Moving
Rehabilitation
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Intelect
SHORTWAVE 400

User Manual

Operation & Installation Instructions for:

Intelect Shortwave

3813- 115V
3814- 230V

Optional Equipment:

020-453218 - Capacitive Plate Electrodes
020-453216 - Capacitive Plate Electrodes
020-453267 - Soft Rubber Electrode
020-453267 - Soft Rubber Electrode
020-969553 - Diplode with Cable (Coil Field Electrode)
020-453263 - Diplode (Coil Field Electrode)

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Electromagnetic Compatibility (EMC) Tables

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FOREWORD

This manual has been written for the owners of the Intelect® Shortwave 400 system. It contains general information on the operation, precautionary practices, and maintenance information. In order to maximize use, efficiency, and the life of your unit, please read this manual thoroughly and become familiar with the controls, as well as the accessories, before operating the unit. This manual contains general safety, operating, maintenance, and care instructions for the owners and operators of the Intelect Shortwave 400 system.

Specifications put forth in this manual were in effect at the time of publication. However, owing to DJO, LLC's policy of continual improvement, changes to these specifications may be made at any time without obligation on the part of DJO, LLC.

Before administering any treatment to a patient, the user of this equipment should read, understand, and follow the information contained in this manual for each mode of treatment available, as well as the indications, contraindications, warnings, and precautions. Consult other resources for additional information regarding the application of shortwave therapy.

Product Description

The Intelect Shortwave 400 system utilizes both inductive and capacitive electrodes to administer electromagnetic energy to the patient's body at shortwave frequencies.

Stay current with the latest clinical developments in the field of shortwave therapy. Observe all applicable precautionary measures for treatment.

Keep informed on appropriate indications and contraindications for the use of shortwave therapy.

This equipment is to be used and sold only under the prescription and supervision of a licensed practitioner.

This product is NOT FOR SALE or USE in the United States of America or any of its Territories.

SAFETY INSTRUCTIONS

GENERAL INFORMATION

The Intelect Shortwave 400 therapy unit and the accompanying components and individual elements fulfill individually 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 shortwave 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.

SAFETY INSTRUCTIONS

PRECAUTIONARY DEFINITIONS

The precautionary instructions found in this section and throughout this manual are indicated by specific symbols. Understand these symbols and their definitions before operating this equipment. The definition of these symbols are as follows:

⚠ CAUTION

Caution

Text with a "CAUTION" indicator will explain possible safety infractions that could have the potential to cause minor to moderate injury or damage to equipment.

⚠ WARNING

Warning

Text with a "WARNING" indicator will explain possible safety infractions that will potentially cause serious injury and equipment damage.

⚠ DANGER

Danger

Text with a "DANGER" indicator will explain possible safety infractions that are imminently hazardous situations that would result in death or serious injury.

Explosion Hazard

Text with an "Explosion Hazard" indicator will explain possible safety infractions if this equipment is used in the presence of flammable anesthetics.

Dangerous Voltage

Text with a "Dangerous Voltage" indicator serves to inform the user of possible hazards resulting in the electrical charge delivered to the patient in certain treatment configurations of TENS/NMES waveforms.

Non-ionizing Electromagnetic Radiation

Text with a "Non-ionizing Electromagnetic Radiation" indicator informs the user of possible hazards resulting from elevated, potentially dangerous, levels of non-ionizing radiation.

Refer to Instruction Manual/Booklet

NOTE: Throughout this manual, "NOTE" may be found. These Notes are helpful information to aid in the particular area or function being described.

SAFETY INSTRUCTIONS

⚠ CAUTION

- Read, understand, and practice the precautionary operating instructions. Know the limitations and hazards associated with using any shortwave device. Observe the precautionary and operational decals placed on the unit.
- DO NOT operate the Intelect Shortwave 400 in conjuction with any other devices.
- DO NOT operate this unit in an environment where other devices are being used that intentionally radiate electromagnetic energy in an unshielded manner. Portable and mobile RF communications equipment can affect Medical Electrical Equipment.
- Other equipment, including patient connected devices, may be adversely affected when in close proximity to shortwave therapy equipment.
- The unit should be routinely checked before each use to determine that all controls function normally, especially that the output control does properly adjust the intensity of the shortwave power output in a stable manner. Also, determine that the treatment time control does actually terminate shortwave power output when the timer reaches zero.
- DO NOT use sharp objects such as a pencil point or ballpoint pen to operate the buttons on the control panel as damage may result.
- This unit should be transported and stored in temperatures between -40°C and 70°C (-40°F and 158°F) to prevent damage to the unit or its components.
- Handle shortwave accessories with care. Inappropriate handling of the accessories may adversely affect their characteristics.

⚠ CAUTION

- Inspect cables and associated connectors before each use.
- Remove hearing aids prior to treatment.
- Treatment should not be given through clothing, although it is permissible to administer treatment through a dressing or plaster in pulsed modes.
- External conductive material should be removed from the immediate treatment area.
- Do not use accessories other than those supplied with the unit, or recommended by DJO, LLC. The safety of other products has not been established, and their use could result in injury to the patient and degrade minimum safety.
- Disconnect the power supply cord before removing covers on this equipment. Refer the servicing of this unit to qualified service personnel.
- This equipment has an output that is capable of producing a physiological effect.
- This unit generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. Harmful interference to other devices can be determined by turning this equipment on and off. Try to correct the interference using one or more of the following: reorient or relocate the receiving device, increase the separation between the equipment, connect the equipment to an outlet on a different circuit from that to which the other device(s) are connected, and consult the factory field service technician for help.

