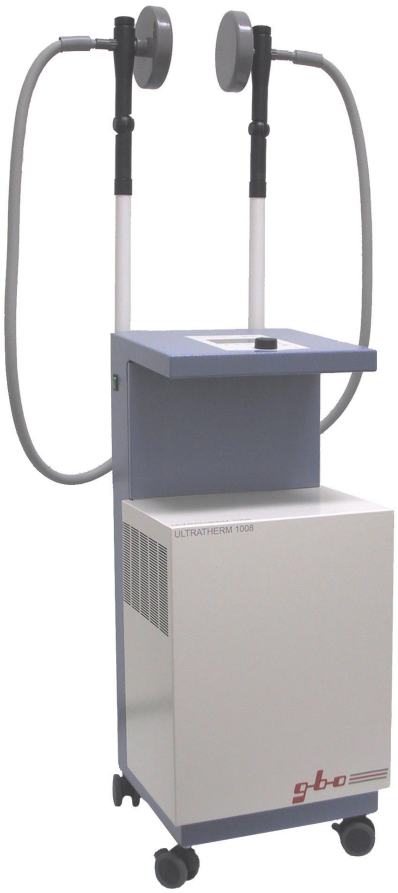
Operating Instructions

ULTRATHERM 1008 short-wave therapy unit



The gbo Medizintechnik AG has taken care in preparation of this manual, but makes no expressed or implied warranty of any kind and assumes no responsibility for errors or omissions.

gbo Medizintechnik AG
Kleiststrasse 6
D-64668 Rimbach

Phone: +49 (0) 6 25 3/808-0
Fax: +49 (0) 6 25 3/808-245
E-Mail: info@gbo-med.de
Internet: http://www.gbo-med.de

Version 1.6
Date of issue February 17th, 2010

Notes in accordance with the Medical Device Directive (MDD)

The **ULTRATHERM 1008** is a line-powered short-wave therapy device of protection class **I**.

The device is in accordance with the EC directive for medical devices (93/42/EWG) and therefore carries the CE sign with the registration number of the notified body for medical devices. The according graphical symbol is placed on the type plate.

According to the MDD, **confotherm** is a class **IIa** device.

The manufacturer is only responsible for the safety, operational reliability and functionality of the device if:

- the device is used in accordance with the instructions for use;
- the electrical installation of the location where the device will be used meets the respective current requirements of electrical safety;
- the device is not used in hazardous environments and humid locations;
- mountings, amplifications, re-adjustments, modifications or repair works are carried out only by personnel authorized by the manufacturer;
- the operator regulation of this EC directive is observed within the scope of MDD.

Technical support may be obtained by the manufacturer, dealers or service authorized by the manufacturer. The product's duration of life as scheduled by the manufacturer is 10 years.

ULTRATHERM 1008 is an electronic device. For its disposal the according regulations for electronic devices have to be observed.

On request, the manufacturer will provide you with further technical descriptions for all repairable parts of the device, such as circuit diagrams, spare parts lists, and adjustment instructions as far as these are necessary for the qualified technical staff of the operator.

Comments on electromagnetic compatibility (EMC)

Medical, electrical devices are subject to special precautions concerning the EMC. They must be installed and operated according to the EMC-advice given in the accompanying documents. In particular medical, electrical devices may be influenced by portable and mobile RF-communication devices.

The manufacturer guarantees the conformity of the unit with the EMC-requirements only when using accessories which are listed in the EC declaration of conformity. The usage of other accessories my cause an increased emission of electromagnetic disturbances or may lead to a reduced electromagnetic immunity.

The unit must not be arranged physically close to other devices or stacked with them. If such an order is necessary nevertheless, the unit must be observed in order to check it for the intentional operation.

You find more EMC-comments in the chapter "Warnings and Safety Precautions" of this manual as well as in the Technical Information on the next two pages.

In accordance with the EMC-regulations for medical products we are obliged by law to provide the following information.

Guidance and manufacturer's declaration — electromagnetic emissions

The equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the equipment should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions, CISPR 11	Group 2	The equipment must emit electromagnetic energy in order to perform its intended function. Nearby electronic equipment may be affected.
RF emissions, CISPR 11	Class B	The equipment is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions, IEC 61000-3-2 (*)	Class A	
Voltage fluctuation/flicker emissions, IEC 61000-3-3 (*)	Complies	
(*) Note: For devices with a power consumption between 75 W and 1000 W only.		

Guidance and manufacturer's declaration — electromagnetic immunity

The equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the equipment should assure that it is used in such an environment.			
Immunity test	**IEC 60601- test level**	**Compliance level**	**Electromagnetic environment – guidance**
Electrostatic discharge (ESD), IEC61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst, IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge, IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines, IEC 61000-4-11	<5% U_τ for ½ cycle (>95% dip) 40% U_τ for 5 cycles 60% dip) 70% U_τ for 25 cycles 30% dip) <95% U_τ for 5 s (>5% dip)	<5% U_τ for ½ cycle (>95% dip) 40% U_τ for 5 cycles 60% dip) 70% U_τ for 25 cycles 30% dip) <95% U_τ for 5 s (>5% dip)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the equipment requires continued operation during power mains interruptions, it is recommended that the equipment be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field, IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_τ is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration — electromagnetic immunity

The equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the equipment should assure that it is used in such an environment.			
Immunity test	**IEC 60601- test level**	**Compliance level**	**Electromagnetic environment – guidance**
			Portable and mobile RF communications equipment should be used no closer to any part of the equipment, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance (m):**
Conducted RF, IEC 61000-4-6	3 V_{rms} 150 kHz to 80 MHz	3 V_{eff}	d=1,2√P
Radiated RF, IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3V/m	d=1,2√P for 80 MHz to 800 MHz d=2,3√P for 800 MHz to 2,5 GHz
			Where P is the maximum output power rating of the transmitter in watts according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Interference may occur in the vicinity of equipment marked with the following symbol: 

Recommended separation distances to portable and mobile RF communication equipment

The equipment is intended to be operated in an electromagnetic environment, where radiated RF interference is controlled. The user can help in avoiding interferences by means of meeting minimum separation distances between portable and mobile RF communication equipment (transmitters) according to the maximum output power of the communication equipment.			
Rated power of the transmitter (W)	**Separation distance according to the tranmission frequency (m)**		
	150 kHz to 80 MHz d=1,2√P	**80 MHz to 800 MHz d=1,2√P**	**800 MHz to 2,5 GHz d=2,3√P**
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

Table of Contents

1 Introduction

1.1 Preface

Safe operation of the short-wave therapy unit requires knowledge of both medicine and electricity.

For this reason, the short-wave therapy unit may be used only by persons with the appropriate training, knowledge and practical experience necessary to ensure proper handling of the unit and who have been properly trained in the use of the unit based on these operating instructions!

- Therefore, please read this operating manual thoroughly and be sure to comply with the safety instructions!

We will be glad to answer any questions you may have concerning this unit or other gbo Medizintechnik AG products.

Our address can be found at the beginning of this manual.

1.2 Scope

The information provided in this instruction manual refers to the

ULTRATHERM 1008 short-wave therapy unit

from gbo Medizintechnik AG.

1.3 Intended use

The ULTRATHERM 1008 short-wave therapy unit may be used only for the intended purposed – **short-wave therapy in the medical treatment of human beings**!

Any other use is deemed not authorized and can cause personal injury or damage to property!

1.4 Guarantee

The **ULTRATHERM 1008 short-wave therapy unit** is guaranteed for 2 years from the date of delivery by gbo Medizintechnik AG.

The unit is covered by the guarantee policy of gbo Medizintechnik AG.

Repair of the unit may be performed only by the manufacturer or a person or company authorized by the manufacturer!

1.5 Exclusion of liability

All obligations of the manufacturer are regulated by the appropriate sales contract or in case of claims for liability, by the product liability law.

Liability claims for personal injury or property damage are excluded if they are the result of one or more of the following causes:

- Unauthorized use of the unit
- Improper operation and maintenance of the unit
- Operation of the unit with protective covers removed, apparent damage to insulators (cables, electrodes) or faults in the building's power supply (protective conductor, residual-current circuit-breaker)
- Failure to comply with the information in this instruction manual concerning the operation, maintenance and repair of the unit
- Use of accessories and replacement parts of other manufacturers
- Unauthorized modification, repairs or structural modifications to the unit
- Unauthorized modification of the unit controls
- Unauthorized exceeding of the power limits
- Failure to inspect parts that are subject to wear
- Treatment of patients without a medical indication
- Catastrophes due to foreign objects or superior force

1.6 Symbols used in the documentation

Information in bold type that is accompanied by this symbol is very important; also for preventing personal injury! You must comply with this information!

Information in bold type that is accompanied by this symbol is important; also for preventing damage to property! You must comply with this information!

Information accompanied by this symbol contains comments, suggestions or tips.

⇨ This arrow identifies cross-references.

● This dot identifies direct instructions for action.

– This dash identifies enumerated items.

1.7 Warning and information plates on the unit

Warning: **Read operating instructions!**
(The symbol is located on the control panel.)

Warning: **Danger for persons with pacemakers or similar implanted devices!**
(The symbol is located above the connection sockets for the electrode cable.)

Note: **Device of type BF (insulated (non-earthed) application element).**
(The symbol is located on the control panel.)

CE – Conformity sign
(The symbol is located on the rating plate.)

This product complies with WEEE Directive 2002/96/EG (waste electrical and electronic equipment). Separate collection for electrical and electronic equipment.

2 Safety instructions

2.1 General information

The **ULTRATHERM 1008 short-wave therapy unit** and the accompanying components and individual elements fulfill singly and as a unit the currently valid safety standards and comply with the stipulations of IEC 601 and the medical products regulations.

The unit and its external components (accessory elements) are safe if used properly and in compliance with the explanations and instructions provided in this documentation.

Nevertheless, the unit or its external components can pose dangers!

Therefore, we urgently recommend that anyone operating the short-wave therapy unit become aware of the potential dangers of the unit and its external components before beginning work.

Please read and observe all safety instructions in this operating manual.

2.2 Responsibilities

- **The short-wave therapy unit may be used only by doctors, physiotherapists or trained assistants under the direction of a doctor or physiotherapist!**
- **Before treating a patient, an anamnesis must be performed by the attending physician, during which the patient must be consulted concerning possible contraindications!**

  An accurate diagnosis is always required for each treatment!
- **All service work (safety inspections and repairs) must be performed only by service technicians who have been authorized by the manufacturer!**

- For your own safety, please read the following safety instructions carefully and observe the information contained therein!
- Perform all work
  - **according to the explanations in this instruction manual,**
  - **correctly and as precisely as possible and**
  - **in compliance with the relevant safety and accident prevention regulations!**

2.3 Personal safety

In case of improper or unauthorized use of the unit, the operator, the patient or other persons may be subjected to the danger of electric shock due to high voltage produced by the unit, the danger of influence on active implantations by magnetic fields produced by the unit and the danger of being burned due to erroneously positioned electrodes or false parameters such as the duration of treatment, power output or operating mode!

- Before operating the unit, please read this instruction manual carefully and observe the information contained therein!
- Pay special attention to the list of contraindications at the end of the instruction manual!

(⇨ Annex B Contraindications)

- Before operating the unit each time, check whether
  - **the unit has been correctly connected to the building's power supply,**
  - **the unit has been set up so that it is free-standing and the patient is not in direct contact with metal objects such as heating radiators, metal beds or other equipment,**
  - **the insulation of the power supply and electrode connection cables is not damaged,**
  - **the electrode connection cable is connected properly and is not cross-routed (which may cause capacitive short circuits),**
  - **only accessories (cables, electrodes) approved by the manufacturer are connected,**
  - **the patient to be treated (and the personnel) have removed all electric devices (e. g. hearing aids, electrotherapy electrodes, mobile telephones) and all conductive objects (e. g. rings, chains, watches, earrings or other jewelry, eyeglasses) and that they are not in the immediate vicinity of the unit,**
  - **the patient is in a composed state and the bodily areas to be treated are dry on the exterior,**
  - **the electrodes are positioned according to the doctor's instructions (to be checked by the doctor or physiotherapist if applied by assisting personnel),**
  - **there is no danger of unwanted local warming due to electrode constrictions and**
  - **no other persons are located within 2 meters of the unit!**

- Before using the unit, speak with the patient to make sure that
  - **he is in a comfortable position during the entire treatment,**
  - **he is not in contact with the unit, the electrode connection cable, the electrodes or other devices or metal objects and**
  - **he should (and can) let you know if he feels unwell!**
- Before using the unit, determine the maximum nominal output power of the respective applicators in order to avoid overheating of tissue!

  (⇨ 7.7 Beginning the treatment)
- At regular intervals during the treatment, check
  - **that the unit is functioning properly,**
  - **for moisture development* (perspiration) in the area of the electrodes and**
  - **whether the patient feels well**!**
- After the treatment, ask the patient about his tolerance of the treatment and visit the treatment environment (doctor or physiotherapist).

* The affected parts of the body should be unclothed during treatment, since accumulation of moisture on the skin or in folds can cause local overheating of the skin. This is especially important in case of clothing made of moisture-resistant fabric such as silk or synthetic fibers!

** The output power must always be set according to the subjective response of the patient! Particular care is to be taken with patients who have a reduced capacity for heat perception!

(⇨ A.2 Dosage levels according to Schliephake)

2.4 Protection of unit

Improper installation, operation or maintenance of the short-wave therapy unit may result in malfunctions of this unit or other devices!

Therefore, observe the following instructions in order to prevent malfunctions:

- In order to prevent electromagnetic disturbances, place the unit at least 6 meters from any other devices! Also make sure that there is sufficient distance between the unit and power supply or data cables in walls, ceilings and floors, since the electromagnetic radiation from the unit can pass these essentially without hindrance!

  In selecting the location for the unit, make sure that the patient has contact during the treatment to the non-earthed application element and, due to equalizing currents in case of differing potentials, that the patient is never in contact with metal elements (especially if they are earthed), such as heating radiators, metal beds or other earthed devices!

