

Moving
Rehabilitation
Forward™

Intelect
TRANSPORT[®]
ULTRASOUND
BY CHATTANOOGA GROUP

User Manual



Model 2782

Intelect TranSport[®]
Ultrasound



ISO 13485 Certified

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IntellectTranSport® Ultrasound

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This manual has been written for the operators of the Intelect TranSport® Ultrasound. It contains general instructions for operation, precautionary instructions, and maintenance recommendations. In order to obtain maximum life and efficiency from your Intelect TranSport Ultrasound, and to assist in the proper operation of the unit, read and understand this manual thoroughly.

The specifications put forth in this manual were in effect at the time of publication. However, owing to DJO, LLC's policy of continuous 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, you should become acquainted with the operating procedures, as well as the indications, contraindications, warnings, and precautions. Consult other resources for additional information regarding the application of therapeutic ultrasound.

Product Description

The Intelect TranSport Ultrasound, designed and manufactured by DJO, LLC, offers a new dimension in portable ultrasound therapy made possible by advanced software design and digital signal processing. The result is a unit with extraordinary versatility based on simplicity of operation.

The Intelect TranSport Ultrasound allows you to select a frequency of 1 or 3.3 MHz without changing applicators (excluding the 1 cm² applicator). Sound heads are available in 1 cm², 2 cm², 5 cm² and 10 cm² and include the patent pending Electronic Signature™ feature. Duty cycle may be set at 10%, 20%, 50% or Continuous.

The following features are available on the Intellect TranSport Ultrasound:

- **Clinical Portable Battery Powered Option**

The Intellect TranSport Ultrasound is a truly portable ultrasound unit that does not confine you to a wall socket to operate. Dual frequency application in the clinic or on the road.

- **Electronic Signature™**

Automatically calibrate the system to any size Intellect TranSport Ultrasound sound head.

- **Ergonomic Applicators**

A new ergonomic design that offers a 20 degree contour in the applicator hand grip. This ergonomic extra will help deliver uniform ultrasound with greater clinician comfort.

- **Head Warming**

A feature traditionally available in more expensive brands of ultrasound. This will help curb the anxiety of patients during the first moments of treatment.

- **Clear LCD display**

Guide the operator through the setup process providing continuous feedback about treatment settings. Gives you optimal visibility during attended procedures.

- **User Protocols**

User protocols allow you to set, save, and change the parameters of each program (protocol) in order to tailor it to meet your patients' specific needs. Ten storage slots are available for user protocols.

ABOUT ULTRASOUND THERAPY

Intellect TranSport® Ultrasound

Precautionary Instructions

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:



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.



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



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.

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



- Read, understand and practice the precautionary and operating instructions. Know the limitations and hazards associated with using any ultrasound device. Observe the precautionary and operational decals placed on the unit.
- Do not operate this unit when connected to any unit other than Chattanooga devices. Do not operate the unit in an environment of short-wave diathermy use.
- The ultrasound unit should be routinely checked before each use to determine that all controls function normally; especially that the intensity control properly adjusts the intensity of the ultrasonic power output in a stable manner. Also, determine that the treatment time control actually terminates ultrasonic 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.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to ultrasonic energy.
- Handle the applicator with care. Inappropriate handling of the applicator may adversely affect its characteristics.
- Before each use inspect applicator for cracks, which may allow the ingress of conductive fluid.
- Inspect treatment head, cables, and associated connectors before each use.
- The Intellect battery pack is designed for use only with Chattanooga Intellect TranSport Stim and Ultrasound systems.
- This unit should be operated in temperatures between 59 to 85°F (15 to 40°C), and transported and stored in temperatures between -20 to 110°F (7 to 43°C), with relative humidity ranging from 30% - 60%.
- Where the integrity of the external protective earth conductor arrangement is in doubt, equipment shall be operated from its internal electrical power source.
- The battery pack should be removed when storing the unit for extended periods of time.
- DO NOT disassemble, modify, or remodel the unit or accessories. This may cause unit damage, malfunction, electrical shock, fire, or personal injury.