SAFETY INSTRUCTIONS

⚠ WARNING

- Since relatively high powers are used, there is the possibility of producing shock, localized burns, and cataracts if the patient is unaware of the heat due to reduced thermal sensation, or if the patient does not know what to expect during treatment.
- Metal in treatment area will provide low impedance paths to the induced radio frequency current, producing local heating and the possibility of burning. In particular, treatment should never be given in the area of metal implants, metal jewelry, buckles, etc. These items must be removed.
- At average power levels above 5 W, patients should not be allowed to come into contact with conductive parts which are earthed or which have an appreciable capacitance to earth and which may provide unwanted pathways for the radio frequency current. In particular, treatment must never be given with the patient on metal framed couches or chairs. Do not use conductive mattresses or mattress covers.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to shortwave energy.
- For continued protection against fire hazard, replace fuses only with ones of the same type and rating.
- Make certain that the unit is electrically earthed by connecting only to a earthed electrical service receptacle, conforming to the applicable national and local electrical codes.
- This device should be kept out of the reach of children.
- Improper installation, operation or maintenance of the shortwave therapy system may result in malfunctions of this unit or other devices.

⚠ WARNING

- Do not store or operate the unit in a dusty environment.
- Care must be taken when operating this equipment around other equipment. Potential electromagnetic or other interference could occur to this or to the other equipment. Try to minimize this interference by not using other equipment in conjunction with it.
- Keep all electrodes, accessories, and their cords separated during treatment by using the cable clips located on the side of the arm extenders. Electrodes or their cords in contact with each other during treatment could result in improper stimulation or skin burns. Do not cross cables.
- Do not lean on or hold the cables during treatment.
- Keep all line cords away from the diathermy unit cables. Do not store or coil line cords where they can come close to the cables on an operating shortwave diathermy unit.
- This equipment is not designed to prevent the ingress of water or liquids. Ingress of water or liquids could cause malfunction of internal components of the system and therefore create a risk of injury to the patient.
- Care must be taken when operating this unit adjacent to or stacked with other equipment. Potential electromagnetic or other interference could occur to this or other equipment. Try to minimize this interference by not using other equipment in conjunction with it.
- Use only accessories that are specially designed for this unit. Do not use accessories manufactured by other companies on this unit. DJO, LLC is not responsible for any consequence resulting from using products manufactured by other companies. The use of other accessories or cables may result in increased emissions or decreased immunity of this unit.

SAFETY INSTRUCTIONS

WARNING

- Induction field electrodes that are operated without a patient could be destroyed due to overheating.
- 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.
- Before increasing the output in response to a report of inadequate patient heating, verify that the cables are properly routed, spaced correctly, and away from metal or grounded objects. The heating effect may be misdirected and heating may be occurring in an unwanted area.
- Be aware that some synthetics and plastics, though assumed to be nonconductive, may be heated by shortwave diathermy.

DANGER

- 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.
- In order to prevent electrical shock, unplug the power plug from the socket before cleaning or disinfecting the unit.
- 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.

DANGER

- 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.
- In order to prevent excessive warming of tissue, the effective output power, as summarized in the **Type of Electrode/Max. Effective Power** table, must not be exceeded.
- Do no perform unauthorized repairs under any circumstances.
- 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 contraindications before putting the unit into operation.
- The Electrode-Skin Distance (ESD) must be small for surface warming and large for depth warming. A larger Electrode-Skin Distance (ESD) is necessary for patients with a thick layer of subcutaneous fat in order to achieve the necessary warming of deep-lying tissue.

- Explosion hazard if Intelect Shortwave 400 is used in the presence of flammable anesthetics mixture with air, oxygen, or nitrous oxide. The warning symbol for this hazard is prominently displayed on the cabinet.

DANGER

- Shortwave diathermy should not be used on patients who have any implanted metallic lead or any implanted system that may contain a lead. Both the heating and non-heating modes of operation pose a risk of tissue destruction. If you are a licensed practitioner who implants or monitors patients with leads or implanted systems with leads, explain to the patient what diathermy is and stress that they should not receive shortwave diathermy treatment. If you are a licensed practitioner who uses diathermy in your practice, be sure to ask patients about possible implants before deciding to administer shortwave diathermy therapy.
- Do not administer shortwave diathermy therapy to a patient who has had an implant in the past unless you are absolutely certain that the implant and all leads in their entirety have been removed. Note that the leads are often left implanted after the implant is removed.

- This unit generates non-ionizing radiation. Patients with implanted electronic devices, such as cardiac pacemakers and defibrillators, cochlear implants, bone growth stimulators, deep brain stimulators, spinal cord stimulators, and other nerve stimulators, must not be treated, even if the device has been turned off.

- The function of certain implanted devices (e.g., pacemakers) may be adversely affected during treatment with shortwave diathermy. In case of doubt, the advice of a licensed practitioner in charge of the patient should be sought.

DANGER

- Never, under any circumstances, attempt to hold any of the electrodes in your hands during therapy.
- 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 and contraindications.
- In case of damage from transport that could endanger personal safety, the unit must not be connected to the Mains Power Supply.
- Keep all unnecessary persons out of the treatment location. No other person should be located within 2 meters of the unit.

SAFETY INSTRUCTIONS

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. **Refer to the Safety Instructions, and Contraindications.**

Before operating the unit each time, check whether:

- The unit has been correctly connected to the Mains 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 RF output jack 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.

PERSONAL SAFETY (CONTINUED)

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 accessory in order to avoid overheating of tissue. **Refer to 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 (Licensed Practitioner).

* 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. **(Dosage levels according to Schliephake)

SAFETY INSTRUCTIONS

PROTECTION OF THE UNIT

WARNING

Improper installation, operation or maintenance of the shortwave therapy unit may result in malfunctions of this unit or other devices.

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 Mains 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 rating on the safety label 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 Mains Power Supply is designed for the comparatively high (possibly additional) power input of the unit (~ 1500VA) and the line is sufficiently protected in accordance with regulations.

WARNING

Make certain that the unit is electrically earthed by connecting only to a earthed electrical service receptacle, conforming to the applicable national and local electrical codes.