- Before connecting the unit, make sure that
  - **the voltage selected by the voltage selector corresponds to the available system voltage,**
  - **the frequency rating on the rating plate corresponds to the system frequency,**
  - **an earthed (!) socket outlet with earthing contact is available for connecting the unit,**
  - **the routing of the power cable from the unit to the socket outlet with earthing contact does not pose a danger for personnel or the patient**
  - **the building's power supply is designed for the comparatively high (possibly additional) power input of the unit (~ 1500 VA) and the line is sufficiently protected in accordance with regulations!**

  Do not connect the unit to the power supply until these requirements have been fulfilled!

- Before putting the unit into operation, check to make sure that the electrode connection cable and the electrodes are undamaged and have been connected correctly to the unit!

  Never operate the unit with open outputs (i.e. without electrodes)!

- Do not operate the unit for an extended period with no load (without a patient), especially in coil (induction field) mode! When operating the unit without power output, induction field electrodes could be destroyed due to overheating!
- Pay attention to the routing of the electrode connection cables. These must always be in the air and must never lie on surfaces!
- Keep chip cards, magnetic cards, audio and video cassettes and other data media that are susceptible to interference away from the unit!
- Clean and disinfect the unit only when the power supply is deactivated (power switch off, power plug disconnected)!
- Clean and disinfect the unit only by means of disinfection by wiping! Disinfecting by spraying can damage the unit due to penetrating moisture!
- Never clean the unit with abrasives, disinfectants or solvents that could scratch the housing or damage the unit!
- Never perform unauthorized service work!

  All service work (safety inspections and repairs) must be performed only by service technicians who have been authorized by the manufacturer!

3 Installation

3.1 Requirements for installation

Before the unit can be installed and put into operation, certain requirements must be fulfilled in the building where the unit is to be operated!

If the unit cannot be installed immediately after delivery, the unit and its external components or accessory elements must be stored in their original packaging in a dry place!

Do not store or operate the unit in a dusty environment!

3.2 Requirements of the installation location

The unit must be installed so that there is no danger to the patient, the operator or other persons!

Therefore, you must read the safety instruction in Chapter 2 and the following information!

- By selecting a suitable location for setting up the unit or by means of structural measures, contact during the treatment by the personnel or the patient with conductive materials that are earthed or have a high capacity to earth must be prevented (e.g. heating pipes, water faucets, metal chairs, metal beds or other earthed devices).
- The unit must be set up so that the (normal) release of electromagnetic radiation during operation does not hinder the function of other devices or data media. The minimum distance to other devices or their power supplies or data transfer lines is 6 meters! Please note that the radiation can easily pass walls, ceilings and floors.
- The room and the installation location must be large enough so that the unit can be operated from the front even if the electrodes are positioned inconveniently.

3.3 Transport of the unit

Measures concerning the transport of the unit from the manufacturer to the operator are based on the individual circumstances and are defined in the general terms of business.

In the event of subsequent transport of the unit, the dealer or the operator is responsible for the unit and for compliance with the safety and accident prevention regulations.

3.4 Unpacking the unit

The unit is generally delivered with the packaging material supplied by the manufacturer. Since the unit weight about 60 kg, it must be unpacked by at least 2 persons!

Proceed as follows:

- Position the transport packaging so that the UP mark is pointing upward.
- Remove the safety bands from the transport packaging.
- Remove the transport packaging upward.
- Remove the remaining foam material.
- Lift (at least two persons) the unit from the lower packaging element.

3.5 Inspection upon receipt

- Verify the delivery documents to make sure that the delivery is complete.
- Immediately after unpacking the unit, check the external components and accessories for possible damage due to transport.

In case of damage from transport that could endanger personal safety, the unit must not be connected to the power supply!

-
-

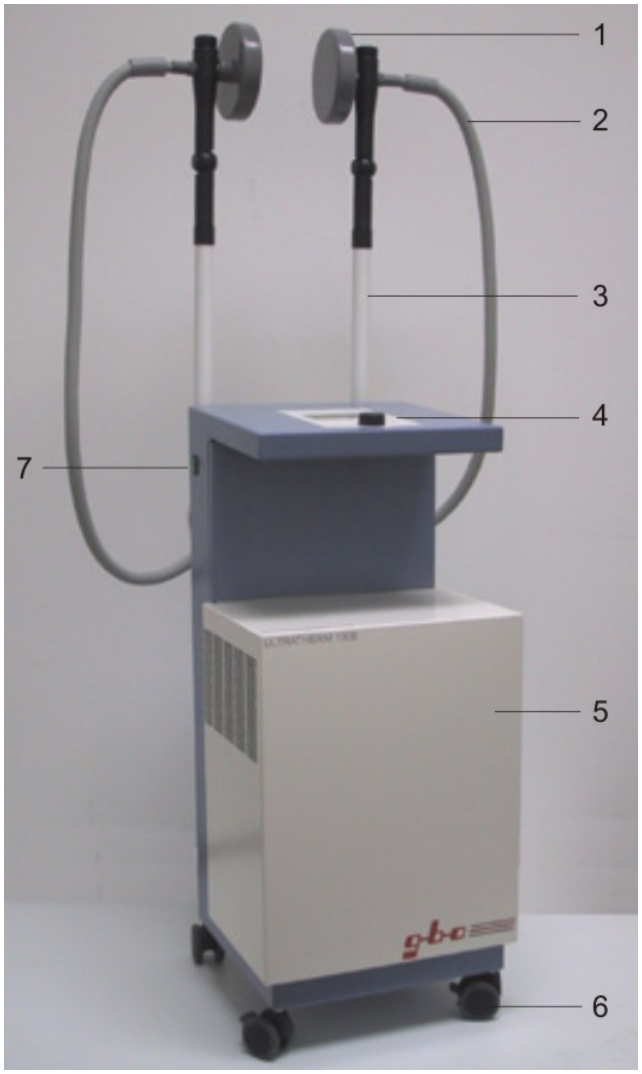
3.6 Damages

Claims for damages resulting from damage due to transport are valid only if the carrier **and** the manufacture are notified without delay. Notification of the manufacturer and the remedy of the damages generally takes place by the dealer.

- Prepare a damage report at once and send it to the carrier and to the dealer.
- When returning the unit, include the following information:
  - Name and address of the sender and receiver
  - Type and serial number of the unit
  - Description of the defect (damage report)
  - Date and signature

4 Description of unit

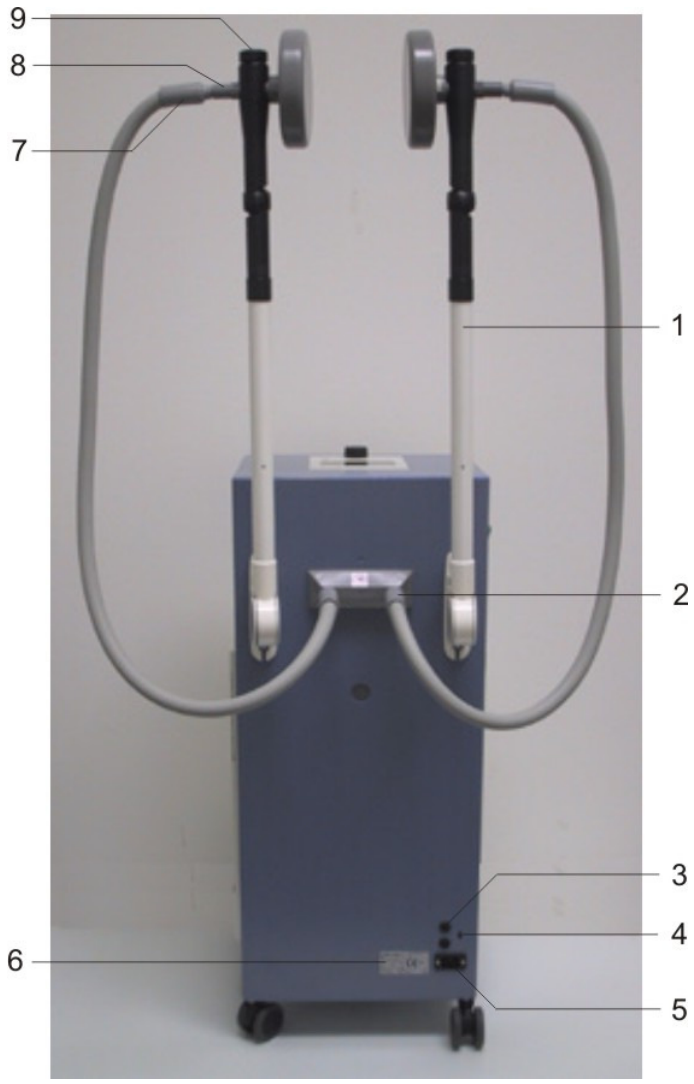
4.1 Operator side



1 *Plastic plate electrode*
2 *Electrode connection cable with sponge rubber covering*
3 *Self-locking plastic electrode arm, extractable*
4 *Control panel with graphic display*
5 *Metal housing*
6 *Locking castor*
7 *Power switch*

Fig. 4 - 1 Front view of ULTRATHERM 1008

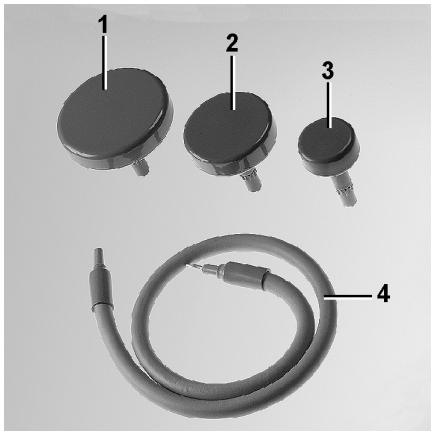
4.2 Patient side



1 *Self-locking plastic electrode arm, extractable*
2 *Male end of the electrode connection cable*
3 *Power safety devices*
4 *Voltage selector*
5 *High-load non-heating appliance plug*
6 *Rating plate*
7 *Female end of the electrode connection cable*
8 *Adjusting element for electrode-skin distance*
9 *Locking screw on electrode arm*

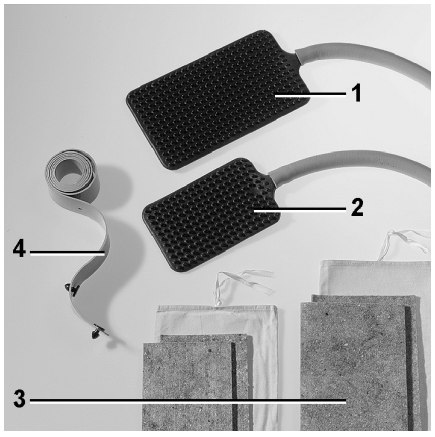
Fig. 4 - 2 Back view of ULTRATHERM 1008

4.3 Accessories



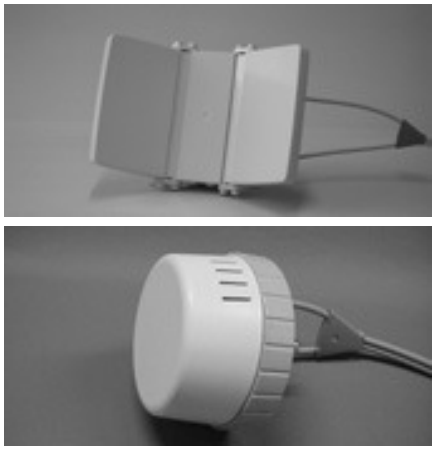
1 *Plastic plate electrode ∅ 165 mm*
2 *Plastic plate electrode ∅ 120 mm*
3 *Plastic plate electrode ∅ 80 mm*
4 *Electrode connecting cable with sponge rubber covering*

Fig. 4 - 3 Plastic plate electrodes, capacitor (dielectric) field



1 *Rubber capacitor electrode 250 x 145 mm*
2 *Rubber capacitor electrode 180 x 120 mm*
3 *Felt layer with linen bag for 1 and 2*
4 *Perforated rubber band with 2 buttons*

Fig. 4 - 4 Rubber capacitor electrodes, capacitor (dielectric) field



1 *Eddy-current electrode (Diplode) with cable*

2 *Eddy-current electrode (Monode) with cable*

Fig. 4 - 5 Plastic eddy-current electrodes, coil (induction) field

5 Description of functions

5.1 Introduction

The ULTRATHERM 1008 short-wave therapy unit can produce dielectric warming by means of electric or electromagnetic fields of varying intensity in essentially any region of the body and can therefore be used for a wide variety of applications.

Treatments can be carried out using either the capacitor (dielectric-field) or the coil (induction-field) method.

In the dielectric-field method, the body part to be treated is within the electric field between two plate electrodes. The “radiation” produces a warming of the body part located within the induction field. Fat layers are warmed considerably more than muscle tissue. When applying the induction-field method, the body part is within a magnetic field, which warms especially tissue containing liquid located near the surface, such as muscles.

5.2 Applications

The short-wave therapy unit is suitable for nearly all heat therapy processes for use in clinics and private practices.

Classical therapy applications can be conducted with the induction-field and dielectric-field methods in continuous or pulsed mode.

The application of high-frequency energy in heat therapy has the advantage of greater depth penetration as opposed to simpler methods, such as packs, baths, infrared light and heat cushions.