CAUTION

- Failure to use and maintain the Intellect TranSport® Ultrasound and its accessories in accordance with the instructions outlined in this manual will invalidate your warranty.
- DO NOT remove the cover. This may cause unit damage, malfunction, electrical shock, fire, or personal injury. There are no user-serviceable parts inside the unit. If a malfunction occurs, discontinue use immediately and consult the dealer for repair service.
- DO NOT permit any foreign materials or liquids to enter the unit. Take care to prevent any foreign materials including, but not limited to, inflammables, water, and metallic objects from entering the unit. These may cause unit damage, malfunction, electrical shock, fire, or personal injury.
- If you have difficulty operating the unit after carefully reviewing this operator's guide, contact your DJO, LLC dealer for assistance.
- This equipment 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/or consult the factory field service technician for help.
- 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.
- Use of parts or materials other than DJO, LLC's can degrade minimum safety
- Remove battery pack if unit is not to be used for an extended period.
- Be sure to read all instructions for operation before treating a patient

WARNING

- Always keep the sound head in constant motion.
- Always keep the sound head in full contact with the patient's skin or submerged under water when setting intensity.
- Use ample conductive gel to ensure good coupling throughout the treatment. If needed, apply when setting intensity.
- Be sure to read all instructions for operation before treating a patient.
- Do not drop the applicator on hard surfaces. Do not cool an overheated sound head with ice water or ice packs. Do not allow the sound head to reach maximum temperatures repeatedly. All of these conditions are likely to damage the sound head crystal. Damage resulting from these conditions is not covered under the warranty.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to ultrasonic energy.
- Make certain that the unit is electrically grounded by connecting only to a grounded electrical service receptacle conforming to the applicable national and local electrical codes.
- This device should be kept out of the reach of children.
- This device should be used only under the CONTINUED supervision of a licensed practitioner.
- 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 (i.e., cell phones) in conjunction with it.
- Federal law restricts this device to sale by, or on the order of, a physician or licensed practitioner.
- Dispose of all products in accordance with local and national regulations and codes.

ABOUT ULTRASOUND THERAPY

Intelect TranSport® Ultrasound



WARNING

- For CONTINUED protection against fire hazard, charge the battery pack only while installed on the Intelect TranSport Ultrasound.
- 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.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous conditions causing damage to the battery pack or cells.
- To prevent electrical shock, disconnect the battery pack from the system before attempting any maintenance procedures.
- When the unit is not in use, it should be protected against unqualified use.



DANGER



- Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, with oxygen or nitrous oxide. The warning symbol for this hazard is prominently displayed on the cabinet.
- DO NOT connect the unit to an electrical supply without first verifying that the power supply is the correct voltage. Incorrect voltage may cause unit damage, malfunction, electrical shock, fire, or personal injury. Your unit was constructed to operate only on the electrical voltage specified on the Voltage Rating and Serial Number Plate. Contact your DJO, LLC dealer if the unit is not properly rated.



DANGER



- NiMH Batteries contain Class E Corrosive materials. In the event of battery cell rupture or leakage, handle battery pack wearing neoprene or natural rubber gloves. Contents of a ruptured or leaking battery can cause respiratory irritation. Hypersensitivity to nickel can cause allergic pulmonary asthma. Contents of cell coming in contact with skin can cause skin irritation and/or chemical burns.
- Never, under any circumstances, open the battery pack housing or cells. Should an individual battery from a battery pack become disassembled, spontaneous combustion of the negative electrode is possible. There can be a delay between exposure to air and spontaneous combustion.
- Charge the battery pack according to the instructions found in this manual. Never attempt to charge the battery pack on any other charging mechanism.
- Use the battery pack only with the Intelect TranSport Series units.
- Do not reverse the polarity of the battery pack. Doing so can increase the individual cell temperature and cause cell rupture or leakage.
- Never dispose of the battery pack in fire. Never short circuit the battery pack. The battery pack may explode, ignite, leak or get hot causing serious personal injury.
- Dispose of NiMH batteries according to national, state and local codes and regulations.

ABOUT ULTRASOUND THERAPY

Intelect TranSport® Ultrasound

OVERVIEW OF ULTRASOUND THERAPY

Utilizing ultrasound waves through muscle, nerve, and connective tissue has been well documented as effective in reducing pain, muscle spasms, and joint contractures.

There are several items that affect the penetration of ultrasound on the target tissues. Please refer to the documentation as a reference on the appropriate frequency for your clinical needs.