PROTECTION OF THE UNIT (CONTINUED)

Do not connect the unit to the Mains 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 Mains 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 must be performed only by service technicians who have been authorized by the manufacturer.

INDICATIONS

General

Shortwave therapy is the application of electromagnetic energy to the body at shortwave frequencies. Shortwave therapy equipment normally uses 27.12 MHz to produce the desired deep heating effect on the tissues of the body.

At these frequencies, electromagnetic energy is converted to thermal energy by the induction of circulating currents in the insulating tissue.

The heating effect produced by Shortwave diathermy aids the healing process by generating heat deep within the tissue resulting in numberous benifical effects.

Shortwave therapy is indicated for the following:

A. Osteoarthritis

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

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

B. Chronic polyarthritis of the hip and shoulder Joints

Definition: Inflammation of more than one joint

Goal of treatment: Pain relief, lessening of inflammation

C. Achillodynia

Definition: Irritation of the Achilles tendon

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

D. 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

E. Bursitis

Definition: Bursal synovitis

Goal of treatment: Normal function without irritation

F. 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

INDICATIONS

G. 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

H. Facial paralysis (peripheral)

Definition: Paralysis of the nervus facialis

Goal of treatment: Accelerated healing, facilitation of new innervation

I. Fracture

Definition: Broken bones

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

J. 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

K. Ischialgia

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

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

L. Contracture

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

Goal of treatment: Physiological joint motion and muscle length

M. Lumbago

Definition: Muscle pain in the lumbar region, lumbar rheumatism

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

N. Myalgia

Definition: Muscle pain

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

O. 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

P. Frozen shoulder

Definition: Shoulder pain accompanied by limitation of movement

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

Q. Periostitis

Definition: Cortical osteitis

Goal of treatment: Pain relief, inflammation stop

R. 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

S. Spondylosis / osteochondrosis

Definition: Arthrosis of the vertebral bodies

Degeneration of the intervertebral discs

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

T. 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

INDICATIONS

U. 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

V. 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

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				■

NOTE:
Always begin the treatment with an intially low dosage. After the treatment has been in progress for 1 - 2 minutes, make the final setting based on the subjective response of the patient.

CONTRAINDICATIONS

General

The following list of contraindications – which is by no means to be regarded as being comprehensive – should always be observed when applying shortwave 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 shortwave therapy must be strictly based on an accurate diagnosis.

Contraindications

- Patients with a cardiac pacemaker may under no circumstances be subjected to shortwave 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 shortwave 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.

CONTRAINDICATIONS

Contraindications (continued)

- Implants, areas where implants have been removed, damaged implants or metal inclusions[2]
- Implants that could be impaired by shortwave 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, endo-metriosis, pyosalpinx or pyo-ovarium, tubal carcinoma.

CONTRAINDICATIONS

Contraindications (continued)

- 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 shortwave 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. **(Dosage levels according to Schliephake)**
- 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. shortwave 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 used.

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.

WARNING

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.

Requirements of the Installation Location

DANGER

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 Instructions** 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.

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.

Unpacking the Unit

The unit is generally delivered with the packaging material supplied by the manufacturer. Since the unit weighs approximately 60 kg (132 lbs), 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.

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.

DANGER

In case of damage from transport that could endanger personal safety, the unit must not be connected to the Mains Power Supply.

NOMENCLATURE

OPERATOR SIDE

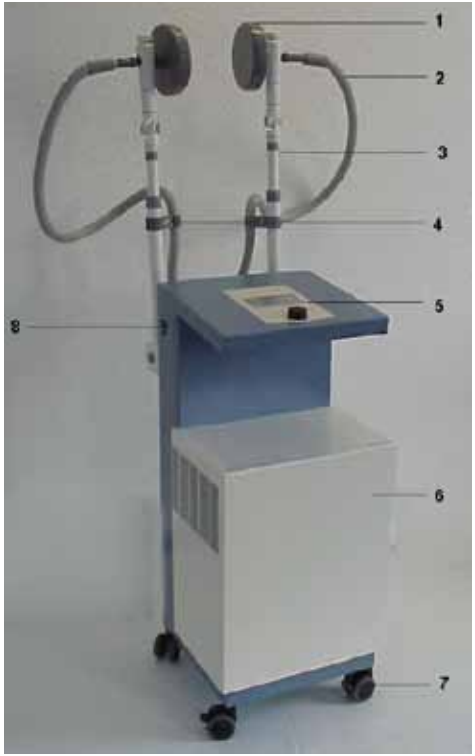


Figure 1
Front View of Intelect Shortwave 400

1. Capacitive Plate Electrode Ø 120 mm
2. Electrode connection cable with sponge rubber covering
3. Self-locking plastic electrode arm, extractable
4. Cable clamp for electrode connection cable
5. Control panel with graphic display
6. Metal housing
7. Locking castor
8. Power switch

NOMENCLATURE

PATIENT SIDE

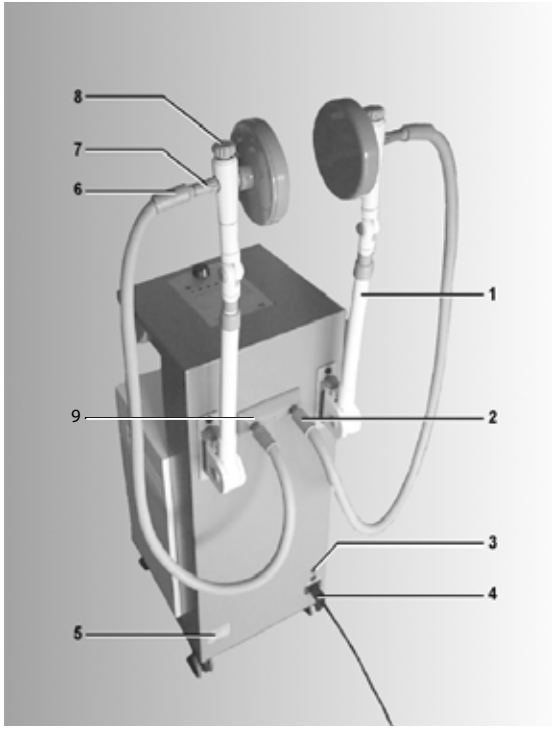


Figure 2
Back view of Intelect Shortwave 400

1. Self-locking plastic electrode arm, extractable
2. Male end of the electrode connection cable
3. Electrical Safety Protection (fuses)
4. High-load non-heating Appliance Plug (Power Cord)
5. Serial Decal
6. Female end of the electrode connection cable
7. Adjusting element for Electrode-Skin Distance
8. Locking screw on electrode arm
9. RF output jacks