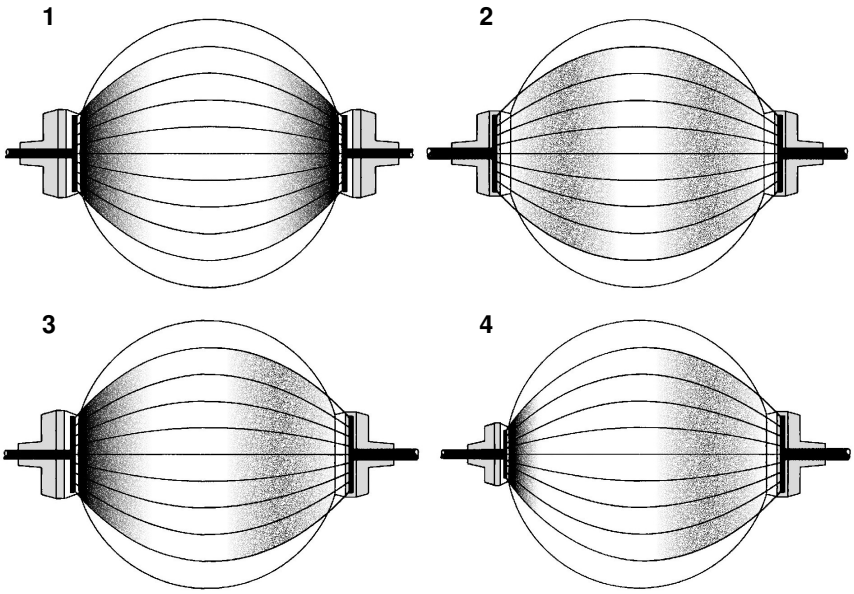
The endogenous heat that is formed triggers a series of physiological processes, producing a spasmolytic effect on muscles, tendons and other structures containing connective tissue, increasing the cell metabolism and the enzyme reaction speed and stimulating perfusion in the treated zone.

The capability of applying the high-frequency energy in short, intense pulses (pulsed mode) can further increase the depth effectiveness, especially the stimulation of perfusion, while the heat generation is hardly felt in the skin, which is more sensitive to heat.

The applications for the high-frequency therapy are diverse. This therapy is especially effective in treating rheumatic disorders of the joints and muscles, inflammatory disorders of the respiratory organs, the kidneys and bile ducts and all disorders due to insufficient perfusion. The pulsed mode is advantageous in the treatment of acute conditions.

gbo Medizintechnik AG short-wave therapy units are therefore used for a wide range of applications in hospitals and in private practices by doctors and physiotherapists.

5.3 Short-wave therapy in the capacitor (dielectric) field



1 *Heat distribution with a small electrode-skin distance (ESD)*
2 *Heat distribution with a large electrode-skin distance (ESD)*
3 *Heat distribution with an unequal electrode-skin distance (ESD)*
4 *Heat distribution with unequal electrodes and an unequal ESD*

Fig. 5 - 1

With the capacitor (dielectric field) method, the body part being treated is located in the high-frequency electric field between two insulated electrodes. The body and the electrodes together form a capacitor. This causes heat to be generated in the entire treatment field located between the electrodes.

With the capacitor method, fat tissue is warmed more effectively than muscle tissue.

Rigid electrodes (plate electrodes) and soft rubber electrodes are used for the capacitor method.

An adjusting device on the plate electrodes or layers of felt with the rubber capacitor electrodes can be used to achieve different electrode-skin distances (ESD).

The ESD must be small for surface warming and large for depth warming! A larger ESD is necessary for patients with a thick layer of subcutaneous fat in order to achieve the necessary warming of deep-lying tissue!

5.4 Short-wave therapy in the coil (induction) field

The coil or induction field produces the high-frequency electric currents within the body tissue by means of induction (induction field). The high-frequency circuit of closed currents occurring in the tissue as a result of induction are referred to as eddy currents. The density of these eddy currents, which is important for the warming effect, is proportional to the electrical conductivity of the tissue. At the same field intensity, therefore, tissue with better conductivity, such as muscles and inner organs, are warmed more than fat tissue. The danger of excessive heating of the outer layers of tissue is therefore significantly reduced, while effective warming down into the muscles is primary.

Two different eddy-current electrodes are available as induction field electrodes:

- Minode for treatment of small-sized areas
- Monode for treatment of mid-sized areas
- Three-part Diplode for treatment of large areas and for treatment of suitable body parts that can be warmed from three sides at the same time.

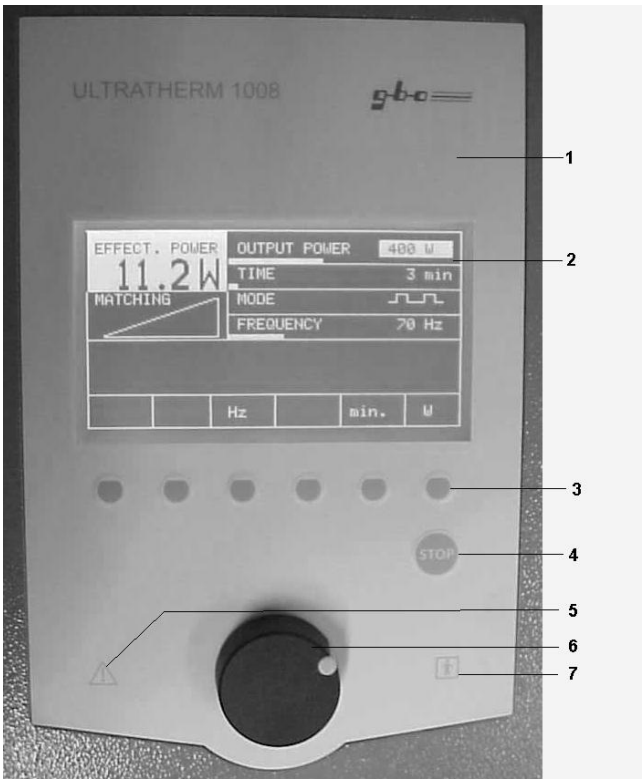
With the induction field electrodes, the perception of warming is delayed. It is recommended to remain below the desired power output at the beginning of the treatment and then to increase the power in increments.

For maximum depth effectiveness, the inductive field electrodes should be in direct contact with the body.

Induction field electrodes that are operated without a patient could be destroyed due to overheating!

6 Program description

6.1 Display and control elements

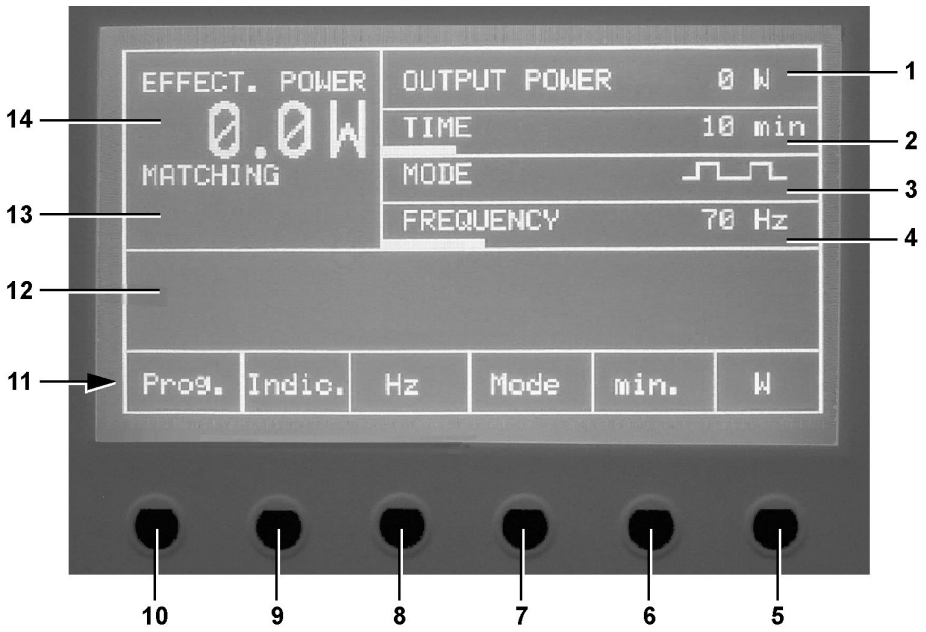


1 *ULTRATHERM 1008 operating element*
2 *Graphic display*
3 *Multi-function keys*
4 *Stop-key (power output shut-off)*
5 *Important: Read operating instructions!*
6 *Multi-function rotary switch with push-button function (Enter)*
7 *Note: Device of type BF (insulated non-earthed application element)*

Fig. 6 - 1 ULTRATHERM 1008 operating element

6.2 Main menu

Main menu after unit is switched on



1 *Output power display field (amplitude)*
2 *Duration of treatment display field*
3 *Operating mode display field (pulsed or continuous mode)*
4 *Pulse frequency in pulsed mode display field*
5 *Function key for activation of the output power parameter*
6 *Function key for activation of the treatment duration parameter*
7 *Function key for activation of the operating mode parameter*
8 *Function key for setting the frequency in pulsed mode*
9 *Function key for selection of the indications menu*
10 *Function key for selection of the programming menu*
11 *Display fields for identifying the key functions*
12 *Text output display field*
13 *Matching display field*
14 *Effective power display field (patient effective power)*

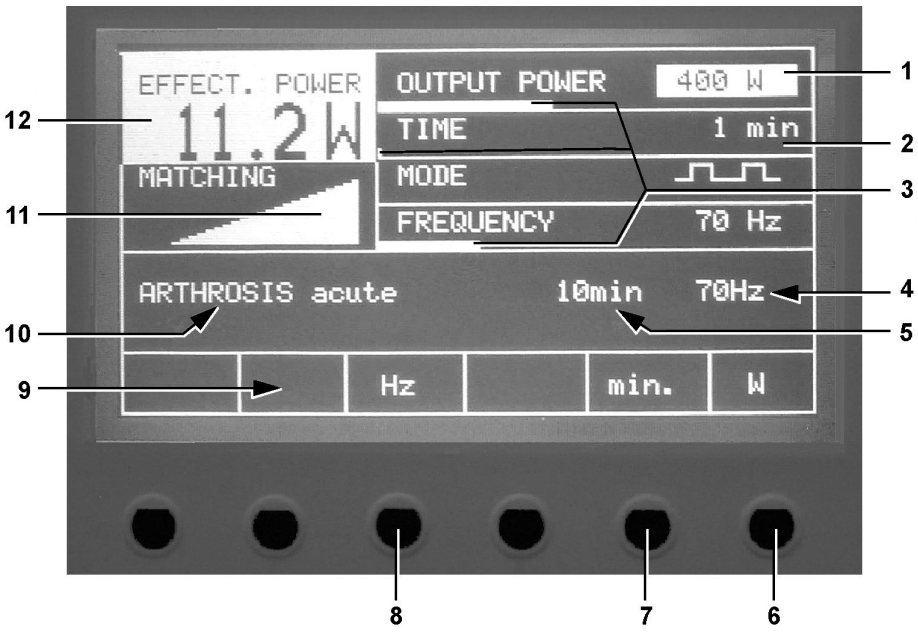
Fig. 6 - 2 ULTRATHERM 1008 main menu

Parameters can be set in three ways:

1. Direct input of parameter with the function keys (5 through 8)
2. Selection of a disorder in the indications menu (9)
3. Selection of a program saved in the programming menu (10)

The treatment is always started by turning up the output power.

Main menu during treatment



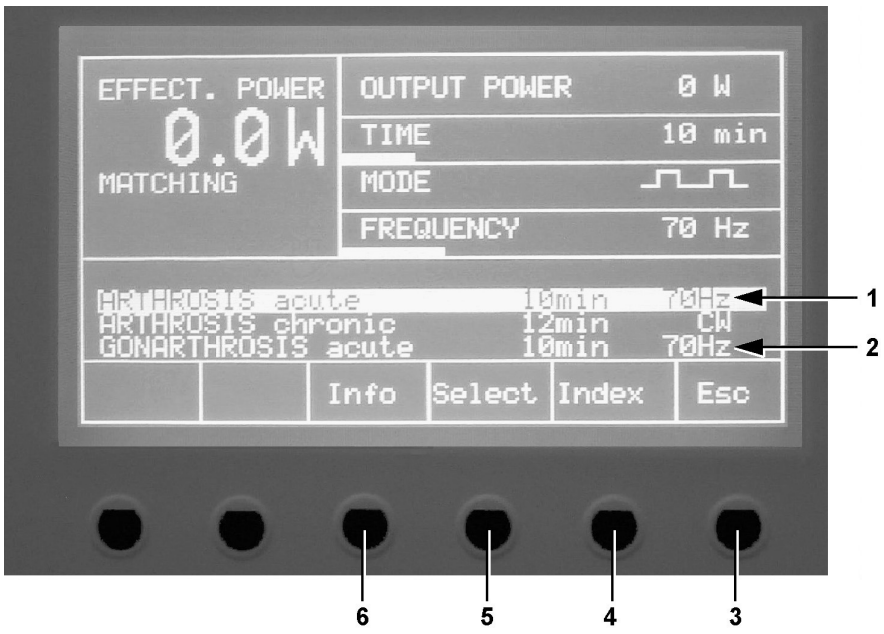
1 *Output power display field (amplitude, selected)*
2 *(Remaining) duration of treatment display field*
3 *Bar display (relative to the maximum value)*
4 *Frequency rating according to the indications menu (only in pulsed mode)*
5 *Duration of treatment according to indications menu*
6 *Function key for activation of the output power parameter*
7 *Function key for activation of the treatment duration parameter*
8 *Function key for activating the frequency parameter in pulsed mode*
9 *Display fields for identifying the key functions*
10 *Selected disorder according to indications menu display field*
11 *Matching display field (optimum effect in full display)*
12 *Effective power display field (patient effective power)*

Fig. 6 - 3 ULTRATHERM 1008 main menu

- The information in the text output field varies depending on the selected program or indication and disappears after changing the parameter for these preset values.
- The effective output power is dependent on the amplitude value of the output power, the frequency setting and the pulse duration setting in the basic settings menu.
- In continuous mode (CW-Mode ≙ **c**ontinuous **w**ave mode), the amplitude value of the output power is the same as the effective output power.

