiece 8k, manual operation, cable length 4 m
913068	Handpiece 8k, stainless steel, cable length 4 m
913069	Handpiece 8k, manual operation, stainless steel, cable length 4 m
913070	Handpiece 10k, cable length 4 m
913071	Handpiece 10k, manual operation, cable length 4 m
913075	Universal handpiece, cable length 4 m
913080	Handpiece 10k, stainless steel, cable length 4 m
913081	Handpiece 10k, manual operation, stainless steel, cable length 4 m
913035	Mains power cable 1,8m DE
913051	Mains power cable 2 m CH
913052	Mains power cable 1,8 m UK
913053	Mains power cable 1,8 m US
4000081	Mains fuse T2AH250V/K-2A T
Future EBERLE products may also be compatible. Detailed information regarding this can be obtained from every EBERLE representative.	



The use of incompatible third-party accessories and cables may result in hazards or injuries to the patient and/or user, impair the performance of the control unit with regard to electromagnetic interference and cause damage to the Control unit!

15. Warranty

The warranty period for the EBERLE Control unit shall be 12 months. Within this period, errors resulting from faulty material and / or inadequate workmanship will be remedied by the manufacturer free of charge.

Transport costs and shipping risks, however, will not be carried by the manufacturer. For further information, please refer to our General Terms and Conditions of Business.



Do not open the device! Arbitrary opening, repairing or modifying of the device absolves us from any liability regarding the operational safety of the system and leads to expiry of any claims whatsoever during the period of warranty!

16. Adresses



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