ACCESSORIES

WARNING

Keep all electrodes, accessories, and their cords separated during treatment by using the cable clips located on the side of the arm extenders. Electrodes or their cords in contact with each other during treatment could result in improper stimulation or skin burns.

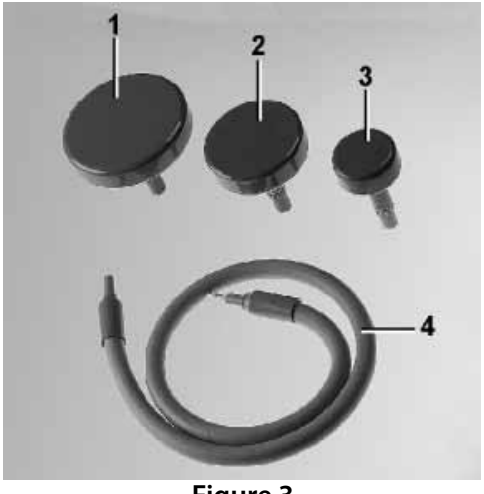


Figure 3
Capacitive Plate Electrodes - Dielectric Field

1. Capacitive Plate Electrode Ø 165 mm
2. Capacitive Plate Electrode Ø120 mm (Standard accessory)
3. Capacitive Plate Electrode Ø 80 mm
4. Electrode connecting cable with sponge rubber covering

NOMENCLATURE

ACCESSORIES (CONTINUED)

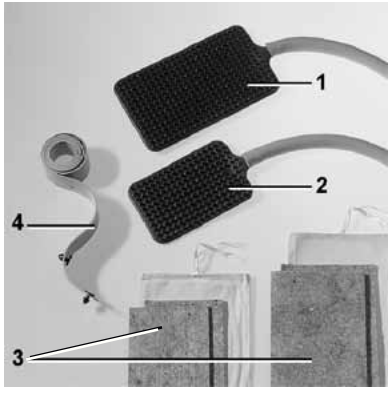


Figure 4
Soft Rubber Electrodes - Dielectric Field

1. Soft Rubber Electrode
   250 x 145 mm

2. Soft Rubber Electrode
   180 x 120 mm

3. Felt layer with linen bag for 1 and 2

4. Perforated rubber band with 2 buttons

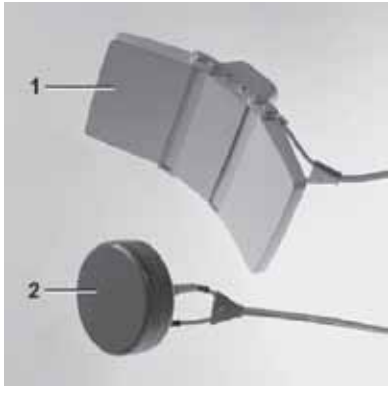


Figure 5
Plastic Eddy-Current Electrodes, Coil - Induction Field

1. Eddy-current Electrode (diplode) with cable

2. Eddy-current Electrode (diode) with cable

SPECIFICATIONS

UNIT SPECIFICATIONS

Figure 6

Operating Data and Ratings

Width*.....420 mm (16.5")
Depth*.....410 mm (16.14")
Height*.....970 mm (38.2")
Standard Weight (without electrodes).....60 kg (132 lbs)
Ambient temperature.....+10 °C to 40 °C (50 °F to 104 °F)
Relative Humidity.....30% to 75%
Air Pressure.....700 hPa to 1060 hPa

Power Consumption.....1400 VA
Input.....115/230 VAC, 50/60 Hz
Output Frequency.....27.12 MHz ± 0.6%
HF Nominal Power.....400 W in continuous mode
.....1000 W peak in pulsed modes
Power Settings.....10 W increments in continuous mode
.....50 W increments in pulsed mode
Power Indiction.....Amplitude and effective power
Pulse Duration.....200 - 600 µs
Pulse Frequencies.....10 - 300 Hz
Treatment Duration.....1 - 60 minutes
Fuses.....T16A (115V) T8 A (230V)
Electrical Class.....CLASS I
Electrical Type.....TYPE BF
Regulatory Risk Class.....IIa according to MDD 93/42/EEC

Transport and Storage Conditions

Ambient temperature**.....-40 °C to 70 C (-40 °F to 158 °F)
Relative Humidity.....10% to 100%
Air Pressure.....500 hPa to 1060 hPa

Regulatory Compliance

The Intelect Shortwave 400 has been designed to meet the requirements of BS EN 60601-1, 60601-2-3 and 60601-1-2.

* without electrodes, electrode arm and electrode cables

DESCRIPTION OF FUNCTIONS

Introduction

The Intelect Shortwave 400 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 capacitive field or the inductive field method.
In the capacitive 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 inductive field method, the body part is within a magnetic field, which warms especially tissue containing liquid located near the surface, such as muscles.

Applications

The shortwave 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 inductive field and capacitive 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.
Intelect Shortwave 400 therapy units are therefore used for a wide range of applications in hospitals and in private practices by doctors and physiotherapists.