6.3 Indications menu

Indications menu; main page



1 *Disorder, selected (inverse display)*

2 *Disorder, not selected*

3 *Function key for return to main menu*

4 *Function key for calling up disorders of other medical fields (index page)*

5 *Function key for confirmation of parameters of the selected disorder (Enter); alternatively, the push-button function of the multi-function rotary switch can be used*

6 *Function key for calling up further information (application of electrodes, comments on therapy)*

Fig. 6 - 4 Indications menu; ULTRATHERM 1008 main page

Indications menu; index page

1 *Medical field, not selected*

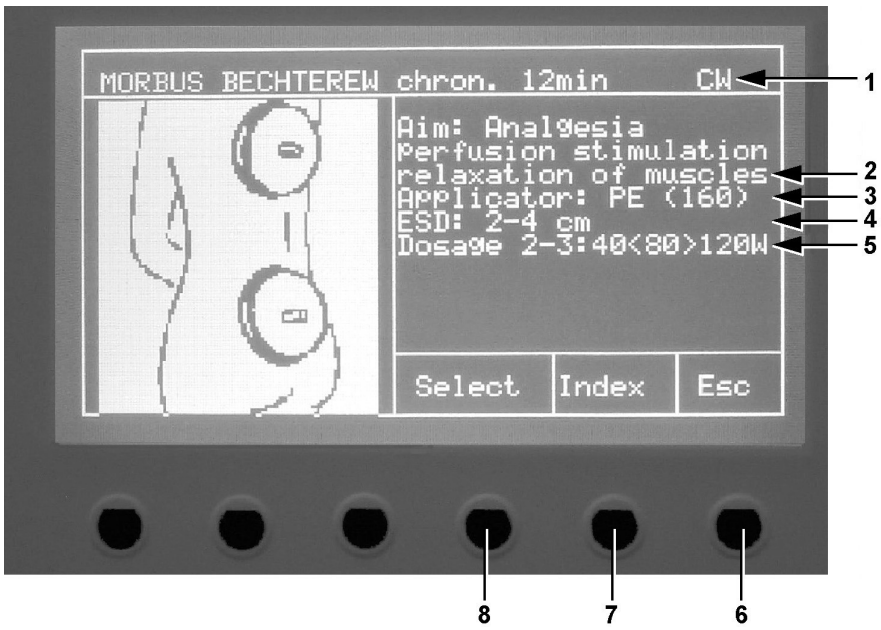
2 *Medical field, selected (inverse display)*

3 *Function key for confirming the selected medical field (Enter); alternatively, the push-button function of the multi-function rotary switch can be used*

4 *Function key for return to main page*

Fig. 6 - 5 Indications menu; ULTRATHERM 1008 index page

Indications menu; info page



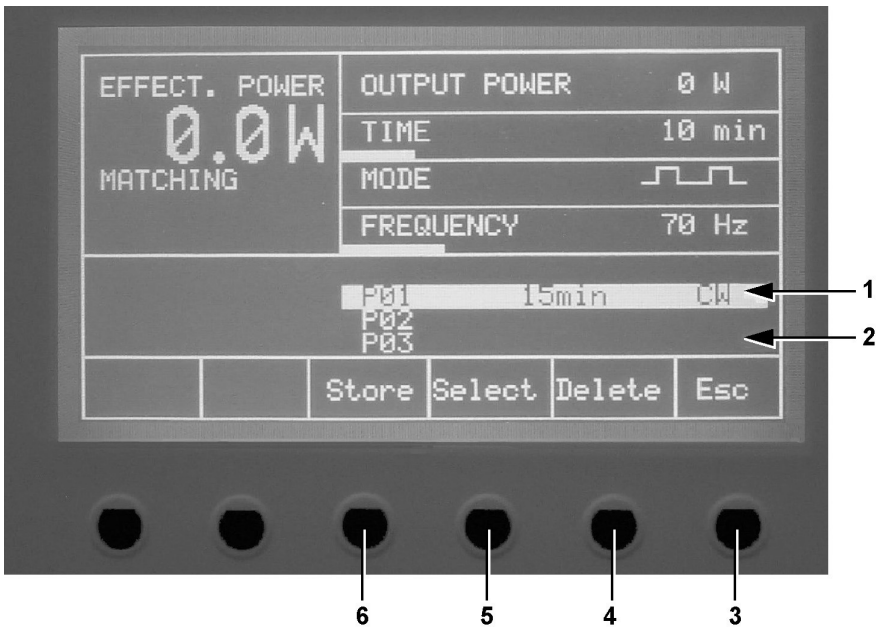
1 *Disorder with duration of treatment and operating mode display field*
2 *Goal of treatment display field*
3 *Applicator display field **
4 *Electrode-skin distance (ESD) display field*
5 *Recommended treatment dosage display field ***
6 *Function key for return to main page*
7 *Function key for calling up disorders of other medical fields*
8 *Function key for confirming the parameters from the display field (1); alternatively, the push-button function of the multi-function rotary switch can be used*

Fig. 6 - 6 Indications menu; ULTRATHERM 1008 info page

* PE = plate electrode (the number in parentheses indicates the electrode diameter)
RE = rubber capacitor electrode

** Treatment dosage
– according to Schliephake: **(⇨ A.2 Dosage levels according to Schliephake)**
– after effective power output: minimum <normal> maximum

6.4 Programming menu



1 *Program position selected display field*

2 *Free program position display field*

3 *Function key for return to main menu*

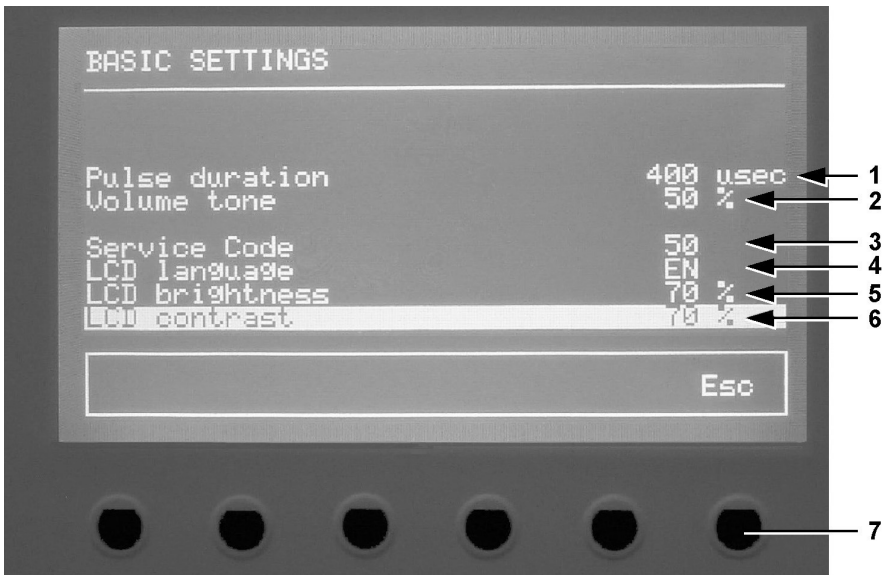
4 *Function key for deleting the parameters of the selected program position*

5 *Function key for selecting the saved parameters of the selected program position (1) for the next treatment.*

6 *Function key for saving the values displayed in the parameters display field in the selected program position. In this case, already saved parameters are overwritten.*

Fig. 6 - 7 ULTRATHERM 1008 programming menu

6.5 Basic settings menu



1 *Pulse duration in pulsed mode display field*
2 *Transmitter volume display field*
3 *Service code display field*
4 *Language selection menu font display field*
5 *Graphic display brightness display field*
6 *Graphic display contrast display field*
7 *Function key for return to main menu*

Fig. 6 - 8 ULTRATHERM 1008 basic settings menu

Opening the basic settings menu:
(⇨ 7.9 Changing basic settings)

7 Putting the unit into operation

7.1 Preparing the unit for operation

The unit has been completely assembled in the factory and is ready for use except for connection of the electrodes.

Proceed as follows in order to prepare the unit for operation:

- Make sure that the voltage selected by the voltage selector corresponds to the available system voltage.
- Insert the required electrodes into the recesses at the end of the electrode arms and fasten the electrodes with the locking screws.
- Plug the electrode connection cable into the socket on the back of the unit. Attach the connecting cable in the cable holders on the electrode arms.
- Set the power switch to the off position.
- Plug the high-load connector for non-heating appliances into the corresponding socket on the back of the unit.

7.2 Check for operational safety

The unit and the electrodes must be positioned so that there is no danger of personal injury! Therefore, you must read and observe the safety instructions and the list of contra-indications before putting the unit into operation!

(⇨ 2.3 Personal safety)

(⇨ Annex B Contraindications)

- Check the condition of the housing and the insulation of the electrodes, electrode connection cable and the power supply cable. Also make sure that the cables have been routed correctly.
- Insert the power plug into an earthed (!) socket outlet.

7.3 Positioning the electrodes

- Position the required electrodes on the part of the body to be treated according to the medical indication. Refer to the indications table at the end of this instruction manual and also observe the following information:

The electrodes must be positioned so as to avoid overheating due to edge effects. The surfaces of the electrodes must be nearly parallel to the area being treated. It is possible, however, to use these edge effects for therapeutic purposes.
If such an effect is expressly desired, the dosage must be controlled very carefully!

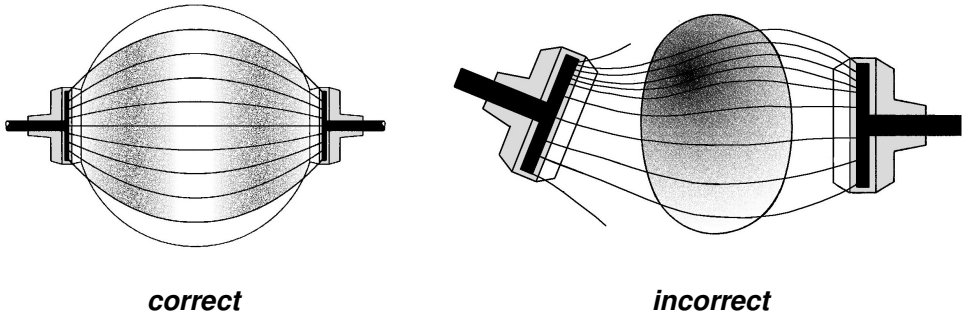


Fig. 7 - 1 Positioning of electrodes – edge effect

Local overheating can occur in the electric field due to one-sided application of electrodes or the presence of metal objects (e.g. earrings, metal implants).

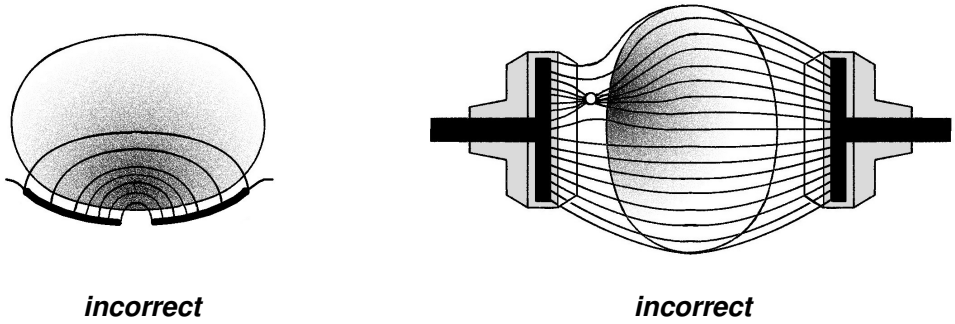
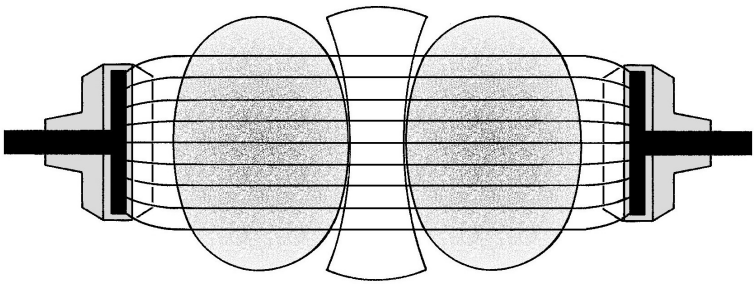
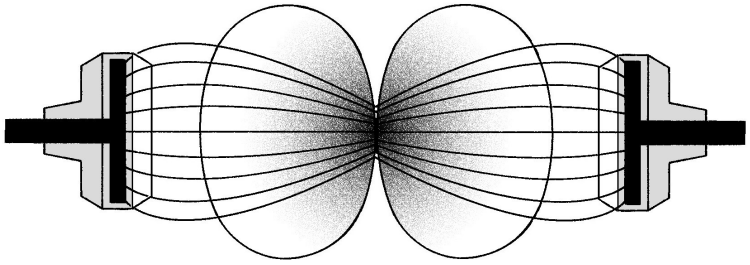


Fig. 7 - 2 Positioning of electrodes – edge effect and metal objects

Local overheating can also occur due to electrode constrictions. This can be prevented by increasing the distance (e.g. with pillows, felt layers) of the affected body part.