DESCRIPTION OF FUNCTIONS (CONTINUED)

Shortwave Therapy in the Capacitor (Dielectric) Field

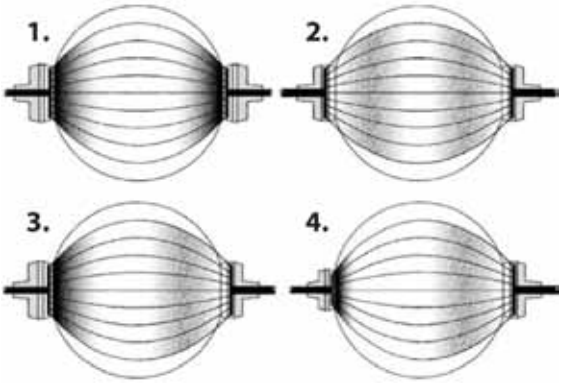


Figure 7

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 Electrode-Skin Distance (ESD)

With the capacitive 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 capacitive method, fat tissue is warmed more effectively than muscle tissue.
Rigid electrodes (capacitive plate electrodes) and soft rubber electrodes are used for the capacitive method.
An adjusting device on the plate electrodes or layers of felt with the Soft Rubber electrodes can be used to achieve different Electrode-Skin Distances (ESD).

⚠ DANGER

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

DESCRIPTION OF FUNCTIONS (CONTINUED)

Shortwave Therapy in the Induction Field

The inductive field produces the high-frequency electric currents within the body tissue by means of induction. 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:

- Diode 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 Inductive 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.

⚠ WARNING

Inductive Field Electrodes that are operated without a patient could be destroyed due to overheating.

PROGRAM DESCRIPTION

Display and Control Elements

Figure 8
Intelect Shortwave 400 Operating Element

1. Intelect Shortwave 400 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)

NOTE: Device of type BF (insulated non-earthed application element)

PROGRAM DESCRIPTION (CONTINUED)

Main Menu

Main menu after unit is switched on

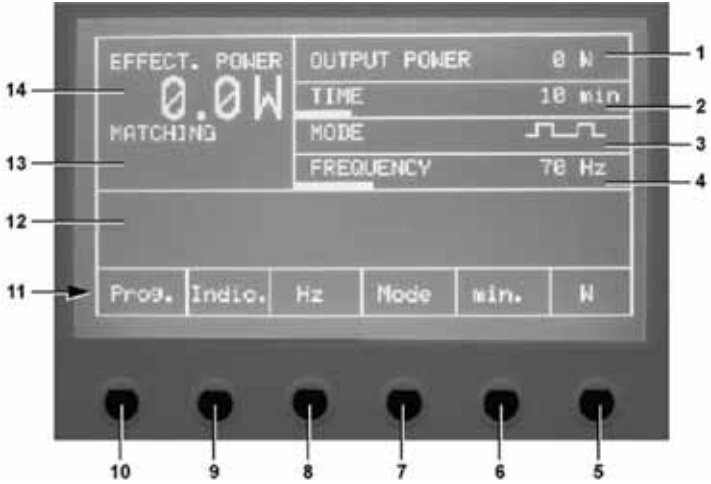


Figure 9
Intelect Shortwave 400 Main Menu

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)

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.

PROGRAM DESCRIPTION (CONTINUED)

Main Menu During Treatment

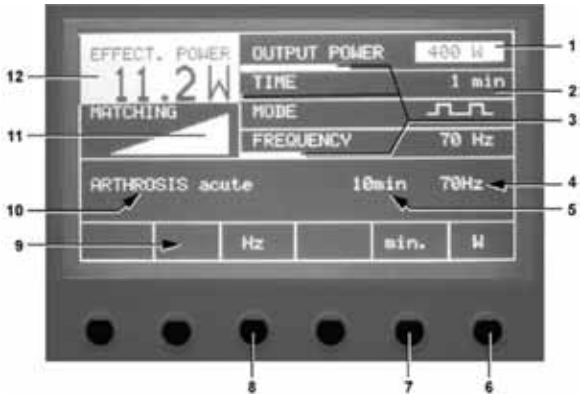


Figure 10
Intelect Shortwave 400 Main Menu

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)

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.

PROGRAM DESCRIPTION (CONTINUED)

Indications Menu (**Indications Menu; Main Page)**

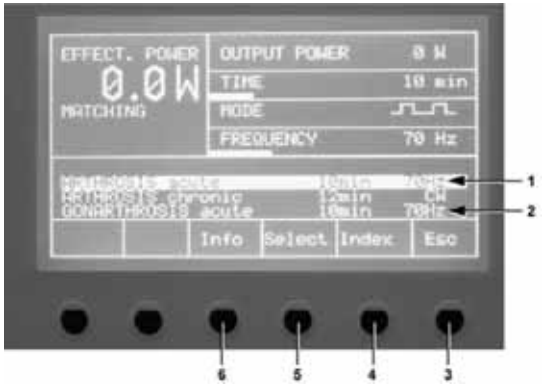


Figure 11
Indications Menu; Intelect Shortwave 400 Main Page

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)

PROGRAM DESCRIPTION (CONTINUED)

Indications Menu (Index Page)

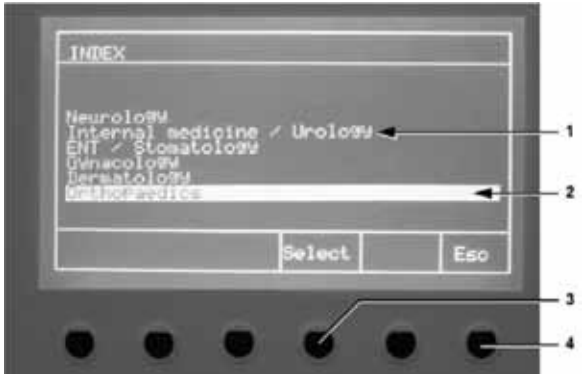


Figure 12
Indications Menu; Intelect Shortwave 400
Index Page

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

PROGRAM DESCRIPTION (CONTINUED)