correct

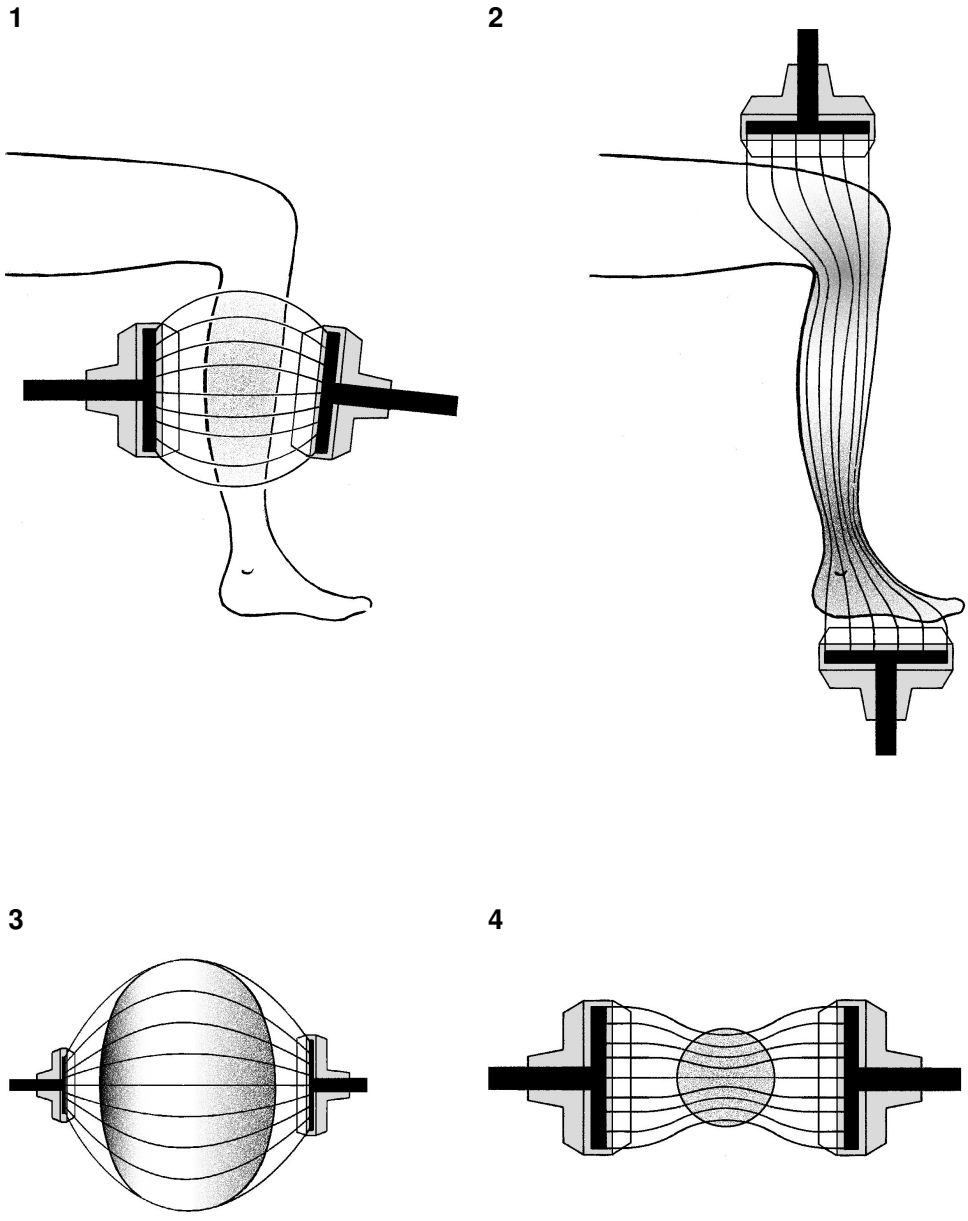


incorrect

Fig. 7 - 3 Positioning of electrodes – electrode constriction

Surface warming can be reduced by increasing the electrode distance. The use of the Monode is recommended for local applications. It is also possible to achieve this, however, by using different electrode sizes and varying the positions.

Below you will find several examples for correct placement of electrodes:



1 *Even irradiation of extremities in the transverse field*
2 *Even irradiation of extremities in the longitudinal field*
3 *Uneven irradiation by the use of different electrodes*
4 *Even irradiation of areas of the trunk, the head or the extremities with a large electrode-skin distance.*

Fig. 7 - 4 Positioning of electrodes – normal cases

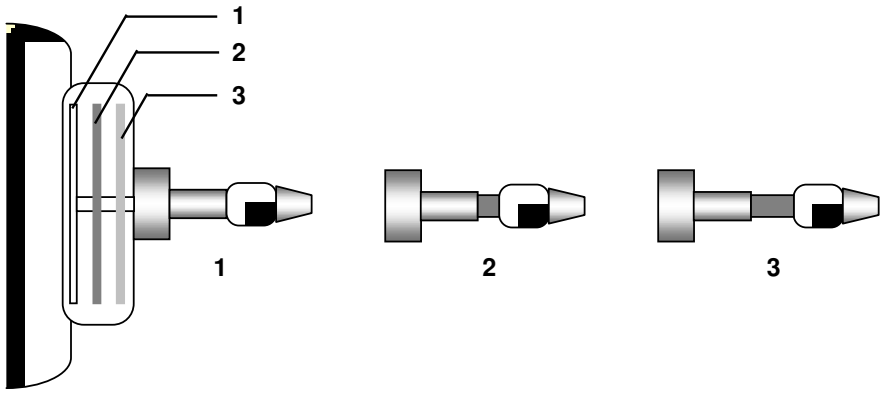
7.4 Setting the electrode-skin distance

The full power required for successful depth therapy is provided by the unit by using a large electrode-skin distance (ESD).

For treatment near the surface, in which the power must be limited in accordance with the respective therapy, a small electrode-skin distance is required.

The optimum setting of the plate electrodes can also be achieved when the electrodes are in contact with the patient's body by adjusting the electrode adjusting pin.

This adjustment changes the distance of the metal plate that is built into the electrode for determining the penetration depth of the HF field; i.e. the distance between the metal plate and the body is increased or decreased.



Position	1	2	3
Electrode-skin distance	1 cm	app. 1.75 cm	app. 2.5 cm
Position of the adjusting pin	inserted	half pulled-out	fully pulled-out

Fig. 7 - 3 Plate electrode with adjusting pin

The soft rubber electrodes adapt to the shape of the body and are held to the body with elastic bands or with small sandbags. The desired electrode-skin distance can be achieved by placing a variable number of felt layers underneath.

The inductive eddy-current electrodes (Minode, Monode and Diplode) are generally placed in contact with the patient's body.

- Set the electrode-skin distance according to the information in the indications table.

7.5 Switching on the unit

- Switch on the power switch.

After switching on the unit by means of the power switch, a short self-test is conducted.

In case of an internal error in the unit, an error code is displayed in the text output field, to assist the technicians in locating the error. In this case, please contact your authorized dealer.

7.6 Setting the parameters

Parameters can be set in three ways:

1. Direct input of parameters
2. Selection of a disorder in the indications menu
3. Selection of a saved program in the program menu.

Proceed as follows, depending on the desired method for setting the parameters:

Direct input of parameters

- According to the information in the indications table in Annex A, set the parameters for duration of treatment, operating mode and frequency (only for pulsed mode) as follows:
  1. Select desired parameter by pressing the corresponding function key (min., Mode, Hz) in the main menu.
  2. Set the selected parameter by turning the multi-function rotary switch to the appropriate position.
  3. Accept the set value by pressing the multi-function rotary switch.

Selecting parameters in the indications menu

- Set the parameter by selecting a disorder in the indications menu as follows:
  1. Select the indications menu by pressing the function key (Indic.) in the main menu.
  2. If necessary, change the medical field by selecting the index page.
  3. Set the desired disorder by turning the multi-function rotary switch.
  4. Display further information by selecting the info page, if applicable.
  5. Accept the saved parameter values for the disorder by pressing the multi-function rotary switch or the Select key.

Selecting parameters in the programming menu

- Set the parameters by selecting a previously saved program in the programming menu as follows:
  1. Select the programming menu by pressing the function key (Prog.) in the main menu.
  2. Set the desired program by turning the multi-function rotary switch.
  3. Accept the parameter values saved in the program by pressing the multi-function rotary switch or the Select key.

7.7 Beginning the treatment

Treatment is always started from the basic menu by turning up the output power by means of the multi-function rotary switch from zero to the desired value. The treatment can be interrupted at any time by pressing the STOP key.

In order to prevent unbearable warming of tissue, the effective output power, as summarized in the following table, must not be exceeded!

Type of electrode	max. effective power
Minode	80 Watt
Monode	120 Watt
Diplode	200 Watt
Plate electrode ∅ 80 mm	80 Watt
Plate electrode ∅ 120 mm	200 Watt
Plate electrode ∅ 165 mm	400 Watt
Rubber capacitor electrode 120 x 180 mm	250 Watt
Rubber capacitor electrode 145 x 250 mm	400 Watt

Induction field electrodes that are operated without a patient could be destroyed due to overheating!

Before beginning treatment, you must read and observe the safety instructions and the list of contra-indications!

(⇨ 2.3 Personal safety)

(⇨ Annex B Contraindications)

- Begin the treatment as follows:
  1. Make sure that the electrodes are in the correct position
  2. Check the parameter setting
  3. Select the output parameter by pressing the function key (W)
  4. By turning the multi-function rotary switch, **slowly** increase the output power. Observe the matching display and the well-being of the patient (verbal response)
  5. Adjust the parameter setting during the treatment, if necessary

During active treatment it is not possible to switch directly from continuous mode (CW mode) to pulsed mode and vice versa.

7.8 Interrupting/ending treatment

- Press the STOP key to interrupt the treatment or wait until the treatment duration has elapsed (signal tone).
- Remove the electrodes and ask the patient how he feels.

7.9 Changing the basic settings

- Switch off the power switch.
- Press the multi-function rotary switch and hold it down.
- Switch the unit on by means of the power switch and wait (with the multi-function rotary switch depressed) until the basic settings menu is displayed.
- Turn the multi-function rotary switch until the desired parameter line is selected.
- Press the multi-function rotary switch. The value to be changed in this line is displayed inversely.
- Set the desired parameter value by turning the multi-function rotary switch.
- Confirm the set value by pressing the multi-function rotary switch. The entire line is then inverted again.
- Change further basic parameters or switch to the main menu by pressing the function key (ESC).

Parameter	Default value	Range
Pulse duration	400 µs	200 - 600 µs
Volume	50 %	0 – 100 %
Service code	0	–
language	DE	DE, EN, FR, ES, IT, RU, PT, TU
LCD brightness	70 %	10 - 100 %
LCD contrast	70 %	0 - 100 %

8 Maintenance and repairs

8.1 Routine maintenance

As the manufacturer, we are responsible for the safety and reliability of the unit only if it is used in accordance with the operating instructions.

Safety inspections, maintenance, repairs and modifications may be performed only by our company or expressly authorized service personnel.

In case of defects, components must be replaced by original parts.

In accordance with the law concerning medical products, the unit must be entered in a medical products log.

Instruction, safety inspections and repairs must be entered with the date of performance in the medical products log.

8.2 Cleaning and disinfection

- Switch off the power switch.

- Unplug the power plug from the socket before cleaning or disinfecting the unit!

- Clean and disinfect the unit and accessories on all external surfaces with a slightly damp cleaning cloth. Use a commercially available cleaning agent that is intended for use in medical facilities.

Under no circumstances may liquid penetrate the openings on the unit, e.g. the connecting sockets of the electrode cables! Therefore, do not use cleaning or disinfectant sprays! The unit, electrodes and cables may not be sterilized using steam or gas!

Never clean the unit with abrasives, disinfectants or solvents that could scratch the housing or damage the unit.

- Wait until the unit is completely dry before operating it again.

8.3 Safety inspections

The following safety inspections must be performed on this unit at 24-month intervals. This must be done by persons who, based on training, knowledge or practical experience, are capable of conducting the inspections correctly and independently.

Visual inspection

- Housing not deformed?
- Power cable undamaged?
- Electrode connection sockets undamaged?
- Power switch OK?
- Electrode cable undamaged?
- Plate electrodes, Diplode, Monode, Minode undamaged (no fissures or brittle material)?
- Rubber capacitor electrodes undamaged (no thin areas or holes)?

Functional test

- Correct function of indicators
- Display of operating modes
- Time setting, check timer for accuracy, e.g. ± 5 s
- Verify power output using a neon indicator

Electrical test (acc. to IEC 601-1)

● Earth leakage current	≤ 0.5 mA (normal condition)
● Earth leakage current	≤ 1.0 mA (single fault condition)
● Housing leakage current	≤ 0.1 mA (normal condition)
● Housing leakage current	≤ 0.5 mA (single fault condition)
● Protective conductor resistance	≤ 100 mΩ

We recommend that the safety inspections be entered in a medical products log in order to document the results of the inspection!

If the unit is not safe for operation, then it must be repaired by the authorized service personnel and the operators must be informed of the dangers posed by the unit!

8.4 Error messages

Both operator errors and internal errors in the unit are displayed as an error code with text information.

Operator errors

E01: Please check electrodes and cables

Cause: An optimum tuning point could not be found; therefore, the applicators, their ESD and the correct connection to the electrode cable should be checked again.

E02: Matching...Please wait!

Cause: For reasons of safety the effective output must not be set higher than 100 W, as long as the tuning process is still in progress. The reason for this is that if tuning takes place at a higher effective output, heat can be clearly felt.

Internal errors

With the exception of temperature errors, the treatment must be discontinued immediately in case of internal errors in the unit. The unit can only be switched off and on again by means of the power switch. If the error message appears again, make a note of the error code, switch the unit off again and notify your authorized service partner.

In case of display failure or other obvious defects, switch the unit off immediately by means of the power switch and notify your authorized service partner!

8.5 Repairs

Do no perform unauthorized repairs under any circumstances!

All service work (safety inspections, repairs) may be performed only by service personnel authorized by the manufacturer!

9 Technical specifications

9.1 Transport and storage conditions

Ambient temperature **	- 40 °C to + 70 °C
Relative humidity	10 % to 100 %
Air pressure	500 hPa to 1060 hPa

9.2 Operating data and ratings

Dimensions *	420 x 970 x 410 mm (W x H x D)
Weight *	60 kg
Ambient temperature **	+ 10 °C to + 40 °C
Relative humidity	30 % to 75 %
Air pressure	700 hPa to 1060 hPa
Supply voltage	115 / 230 V
Frequency	50/60 Hz
Power consumption	1400 VA
Line fuses	T16 A
HF nominal power	1000 W pulsed mode (at the pulse peak) 400 W continuous mode
Power setting	in 10-Watt increments (CW mode), in 50-Watt increments (pulsed mode)
Power indication	Amplitude and effective power
Working frequency	27.12 MHz +/- 0.6 %
Pulse duration	200 – 600 µs
Pulse frequency	10 – 300 Hz
Treatment duration	1 – 60 min
Design	IEC 601-1, IEC 601-2-3, IEC 601-1-2
Protection class	I/BF
Equipment class (MPG)	IIb acc. to MPG
Certification	The device bears the CE mark according to Council Directive 93/42 EWG of 14 June 1993 on medical products.

* without electrodes, electrode arms and electrode cables

**** If the unit is operated after cooling to below the freezing point, malfunctions or defects may occur due to formation of condensation water !**

Annex A

Indications table

Table of contents for Annex A

A Indications table

A.1 Important information

This indications table – **which makes no claim to being comprehensive** – contains empirical values as guidelines for short-wave therapy.

If properly executed, the therapeutic application of the short-wave irradiation is safe and effective.

Nevertheless, the unit or its external components can pose dangers!

Therefore, we urgently recommend that anyone operating the short-wave therapy unit become aware of the potential dangers of the unit and its external components before beginning work.

- **Read and comply with all safety instructions and the list of contraindications!**

  (⇨ 2. Safety instructions)

  (⇨ Annex B Contraindications)

- The conventional method of even warming of all tissue layers by means of continuous transfer of energy is supplemented by successfully including new areas of application in the treatment due to the pulsed mode. Based on experience in clinics and specialized practices, optimum results are achieved with a pulsed, athermal therapy especially in the case of acute illnesses.
- For illnesses that have not yet reached the chronic stage but have been present for some time, a pulsed, low-thermal application should be preferred.
- Continuous application is recommend in case of decidedly chronic conditions.
- When applying the short-wave treatment to small children, a very careful dosage and constant observation (manual checking of skin temperature when the unit is switched off) are necessary. Accordingly, small children should be fully undressed during the treatment.
- For surface therapy (skin and subcutaneous fat), a small distance is usually required between the electrode and the skin on the treatment side (active side) and a large distance on the opposite (passive) side.
- For depth therapy (inner organs, joints), a large electrode-skin distance is required on both sides.

– If the muscles or the joints are to be warmed more on one side, the use of the special electrode, or “Monode”, is recommended.
The “Monode” is used in a monopole configuration, i.e. without a counter-electrode.

– The duration of treatment (e.g. 5 – 20 minutes) should be short and with a small dosage at the beginning and can be gradually increased – depending on the tolerance of the patient.
In case of severe reactions, the treatment should be interrupted and then reduced to a smaller dosage and a shorter duration.

A.2 Dosage levels according to Schliephake

Dosage 1: **No perceptible heat** (athermal, subliminal)

Dosage 2: **Slight warming** (heat just perceptible)

Dosage 3: **Pleasantly warm** (pleasant, tolerable perception of warmth)

Dosage 4: **Strong warming** (strong but still tolerable perception of heat)

Heat perception	Treatment dosage			
	1	2	3	4
none	■			
low		■		
medium			■	
strong				■

Dosage schema according to Schliephake

Important:
Always begin the treatment with an initially low dosage! After the treatment has been in progress for 1 – 2 minutes you can make the final setting based on the subjective response of the patient.

A.3 Indications

On the following pages you will find a list of disorders that can be treated with short-wave therapy; the list is arranged according to medical fields and is also analogous to the unit software.

A.4 Orthopedics – Surgery / Neurology

Disorders of the musculoskeletal system (bones, joints and muscles)

Arthritis and arthrosis

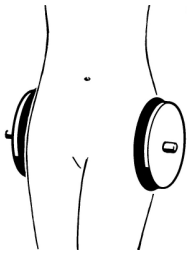
In contrast to treatment with medication, electrotherapy is seldom applied to the various forms of arthritis and polyarthritis, since this is primarily a non-specific therapy. The goal of the therapy is primarily to alleviate pain and swelling.

A.4.1 Osteoarthritis

Definition: Chronic joint disorders (knee, hip, shoulder, elbow, hand, foot and mandibular joints)

Goal of treatment: analgesia, tone reduction, stimulation of perfusion

Favorable combinations: ultrasonic therapy, electrotherapy (combined therapy), manual therapy, prevention of dysfunctional stress, cryotherapy



Heat therapy – short-wave (chronic)		
Mode	Continuous mode	
Applicator	Plate electrodes	
Location of treatment	Irradiation of painful joints	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	10 – 15 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue Apply treatment in pain-free joint positions	
Important!	**Use heat therapy only if tolerable for patient!**	

A.4.2 Chronic polyarthritis of the hip and shoulder joints

Definition: Inflammation of more than one joint

Goal of treatment: Pain relief, lessening of inflammation

Favorable combinations: Physical therapy, immobilization and position to relieve pain, electrotherapy

Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diplode	
Location of treatment	Irradiation of painful joints	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	5 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	10 – 15 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, can also be applied for 2 – 3 minutes in inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.	

A.4.3 Achillodynia

Definition: Irritation of the Achilles tendon

Goal of treatment: Stimulation of perfusion, elimination of functionally-impaired contractures, analgesia, trophic improvement

Favorable combinations: Reduction of strain due to sports, heel cushions to alleviate symptoms, ultrasound, electrotherapy, cryotherapy and heat therapy

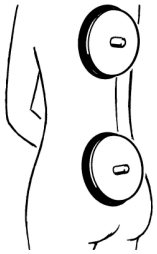
Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode	
Location of treatment	Both sides of the Achilles tendon	
Electrode-skin distance	Left: 1 cm – 2 cm	Right: 1 cm – 2 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	12 – 15 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, can also be applied for 2 – 3 minutes in inflammatory condition.	

A.4.4 Bechterew's disease

Definition: Inflammatory, stiffening disorder of the spine and of the major joints

Goal of treatment: Pain relief, local stimulation of perfusion, alleviation of muscular tension

Favorable combinations: Combined therapy (electrotherapy / ultrasound), physical therapy, physical exercise, breathing exercises



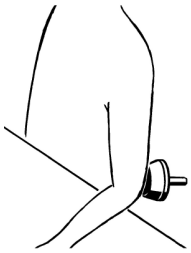
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diplode	
Location of treatment	Longitudinal irradiation of the spine	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	12 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, can also be applied for 2 – 3 minutes in inflamed or inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.	

A.4.5 Bursitis

Definition: Bursal synovitis

Goal of treatment: Normal function without irritation

Favorable combinations: Manual therapy: pain-relieving traction, mobilization below caudal, cryotherapy or cold compresses in acute condition. Histamine iontophoresis. heat therapy and ultrasound in chronic condition.



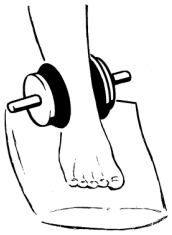
Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode / pulsed mode subacute	
Applicator	Plate electrodes / Monode	
Location of treatment	Above the joint	
Electrode-skin distance	Active: 1,5 cm – 2 cm ∅ 8 cm	Passive: 2 cm – 4 cm ∅ larger than active electrode
Duration of treatment	3 min – 10 min	Subacute: 10 min – 15 min
Treatment dosage	Dosage: 2 – 3	Subacute: Dosage: 1 12 Watt middle power
Treatment interval	Every other day	8 – 12 treatments
Notes	Coil method (Monode) in subacute phase	

A.4.6 Distortions, dislocations, contusions

Definition: Twisted joints, overextended joints, sprains, dislocations (luxation), crushing, injury due to brute force (contusion), always consider the possibility of fracture!

Goal of treatment: Pain relief, local stimulation of perfusion, hematoma resorption, luxations must first be set and immobilized until capsules are healed

Favorable combinations: Electrotherapy, ultrasonic therapy, ice treatment in acute condition



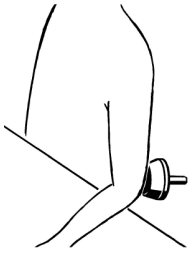
Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode; Monode (subacute)	
Location of treatment	Irradiation of the joint	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	5 min – 10 min	Subacute: 10 min – 15 min
Treatment dosage	Dosage: 2 – 3	Subacute: Dosage: 1 12 Watt middle power
Treatment interval	Daily	5 – 10 treatments
Notes	The use of coil (Monode / diplode) electrodes rather than capacitor (dielectric-field) electrodes is recommended	
Important!	**Contraindication: Heat therapy in all acute phases, fresh hematoma!**	

A.4.7 Epicondylitis

Definition: Tennis elbow, inflammation of tendon attachments on cubital or radial part of elbow joint (humeral)

Goal of treatment: Pain relief, elimination of irritation

Favorable combinations: **Ultrasonic therapy**, electrotherapy **(combined therapy)**, ice treatment, heat therapy only in chronic condition



Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Monode	
Location of treatment	Lateral irradiation of joint	
Electrode-skin distance	Electrode in contact with skin	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	Subacute: Dosage: 1 16 Watt middle power
Treatment interval	Daily	5 – 10 treatments
Important!	**Contraindication: Heat therapy in all acute phases!**	

A.4.8 Facial paralysis (peripheral)

Definition: Paralysis of the nervus facialis

Goal of treatment: Accelerated healing, facilitation of new innervation

Favorable combinations: Electrotherapy, heat therapy, keep face warm, passive or passive-active exercise in front of a mirror

Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Monode	
Location of treatment	Above the nerve end	
Electrode-skin distance	Electrode in contact with skin	
Duration of treatment	3 min – 8 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	up to 12 treatments
Notes	Short-wave therapy for nervus facialis aftercare	
Important!	**In case contractures occur, the electric therapy must be stopped immediately!**	

A.4.9 Fracture

Definition: Broken bones

Goal of treatment: Accelerated callus formation, especially in case of fractures that heal poorly

Favorable combinations: **Ultrasonic therapy**, heat therapy
Electrotherapy: training of the atrophied muscles

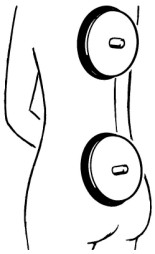
Heat therapy – short-wave (for fractures that heal poorly)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes	
Location of treatment	Locally, above the fracture	
Electrode-skin distance	Active: 2 cm	Passive: 4 cm
Duration of treatment	3 min – 5 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	10 treatments
Notes	The short-wave therapy accelerates and improves callus formation. Additional segmental application, dosage 1, 3 min., is always favorable.	
Important!	**Do not apply short-wave treatment in case of fresh hematoma or nailing!**	

A.4.10 Intercostal neuralgia

Definition: Nerve pain. Acute, painful irritation starting from the thoracic spine. Possible causes of this are nerve root compressions and acute blockages in the area of the kinetic elements or the joint faces of the vertebral bodies.

Goal of treatment: Pain relief

Favorable combinations: **Galvanization**, Stanger baths, iontophoresis, heat therapy, ultrasonic therapy. Injections with local anesthetics in the paravertebral muscles is a tried and tested treatment.



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diplode	
Location of treatment	Longitudinal stimulation in the nerve end	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2	**Acute: Dosage 1**
Treatment interval	Every other day	12 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, can also be applied for 2 – 3 minutes in inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.	
Important!	**Apply heat treatment only if it is bearable for the patient!**	

A.4.11 Ischialgia

Definition: Pain in ending of nervus ischiadicus, always radicular, usually caused by damaged intervertebral disk

Goal of treatment: Analgesia, tone reduction, hyperaemisation of the affected muscles

Favorable combinations: Ultrasonic therapy, electrotherapy (combined therapy), manual therapy

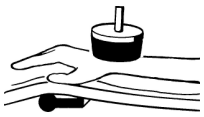
Heat therapy – short-wave (chronic)		
Mode	Continuous mode	
Applicator	Plate electrode 120 and rubber electrode 180 x 120	
Location of treatment	Sole of foot (rubber electrode) and knee (plate electrode) – longitudinal stimulation	
Electrode-skin distance	2 cm – 3 cm	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	At least 10 treatments in series
Notes	Treatment in supported prone position	
Important!	**Apply heat treatment only if bearable for the patient!**	

A.4.12 Contracture

Definition: Loss of motion in a joint due to the shortening of soft tissue

Goal of treatment: Physiological joint motion and muscle length

Favorable combinations: Physical therapy, electrotherapy, ultrasonic therapy, heat therapy, ice treatment, however not in case of aversion to cold (rheumatoid-arthritis).



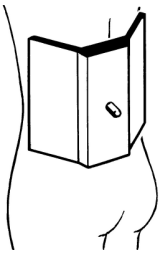
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode	
Location of treatment	Irradiation of the joint	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 – 4 cm
Duration of treatment	15 min – 20 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	3 times per week	10 – 12 treatments
Notes	Application of heat and cold help to loosen up the joints. Always apply kinesiotherapy afterwards!	
Important!	**Application of heat is contraindicated in case of pain!**	

A.4.13 Lumbago

Definition: Muscle pain in the lumbar region, lumbar rheumatism

Goal of treatment: Elimination of the painful muscle tension, tone reduction

Favorable combinations: **Ultrasonic therapy**, electrotherapy **(combined therapy)**, heat therapy



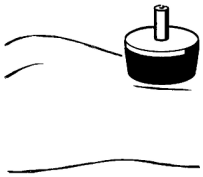
Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Monode, diplode	
Location of treatment	In the lumbar region	
Electrode-skin distance	Apply Monode or diplode directly to skin	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	Min. 6 treatments in series
Notes	Treatment in supported prone position	
Important!	**A further diagnosis is necessary if there is no improvement after the first treatments!**	

A.4.14 Myalgia

Definition: Muscle pain

Goal of treatment: Freedom from pain, full muscular function, tone reduction

Favorable combinations: **Ultrasonic therapy,** electrotherapy **(combined therapy),** heat therapy



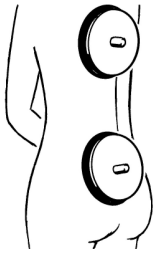
Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Monode, diplode	
Location of treatment	Above the muscle region	
Electrode-skin distance	Apply Monode or diplode directly to skin	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	Every other day	1 – 10 treatments
Notes	–	

A.4.15 Neuralgia / neuritis

Definition: Nerve pain, nerve inflammation.
While neuritis is characterized by clear symptoms of dysfunction, neuralgia refers to conditions where pain is primary, normally during the night.

Goal of treatment: Pain relief, acceleration of healing and regeneration without loss of function, inflammation stop

Favorable combinations: **Galvanisation,** hydroelectric one, two, four-cell or full bath, iontophoresis, heat therapy, ultrasonic therapy



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diplode	
Location of treatment	Longitudinal stimulation in nerve end	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	Acute: Dosage 1
Treatment interval	Every other day	12 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, can also be applied for 2 – 3 minutes in inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.	

A.4.16 Frozen shoulder

Definition: Shoulder pain accompanied by limitation of movement

Goal of treatment: Freedom from pain, stimulation of perfusion, full joint movement

Favorable combinations: **Ultrasonic therapy**, electrotherapy **(combined therapy)**, exercise. In case of acute pain, cryotherapy and immobilization with slight abduction is favorable.