Indications Menu (Info Page)

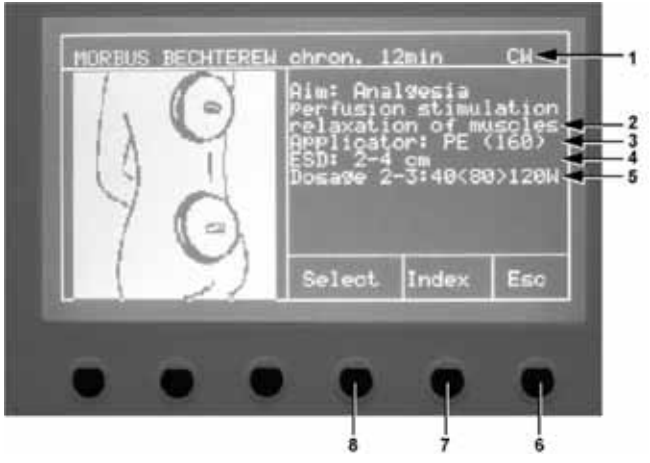


Figure 13
Indications Menu; Intelect Shortwave 400 Info Page

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

* PE = capactive plate electrode (the number in parentheses indicates the electrode diameter)

RE = Soft Rubber electrode

****Treatment dosage according to Schliephake**

PROGRAM DESCRIPTION (CONTINUED)

Programming Menu

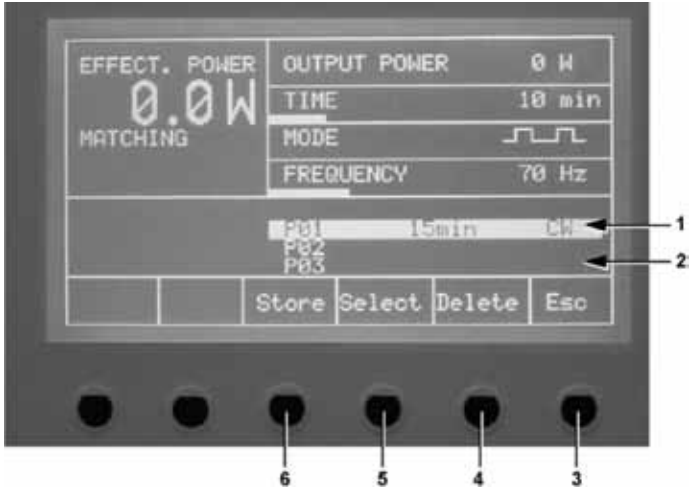


Figure 14
Intelect Shortwave 400 Programming Menu

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.

PROGRAM DESCRIPTION (CONTINUED)

Basic Settings Menu

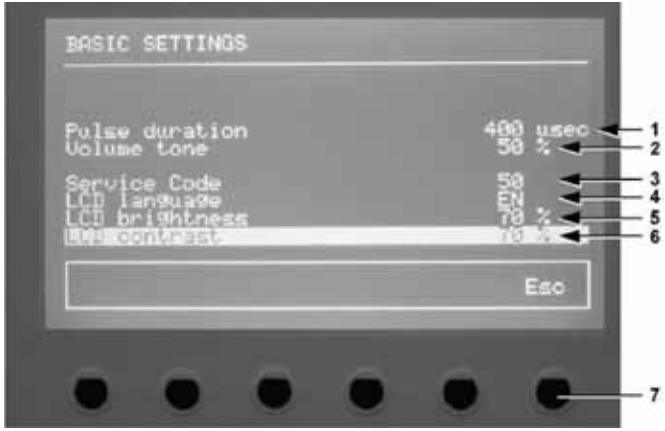


Figure 15
Intelect Shortwave 400 basic Settings Menu

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

NOTE:
For information regarding opening the basic settings menu, refer to **Changing Basic Settings.**

PUTTING THE UNIT INTO OPERATION

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 and the power cord.

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

- Make sure that the voltage rating on the serial decal conforms to the system voltage of the building.
- 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 (power cord) for non-heating appliances into the corresponding socket on the back of the unit.
- 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 cord plug into an earthed socket outlet.

DANGER

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 contraindications before putting the unit into operation.

Check for Operational Safety

Refer to Safety Instructions, Personal Safety and Contraindications for operational safety information.

WARNING

Make certain that the unit is electrically earthed by connecting only to a earthed electrical service receptacle, conforming to the applicable national and local electrical codes.

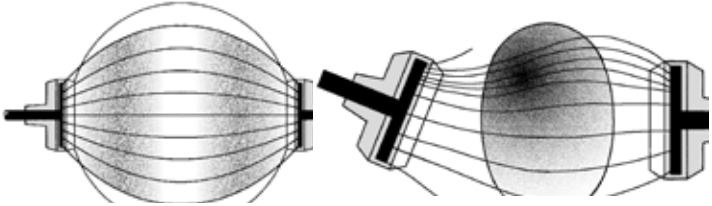
PUTTING THE UNIT INTO OPERATION

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.

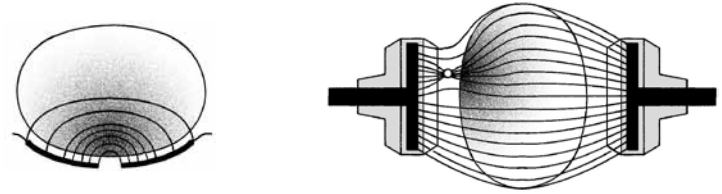
NOTE:
If such an effect is expressly desired, the dosage must be controlled very carefully.