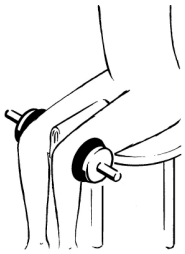
Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diplode	
Location of treatment	On both sides of the joint	
Electrode-skin distance	Active: 2 cm – 3 cm	Passive: 2 cm – 3 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	2 times per week	10 – 15 treatments
Important!	**Contraindication: Heat therapy in all acute phases!**	

A.4.17 Periostitis

Definition: Cortical osteitis

Goal of treatment: Pain relief, inflammation stop

Favorable combinations: **Ultrasonic therapy**, electrotherapy **(combined therapy)**, ice treatment, dressing with ointment containing NSAID (e.g. Voltaren Emulgel)



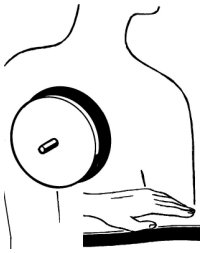
Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diplode	
Location of treatment	On both sides of the bone	
Electrode-skin distance	Active: 2 cm	Passive: 2 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Daily	10 – 15 treatments
Important!	**Contraindication: Heat therapy in all acute phases!**	

A.4.18 Raynaud´s disease

Definition: Acute arterial blood supply in the fingers (angiospasms)

Goal of treatment: Reduction of the frequency, intensity and duration of the attacks

Favorable combinations: **Heat therapy**, electrotherapy, physical exercises, warm hand baths



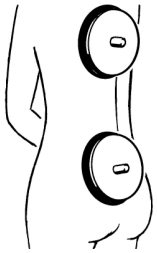
Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes / plate and rubber electrode / Monode	
Location of treatment	On both sides of the hand or from the shoulder blade to the hand	
Electrode-skin distance	Active: 2 cm	Passive: 2 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	2 – 3 times per week	10 – 12 treatments
Notes	Treatment only in inflammation-free stage, as accompaniment to kinesiotherapy. Begin with small dosage (1 – 2), after 5 – 8 treatments, increase to dosage level 3 if necessary.	

A.4.19 Spondylosîs / osteochondrosis

Definition: Arthrosis of the vertebral bodies
Degeneration of the intervertebral disks

Goal of treatment: Freedom from affliction, retardation of degeneration, muscle relaxation, stimulation of perfusion

Favorable combinations: **Ultrasonic therapy**, electrotherapy **(combined therapy)**, massage



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diplode	
Location of treatment	Above the spine	
Electrode-skin distance	Active: 3 cm – 4 cm	Passive: 3 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	15 – 20 treatments

A.4.20 Sudeck´s dystrophy

Definition: Fracture disorder, healing decompensation. Dystrophy refers to a dystrophic alteration of the extremities occurring especially after fractures and operations.

Goal of treatment: Slow, careful improvement of the metabolism of the extremity. Prevention of atrophy and stiffness of joints.

Favorable combinations: At the beginning, ice and ice immersion baths and carefully executed physical therapy exercises. **Ultrasonic therapy**, cryotherapy, electrotherapy, exercises in water bath below the pain threshold

Heat therapy – short-wave (only chronic afflictions: stage 3 and 4)		
Mode	Continuous mode	
Applicator	Monode, diplode	
Location of treatment	Segmental, local: after a few treatments according to the subjective feeling of the patient	
Electrode-skin distance	Active: 1 cm	
Duration of treatment	3 min – 6 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	3 times per week	10 – 12 treatments
Important!	**Heat therapy only if bearable and never in acute phase!**	

A.4.21 Tendovaginitis

Definition: Inflammation of tendon and sheath
Painful grating or chafing of the affected tendon after overstraining or dull trauma

Goal of treatment: Inflammation stop, pain relief, free movement function

Favorable combinations: **Ultrasonic therapy**, electrotherapy (iontophoresis), immobilization. In acute phase cryotherapy can be attempted. Physical therapy with stretching exercises. Rubbing with ointment containing heparin or NSAID can be attempted.

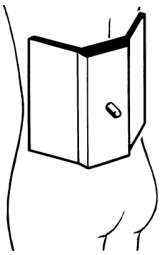
Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / Monode	
Location of treatment	Above the inflammation on both sides of the lower arm	
Electrode-skin distance	Active: 1 cm – 2 cm (small plate electrode)	Passive: large rubber electrode under the arm / hand
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Daily	15 – 20 treatments
Notes	In subacute phase: Pulsed mode dosage 1 (15 W effective)	

A.4.22 Cervical syndrome

Definition: Post-traumatic neck syndrome. Refers to afflictions beginning in the cervical spine that can emanate into the shoulder muscles or arms

Goal of treatment: Pain relief, stimulation of perfusion, specific relaxation and stretching of tense muscle groups.

Favorable combinations: Electrotherapy/iontophoresis, heat therapy, ultrasonic therapy/ combination therapy, fango packs and massage.



Heat therapy – short-wave (chronic affliction)		
Mode	Continuous mode	
Applicator	Monode / diplode	
Location of treatment	3rd cervical vertebra toward caudal	
Electrode-skin distance	Full contact	
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	5 – 10 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue.	
Important!	**Apply heat treatment only if it is bearable for the patient!**	

A.5 Dermatological indications

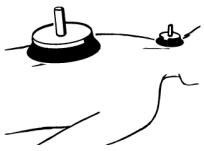
- Inflammatory and purulent conditions such as furuncles, carbuncles, sweat gland abscesses, paronychia and panaris can be favorably treated with **high-frequency heat therapy**. In the acute stage the inflammation should be stopped or suppressed. At a later stage, colliquation should be accelerated.
- In dermatology, the use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended for treatment.
- As the condition improves, continue the treatment until the wound is fully closed.

A.5.1 Furuncle, carbuncle

Definition: Inflammation of the hair follicle
Carbuncle: dense group of furuncles

Goal of treatment: Quick healing (i.e. acceleration of colliquation)

Favorable combinations: **Short-wave or microwave therapy** is the preferred method. UV-radiation, hot immersion or partial baths with addition of chamomile or arnica



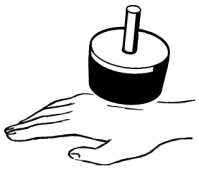
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode	
Location of treatment	Above inflammation	
Electrode-skin distance	Active: 1 cm (small electrode plate above the inflammation focus)	Passive: 4 cm with larger electrode
Duration of treatment	1 min – 2 min	
Treatment dosage	Dosage: 1	
Treatment interval	Daily	1 – 2 treatments
Notes	Can also be treated well with coil electrodes. In the beginning stage (small boil) it is often possible to achieve improvement with one treatment. In the advanced stage, the colliquation takes place in the direction chosen during the application. This can be used to good advantage with nose furuncles. Deep furuncles that are not open can be treated 2 minutes, ESD 2 cm. **Auditory canal furuncle:** ESD afflicted ear: 1.5 cm, press against auricle ESD healthy ear: 3 cm with larger electrode	
Important!	**Higher and longer dosages involve the danger of spreading! With open furuncles the wound must be dry; otherwise there is danger of being burned. Manual manipulations are contraindicated!**	

A.5.2 Frostbite

Definition: Tissue damaged by cold, perniosis

Goal of treatment: General warming, stimulation of perfusion

Favorable combinations: **Heat therapy**, ultrasonic therapy, electrotherapy (iontophoresis), baths with oak bark as medicinal additive



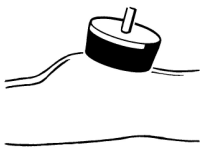
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / rubber electrodes / Monode	
Location of treatment	Above affected areas / eddy-current electrode in contact with skin	
Electrode-skin distance	Active: 2 cm – 3 cm	Passive: 6 cm
Duration of treatment	5 min – 8 min fresh (early treatment)	10 min old (late treatment)
Treatment dosage	Dosage: 1 fresh (early treatment)	Dosage: 1 – 2 old (late treatment)
Treatment interval	Daily	10 – 15 treatments
Notes	The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended. In case of fresh frostbite, treat with max. 20 W effective power.	

A.5.3 Skin injuries

Definition: Open legs (stasis ulcer), open wounds, bedsores (decubitus)

Goal of treatment: Stimulation of perfusion

Favorable combinations: Electrotherapy, heat therapy, baths with medicinal additives



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Monode	
Location of treatment	Above affected areas	
Electrode-skin distance	1 cm	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 1 10 W – 20 W effective power	
Treatment interval	Daily	10 treatments
Notes	Upon improvement, continue treatment until wound is closed	

A.5.4 Hidradenitis

Definition: Sweat gland abscess

Goal of treatment: Quick healing

Favorable combinations: **Short-wave or microwave therapy** is the preferred method

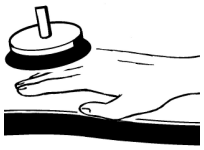
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode	
Location of treatment	In the axilla	
Electrode-skin distance	Active: 1cm (small plate electrode above the inflammation focus) Monode in contact with skin	Passive: 4 cm with larger electrode
Duration of treatment	10 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	10 treatments
Notes	The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended	

A.5.5 Panaritia

Definition: Whitlow, purulent inflammation on fingers and hand due to infection with suppuratives

Goal of treatment: Inflammation stop

Favorable combinations: **Short-wave therapy** is the preferred method



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / rubber electrodes / Monode	
Location of treatment	Above inflammation – Passive rubber electrode under the hand	
Electrode-skin distance	Active: 2 – 3 cm (small plate electrode above the inflammation focus)	Passive: 3 cm with rubber electrode
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	5 – 12 treatments
Notes	The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended	

A.6 Gynecology

A.6.1 Heat therapy

In gynecology, high-frequency therapy is used especially for stimulation of resorption and perfusion in case of chronic adnexitis and non-inflammatory disorders in the lesser pelvis.

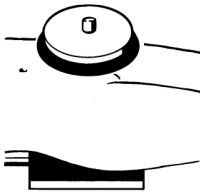
No local treatment during pregnancy or menstrual phase!

A.6.2 Adnexitis (chronic)

Definition: Inflammation of the ovaries and uterine tube

Goal of treatment: Acceleration of healing processes, stimulation of perfusion

Favorable combinations: Acute: absolute bed rest, ice pack, cold damp compresses
Chronic: mud applications



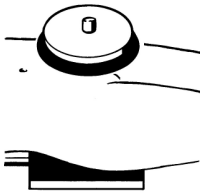
Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and under the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm with rubber electrode beneath the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	Every other day	5 – 10 treatments
Notes	–	
Important!	**No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!**	

A.6.3 Amenorrhea, dysmenorrhea, ovarian insufficiency

Definition: Absence of menstruation, painful menstruation, insufficient function of ovaries

Goal of treatment: Regular function of ovaries, painless menstruation

Favorable combinations: Physical therapy for neurohumoral regulation, mud baths, massage of connective tissue



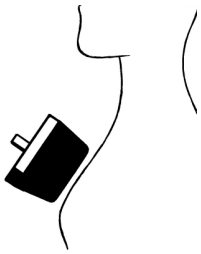
Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and under the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm with rubber electrode under the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	3-times per week	5 – 10 treatments
Notes	Begin: 6 days after menstruation	
Important!	**No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!**	

A.6.4 Mastitis

Definition: Inflammation of mammary glands

Goal of treatment: Stop inflammation

Favorable combinations: –



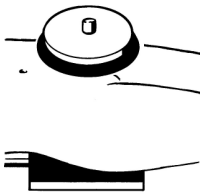
Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Diplode, Monode or plate electrodes	
Location of treatment	Above breast	
Electrode-skin distance	Diplode, Monode: full contact Active (ventral): 3 cm – 5 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm (shoulder blade)
Duration of treatment	1 – 2 min (for resorption of fresh infiltrates) 5 – 10 min (to stimulate colliquation in chronic afflictions)	
Treatment dosage	Dosage: 1 (for resorption of fresh infiltrates) Dosage: 2 (to stimulate colliquation in chronic afflictions)	
Treatment interval	Daily	5 – 10 treatments
Notes	–	

A.6.5 Myometritis (chronic)

Definition: Inflammation of uterine muscles

Goal of treatment: Accelerate healing, stimulation of perfusion

Favorable combinations: –



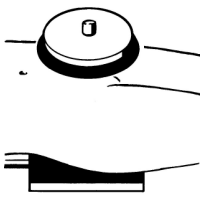
Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and beneath the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm with rubber electrode beneath the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	Every other day	5 – 10 treatments
Notes	–	
Important!	**No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!**	

A.6.6 Parametrism

Definition: Alteration of the female pelvic connective tissue

Goal of treatment: Stimulation of perfusion,
relaxation of the smooth uterine suspensory ligaments

Favorable combinations: Sitz baths for increasing temperature with additives such as natural mud, massage of connective tissue



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and beneath the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the organ to be stimulated)	Passive (dorsal): 4 cm – 5 cm with rubber electrode beneath the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2	
Treatment interval	3 times per week	5 – 10 treatments
Notes	–	
Important!	**No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!**	

A.7 ENT / dentistry and oral medicine

HF treatment of ear, nose and throat symptoms:
Especially subacute and chronic inflammations in the area of the paranasal sinuses and the external auditory canal are important indications for HF treatment. An acute middle ear infection is a known contraindication for any local application of heat.

HF treatment of dental, oral and mandibular symptoms:
Indicated especially after tooth extractions and in case of disorders of the mandibular joint. Warming of the external oral cavity and the proper oral cavity can also be achieved with HF heat therapy.

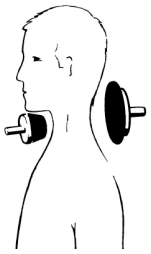
- **Avoid prolonged transverse irradiation through the skull due to impact on base of brain!**
- **Short-wave treatment is recommended for polypous conditions. Empyemas, however, should not be treated in this way!**
- **Never under (or immediately after) local anesthesia!**
- **Caution where larger metal parts, fillings, bridges or metal bars are present - resonance heating possible! Therefore, monitor heat conditions during the initial phase of the treatment and stop the short-wave application immediately if heat is felt!**

A.7.1 Laryngitis

Definition: Inflammation of the voice box without specific irritants

Goal of treatment: Freedom from affliction, clear voice, stimulation of local perfusion

Favorable combinations: Inhalation therapy: ultrasonic aerosol therapy, damp-warm throat compress



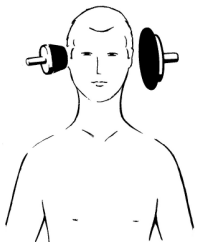
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode (full contact)	
Location of treatment	At level of thyroid cartilage and in the neck / eddy-current electrode in contact with skin	
Electrode-skin distance	Active: 1 cm – 4 cm	Passive: 5 cm
Duration of treatment	1 min – 3 min	
Treatment dosage	Dosage: 1	
Treatment interval	Daily	6 treatments
Notes	heat therapy in acute stage	
Important!	**Allow voice to recover fully, no whispering!**	

A.7.2 Otitis media (chronic)

Definition: Middle ear infection

Goal of treatment: Elimination of pain, acceleration of healing

Favorable combinations: –



Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes / Monode (full contact)	
Location of treatment	Afflicted ear (small electrode – press against auricle) and healthy ear (large electrode)	
Electrode-skin distance	Active: 2 cm (afflicted ear)	Passive: 3 cm – 4 cm (healthy ear)
Duration of treatment	2 min – 5 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	2 times per week	6 treatments
Notes	Heat therapy after perforation of the eardrum and in case of residual cavities after radical operations	
Important!	**Wherever possible, avoid extended transverse irradiation through the skull (due to impact on base of brain).**	

A.7.3 Sinusitis max.

Definition: Inflammation of maxillary sinus

Goal of treatment: Stimulation of perfusion, loosening of mucus, healing, improving resistance

Favorable combinations: **Heat therapy**, **ultrasonic therapy**, inhalation therapy with isotonic saline solution

Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes (small) / Monode	
Location of treatment	Plate electrodes: Apply on both sides of the face up to the level of the nasal root	
Electrode-skin distance	Active: 2 cm (small plate electrode)	Passive: 3 cm
Duration of treatment	Acute: 1 min – 3 min	Chronic: 5 min – 10 min
Treatment dosage	Acute: Dosage: 1	Chronic: Dosage: 2 – 3
Treatment interval	Daily Acute: 6 treatments	Chronic: 10 – 12 treatments
Notes	Short-wave is more effective than light box. Short-wave treatment is recommended for polypous conditions. Empyemas, however, should not be treated in this way!	
Important!	**Allow decongestion of mucous membranes before applying treatment!**	

A.8 Internal medicine, urology

Rheumatic disorders (see Orthopedics)

Disorders of the respiratory tract and the digestive tract

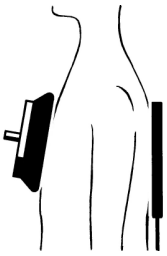
- **Combination with simultaneous aerosol inhalation in cases of chronic bronchitis. Do not apply short waves during fever attacks!**
- **Use heat therapy only at the posticteric stage. Note that the liver is better supplied with blood when the organ is in horizontal (not vertical) condition. Never irradiate acute hepatitis conditions (danger of life-threatening exacerbation)!**
- **Heat therapy after the inflammatory exudate has decreased. No heat therapy in cases of tuberculosis!**
- **Genitals should be kept outside of the capacitor (dielectric) field!**

A.8.1 Bronchitis (chronic)

Definition: Inflammation of the bronchial mucous membrane

Goal of treatment: Purulent chronic bronchitis: Healing (combat infection, loosening of mucus)
Obstructive chronic bronchitis: Removal of the bronchial obstruction

Favorable combinations: **Heat therapy, ultrasonic therapy**
Instruction in how to cough effectively, inhalation therapy: aerosol therapy with table salt, Sultanol® or Atrovent® inhalation solution



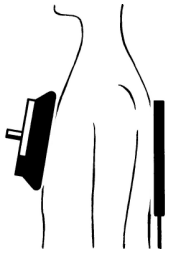
Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes (large) / diplode	
Location of treatment	Transverse irradiation of the thorax, apply diplode directly from ventral	
Electrode-skin distance	Ventral: 4 cm	Dorsal: 4 cm
Duration of treatment	In case of purulent mucus: 3 min	Obstructive chronic: 8 min – 12 min
Treatment dosage	In case of purulent mucus: Dosage: 1	Obstructive chronic: Dosage: 2 – 3
Treatment interval	Every other day	Chronic: 12 treatments
	Purulent: 6 treatments	
Notes	If possible, combine with simultaneous aerosol inhalation in case of chronic bronchitis	
Important!	**As long as purulent mucus is present, treat only with dosage 1; later with dosage 2!** **Do not apply short waves during fever attacks!**	

A.8.2 Cholelithiasis

Definition: Gallstones

Goal of treatment: Spasmolysis, pain relief, stimulation of perfusion

Favorable combinations: **Heat therapy, ultrasonic therapy,**
Massage of connective tissue, series of increasing foot baths with subsequent abdominal pack



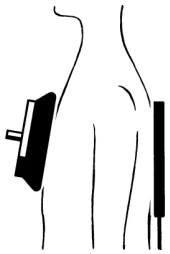
Heat therapy – short-wave (for post-operative complaints)		
Mode	Continuous mode	
Applicator	Plate electrodes (large) – rubber electrode	
Location of treatment	Transverse irradiation of liver region	
Electrode-skin distance	Ventral: 3 cm – 4 cm	Dorsal: 6 cm – 7 cm (rubber electrode and terry towels)
Duration of treatment	Postoperative: 3 min	
Treatment dosage	Dosage: 2	
Treatment interval	Every other day	10 – 12 treatments
Notes	The short-wave treatment is not the primary method for gallstones and dyskinesia of the bile ducts. It serves only to positively support neural therapy.	

A.8.3 Hepatitis

Definition: Inflammation of the liver

Goal of treatment: Healing, stimulation of perfusion of liver and general well-being

Favorable combinations: Hot roll above the liver, foot and arm baths, brush massage to stimulate peripheral perfusion, massage of connective tissue, breathing therapy



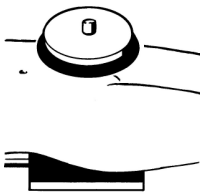
Heat therapy – short-wave (posticteric stage)		
Mode	Continuous mode	
Applicator	Plate electrodes – rubber electrode / diplode (full contact)	
Location of treatment	Above the liver	
Electrode-skin distance	Ventral: 2 cm – 4 cm or diplode (full contact)	Dorsal: 6 cm (rubber electrode)
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2	
Treatment interval	Every other day	12 treatments
Notes	Use heat therapy only in the posticteric stage. Note that the liver is better supplied with blood when the organ is in horizontal (not vertical) condition.	
Important!	**Never irradiate acute hepatitis conditions (danger of life-threatening exacerbation)! No hot full baths (this results in significant reduction of perfusion of the liver)!**	

A.8.4 Constipation

Definition: Constipation

Goal of treatment: Regular stool with normal consistency, improvement of tone and function of stomach muscles, stimulation of intestinal peristalsis

Favorable combinations: Heat therapy, ultrasonic therapy, electrotherapy, colon massage, connective tissue massage, sitz baths to raise temperature



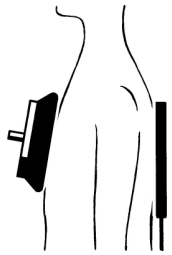
Heat therapy – short-wave (in case of spastic constipation)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes	
Location of treatment	Above abdomen and lumbar region	
Electrode-skin distance	Ventral: 4 cm – 5 cm	Dorsal: 5 cm (rubber electrode)
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2	
Treatment interval	Daily	5 treatments
Notes	Increased effectiveness in combination with spasmolysant, which should be applied intravenously or rectally before treatment.	
Important!	**Exact diagnosis necessary before beginning treatment! Omit specific disorders due to danger of colliquation of tissue!**	

A.8.5 Unspecific exudative pleurisy (chronic)

Definition: Inflammation of the pleura

Goal of treatment: Stop inflammation without retention of calluses, adhesive bands and breathing impediments

Favorable combinations: Breathing therapy, drainage position, breathing-thorax exercises, Kneipp pack, heat therapy



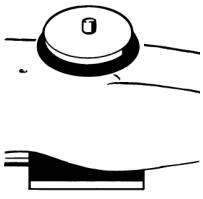
Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / diplode (full contact)	
Location of treatment	Ventral and dorsal from thorax	
Electrode-skin distance	Ventral: 5 cm	Dorsal: 5 cm
Duration of treatment	2 min – 5 min	
Treatment dosage	Dosage: 1 – 2 (increase dosage if tolerance is good)	
Treatment interval	2 times per week	10 treatments
Notes	Heat therapy after the inflammatory exudate has decreased. Heat therapy accelerates the resorption and reduces shrinkage and thickening. In cases of dry pleurisy, the treatment is used with various degrees of success.	
Important!	**Do not use heat therapy and UV radiation in cases of tuberculosis!**	

A.8.6 Prostatitis and vesiculitis

Definition: Inflammation of the prostate gland and the seminal gland

Goal of treatment: Healing, freedom from affliction, stop inflammation

Favorable combinations: Short-wave microwave therapy, warm to hot sitz baths



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes – rubber electrode / Monode	
Location of treatment	Active (smaller electrode) above the perineum, passive above the sacrum, Monode locally from direction of perineum	
Electrode-skin distance	Active above perineum: 2 cm	Passive above sacrum: 3 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	2 – 3 times per week	10 – 15 treatments
Notes	Genitals should be kept outside of the capacitor (dielectric) field	
Important!	**Acute: No short-wave therapy!**	

Annex B

Contraindications

B Contraindications

The following list of contraindications – which is by no means to be regarded as being comprehensive – should always be observed when applying short-wave treatment for therapeutic purposes!

Always be sure to ask the patient about these contraindications, as not all contraindications are immediately recognizable by the therapist (e.g. pregnancy)!

In addition, any external signs that might point to the existence of contraindications (e.g. scars, etc.) should always be reason enough to ask the patient about contraindications!

As a rule, any short-wave therapy must be strictly based on an accurate diagnosis!

B.1 Absolute contraindications

- Patients with a cardiac pacemaker may under no circumstances be subjected to short-wave therapy. The effects of the applied high frequency on the pacemaker could cause ventricular fibrillation. Any other persons with pacemakers must also remain outside of the treatment area during the short-wave therapy!
- Patients whose condition could be negatively affected by heat
- Patients with tuberculosis
- Patients with hemorrhages or risk of hemorrhage
- Patients with septic conditions and empyemas
- Patients with malignant tumors and tumors that are not yet identified [1]

[1] According to Schneider (in Elektromedizin 7/62): Tissue and organ sections with inflammations, necroses, pus formation and abscesses. In such cases, the therapist must choose between the application of cold or heat in accordance with general pathological considerations, depending on the degree of inflammation. Inflammatory conditions that are still in statu nascendi are treated with cold. Inflammatory conditions with necroses and a cavitary tendency are treated with therapeutic means that generate heat and hyperemia. Chronic and unspecific inflammations are treated in the same way (heat and hyperemia), as this supports resorption, reparation and regeneration. Specific chronic inflammations (such as tuberculosis), however, are activated by heat. Accordingly, they represent a contraindication. The same applies in the case of malignant tumorous conditions. Heat application in the case of a tumorous disease can only be regarded as malpractice. Moreover, cardiac congestions must be removed prior to any heat application.

B.2 Local contraindications

- Implants or metal inclusions [2]
- Implants that could be impaired by short-wave irradiation
- Swellings that still feel warm
- Thermohyperesthesia
- Thermohypesthesia
- Acute inflammations
- Severe arterial obstructions (stage III and IV)
- Gynecological disorders involving acute inflammation [3]
- Wetness, perspiration or damp bandages
- Permeating irradiation of the thorax in cases of severe heart diseases (heart valve diseases, myocardial insufficiency, myocardiac infarct, severe coronary sclerosis)
- Pregnancy, since irradiation of the abdomen could cause teratogenous damage due to alterations of blood circulation and diffusion
- During the menstrual cycle
- Sudeck's syndrome, stage I and II
- Basedow's disease (irradiation could cause serious states of agitation)
- Varicose veins (irradiation could cause congestive pain)

[2] The higher conductivity of metals causes concentration of the field, producing a high temperature in the border area of the tissue. This in turn can cause excessive local heat, leading to (irreparable) third-degree burns. Therefore, caution is also necessary in case of long-existing metal inclusions, such as shell fragments.

[3] Further contraindications relating to gynecological disorders include (see Möbius, Gynecological University Clinic, Jena): genital tuberculosis, endometriosis, pyosalpinx or pyo-ovarium, tubal carcinoma.

B.3 Of particular importance

– Particular care must be taken if the patient's clothing is wet or damp, since the garments may heat up faster and more intensely than the patient's body.
Synthetic fibers (perlon, nylon, etc.) are characterized by low absorbency, which can cause the skin beneath such fabrics to quickly become moist. Therefore, it is recommended that the body areas to be treated be completely unclothed and the patient's skin dried, particularly where perspiration accumulates in folds of the skin. This applies especially when a higher dosage is being applied. There is no danger, however, when applying short-wave irradiation to bandaged areas as long as the bandages are completely dry.
When treating small children, particular care is obviously required, due to the low body weight. Very careful dosing and constant observation (manual checks of the skin temperature while the unit is switched off) are necessary.

– Since the effects of high-frequency fields on unborn life have not yet been sufficiently researched, we recommend that operators who are pregnant do not remain in the immediate vicinity of the applicator when the unit is activated.

– The output power must always be set according to the subjective response of the patient! Therefore, special care must be taken in case of patients with a diminished capacity for perception of heat!

(⇨A.2 Dosage levels according to Schliephake)

Important:

We would like to point out that it is advisable to post warnings for wearers of pacemakers in the rooms where high-frequency therapy (e.g. short-wave therapy) is applied.

Moreover, a distance of at least 6 meters must be maintained between the unit and any low-frequency therapy that is being carried out at the same time!