Correct **Incorrect**

Figure 16
Positioning of Electrodes – Edge Effect

Correct positioning of the electrodes for the Edge Effect allows for equal distribution of the concentrated heating 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).

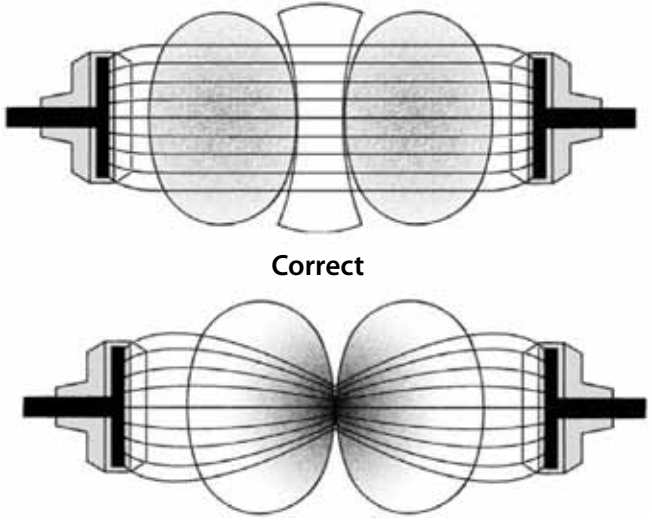


Correct **Incorrect**

Figure 17
Positioning of Electrodes – Edge Effect and Metal Objects

PUTTING THE UNIT INTO OPERATION (CONTINUED)

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

Figure 18
Positioning of Electrodes – Electrode Constriction

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

PUTTING THE UNIT INTO OPERATION (CONTINUED)

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

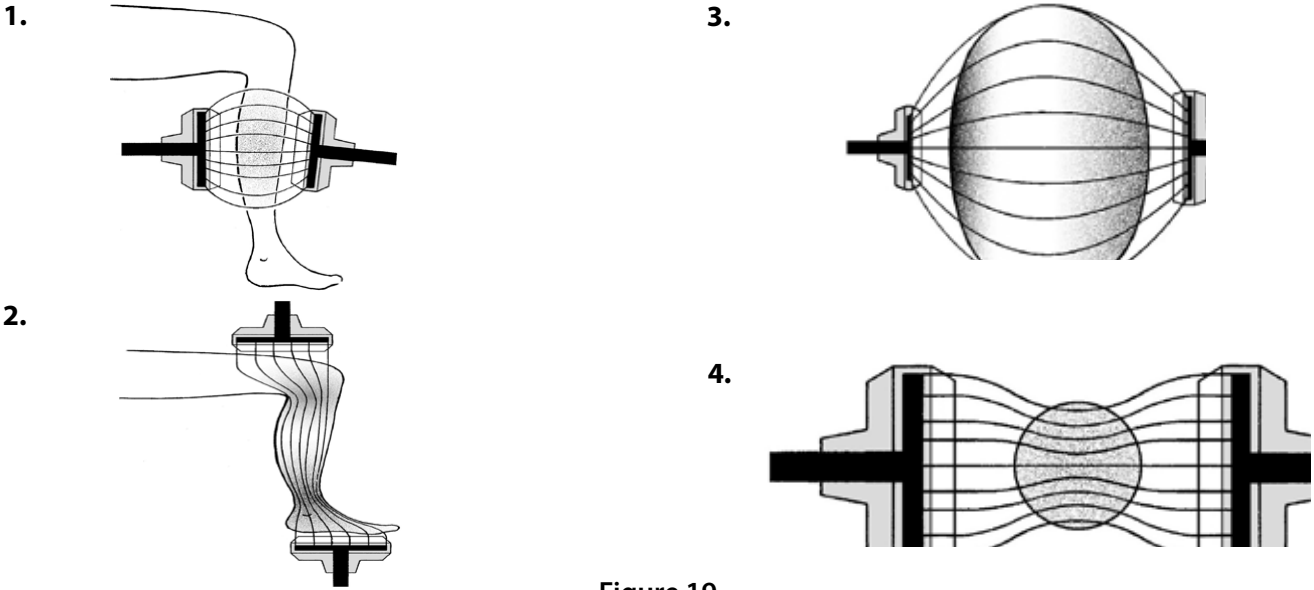


Figure 19
Positioning of Electrodes – Normal Cases

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

PUTTING THE UNIT INTO OPERATION (CONTINUED)

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 capacitive 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.)

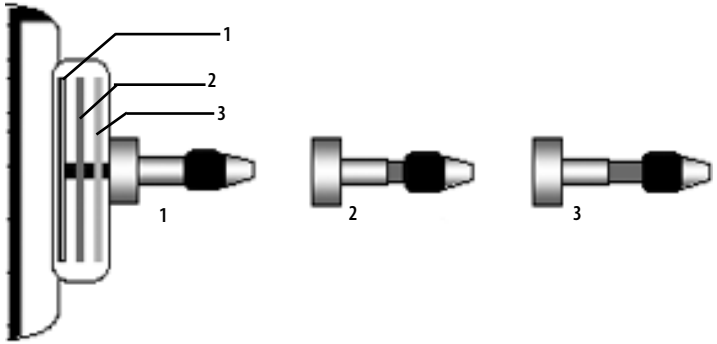


Figure 20
Plate Electrode with Adjusting Pin

Position	1	2	3
Electrode-Skin Distance	1 cm	approx. 1.75 cm	approx. 2.5 cm
Position of the adjusting pin	inserted	half pulled-out	fully pulled-out

PUTTING THE UNIT INTO OPERATION (CONTINUED)

Setting the Electrode-Skin Distance (continued)

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 (diode, and diplode) are generally placed in contact with the patient's body.

Set the Electrode-Skin Distance accordingly.

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.

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

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.

PUTTING THE UNIT INTO OPERATION (CONTINUED)

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.

BASIC OPERATION (CONTINUED)

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.

DANGER

In order to prevent excessive warming of tissue, the effective output power, as summarized in the **Type of Electrode/Max. Effective Power** table must not be exceeded.

Type of Electrode	Max. Effective Power
Diode	120 Watt
Diplode	200 Watt
Capacitive Plate Electrode Ø 80 mm	80 Watt
Capacitive Plate Electrode Ø 120 mm	200 Watt
Capacitive Plate Electrode Ø165 mm	400 Watt
Soft Rubber Electrode 120 x 180 mm	250 Watt
Soft Rubber Electrode 145 x 250 mm	400 Watt

Before beginning treatment, you must read and observe the safety instructions and the list of contraindications. **Refer to Safety Instructions, Personal Safety and Contraindications for operational safety information.**

BASIC OPERATION (CONTINUED)

Beginning the Treatment (continued)

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.

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

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.

BASIC OPERATION (CONTINUED)

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*	-	-
LCD language**	any	E, F, S
LCD brightness	70 %	10 - 100 %
LCD contrast	70 %	0 - 100 %

***** Refer to the Service Manual for Service Codes
****** E = English, F = French, S = Spanish

MAINTENANCE AND REPAIRS

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.

Cleaning and Disinfection

Switch off the power switch.

Unplug the power plug from the socket before cleaning or disinfecting the unit.

DANGER

In order to prevent electrical shock, unplug the power plug from the socket before cleaning or disinfecting the unit.

MAINTENANCE AND REPAIRS (CONTINUED)

Cleaning and Disinfection (continued)

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.

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

DANGER

- 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.

MAINTENANCE AND REPAIRS (CONTINUED)

Safety Inspections

The following safety inspections must be performed on this unit. 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 (Daily)

- Housing not deformed?
- Power Cable undamaged?
- Electrode connection sockets undamaged?
- Power switch OK?
- Electrode Cable undamaged?
- Capacitive Plate Electrodes, Diplodes, Diodes undamaged (no fissures or brittle material)?
- Soft Rubber Electrodes undamaged (no thin areas or holes)?

Functional Test (Daily)

- 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

MAINTENANCE AND REPAIRS (CONTINUED)

Electrical Test (Acc. to IEC 601-1)
(12 month intervals or as dictated by you Health Care Facility)

- 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

NOTE:
It is the responsibility of the Health Care Facility to verify that the unit complies with the facility, local and national Earth Leakage limits.

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

DANGER

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.

MAINTENANCE AND REPAIRS (CONTINUED)

Error Messages (Requires authorized service personnel)

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 Electrode-Skin Distance (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 (Requires authorized service personnel)

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.

⚠ WARNING

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.

MAINTENANCE AND REPAIRS (CONTINUED)

Repairs

DANGER

Do no perform unauthorized repairs under any circumstances.

Service

Should the unit require service, warranty, or repair, please contact the selling dealer or your local DJO customer service.

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

ACCESSORIES

STANDARD ACCESSORIES

Ref.	Description	Qty
39-14762	Indicator Discharge Tube	1
39-020453217	Capacitive Plate Electrode 120mm diameter	1
28256	Intelect Shortwave 400 User Manual	1

NOTE: Power Cords are not listed; however the Power Cord shipped with the unit will accommodate the electrical requirements for the country of use.

OPTIONAL ACCESSORIES

Ref.	Description	Qty
39-020453216	Capacitive Plate Electrode 80 mm diameter	1
39-020453218	Capacitive Plate Electrode 165 mm diameter	1
020-453220	Shortwave electrode connection cable with cellular rubber coating	1
020-453214	Cable clamp	1
020-969553	Diplode (Coil Field Electrode 18 x 39 cm) with cable	1
020-453263	Diplode (Coil Field Electrode 18 cm) without cable	1
020-453231	Connection cable Diode	1
39-020453266	Soft Rubber Electrode 180 x 120 inclusive one Linenpocket and one intermediate felt layer	1
39-020453267	Soft Rubber Electrode 250 x 145 inclusive one Linenpocket and one intermediate felt layer	1
45-38-963-EH725	Rubber strap 1 row of holes 135 cm long 2,7 cm wide	1
22-74-801Q1320	Fastening button	1

WARRANTY

DJO, LLC ("Company") warrants that the Intelect Shortwave 400 ("Product") is free of defects in material and workmanship. This warranty shall remain in effect for two years (24 months) from the date of original consumer purchase. If this Product fails to function during the two year warranty period due to a defect in material or workmanship, at the Company's Option, Company or the selling dealer will repair or replace this Product without charge within a period of thirty (30) days from the date on which the Product is returned to the Company or the dealer.

All repairs to the Product must be performed by a service center certified by the Company. Any modifications or repairs performed by unauthorized centers or groups will void this warranty.

The warranty period for accessories is 180 days.

This Warranty Does Not Cover:

- Replacement parts or labor furnished by anyone other than the Company, the selling dealer or a certified Company service technician.
- Defects or damage caused by labor furnished by someone other than Company, the selling dealer or a certified Company service technician.
- Any malfunction or failure in the Product caused by product misuse, including, but not limited to, the failure to provide reasonable and necessary maintenance or any use that is inconsistent with the Product User's Manual.

COMPANY SHALL NOT BE LIABLE IN ANY EVENT FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

DJO, LLC is not responsible for injury or damage resulting from modifications or service performed by non-authorized DJO, LLC service personnel.

To Obtain Service From Company or the selling dealer under this warranty:

1. A written claim must be made within the warranty period to the Company or the selling dealer.
2. The Product must be returned to the Company or the selling dealer by the owner.

This warranty gives you specific legal rights and you may also have other rights which vary from region to region.

The Company does not authorize any person or representative to create for it any other obligation or liability in connection with the sale of the Product. Any representation or agreement not contained in the warranty shall be void and of no effect.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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