There are 4 sound heads available with the Intelect TranSport Ultrasound System: 1 cm², 2 cm², 5 cm², and 10 cm².

Select either 1 or 3.3 MHz frequencies for each applicator (excluding the 1 cm² applicator). Frequency may be selected either before or during therapy.

Common Terms

Applicator - The hand held assembly used to deliver ultrasonic energy. The applicator includes the sound head, transducer, and related electronics.

Beam Non-Uniformity Ratio (BNR) – By nature, an ultrasound beam is not homogeneous. The BNR is a ratio of the highest intensity found in the beam field to the average intensity as indicated on the output display of the unit. This measure may not exceed 5.0:1. Because of the areas of increased intensity, the sound head is moved continuously during the treatment.

Collimating (Coll)- The shape of the ultrasound beam. While neither focused nor dispersed, this ultrasound beam resembles a column when applied from the unit through the sound head.

Continuous Mode – The output of the ultrasound is not interrupted during the treatment time. This mode imparts the most energy to the tissues and is used when a maximal effect is desired. (See Duty Cycle).

ABOUT ULTRASOUND THERAPY

Intelect TranSport® Ultrasound

OVERVIEW OF ULTRASOUND THERAPY - COMMON TERMS (CONTINUED)

Coupling Media – An agent used to insure that the ultrasound is transmitted from the sound head to the tissue to be treated. Gels or lotions labeled for therapeutic ultrasound use are recommended.

Duty Cycle – This is the ratio of the “On” time to “Total” time of the cycle, expressed as a percentage. The duty cycle describes the pulsed modes of ultrasound. The lower the percentage, the lower temporal average intensity. 100% is continuous ultrasound.

Effective Radiating Area (ERA) – A measure of the ultrasound beam made underwater, 5 mm from the radiating surface of the sound head. The ERA is always smaller than the geometric area of the sound head, but should be as close as possible. This measurement is used to calculate the ultrasound intensity in W/cm^2 .

Frequency (Freq) – Selectable to 1 or 3.3 MHz with the 2 cm^2 , 5 cm^2 , or 10 cm^2 sound head (only 3.3 MHz is available with the 1 cm^2 sound head). The lower the frequency, the longer the wavelength, and the deeper the penetration of ultrasound.

Lead Zirconate Titanate – A synthetic crystal used to create the ultrasound beam by vibrating 1,000,000 (1 MHz) or 3,300,000 (3.3 MHz) times per second. This type of crystal is both durable and efficient in its functions.

Power – A measure of the intensity of the ultrasound delivered to the patient. Unit of measure is watts (W).

Pulse Duration – Refers to the amount of time the ultrasound is being delivered in the pulsed mode. For example, in the 20% duty cycle mode, the ultrasound is delivered for 2 msec and off for 8 msec (at 100 Hz) throughout the treatment period.

Pulse Frequency – The pulse frequency is the number of pulses per second and is expressed in hertz. The available pulse frequency on the Intelect TranSport Ultrasound is 100 Hz.

OVERVIEW OF ULTRASOUND THERAPY - COMMON TERMS (CONTINUED)

Pulsed Mode – The output of the ultrasound is automatically interrupted during the treatment time. This limits the amount of energy delivered to the tissues.

Sound Head – The aluminum face of the applicator that contacts the patient's skin. It covers a transducer mechanism that converts electrical energy to mechanical energy in the form of a vibrating crystal.

Ultrasound Intensity – Ultrasound power delivered to the patient expressed in total power as watts (W) or in terms of the sound head's effective radiating area, watts per centimeter squared (W/cm^2).

Description of Ultrasonic Field

The spatial distribution of the radiated field is essentially a collimated beam of the ultrasonic energy having a cross-sectional area of 8.5 cm^2 for the 10 cm^2 sound head when measured at a point 5 mm from the transducer face.

The energy distribution within the radiated field is 3.0 W/cm^2 maximum and it takes a generally conic shape, having decreasing intensity at progressively increasing distance from the face of the transducer. This field distribution applies for the radiation emitted into the equivalent of an infinite medium of distilled, degassed water at 30° C and with the line voltage variations in the range of 10% of the rated line voltage.

Indications for Ultrasound

- Application of therapeutic deep heat for the treatment of selected sub-chronic and chronic medical conditions such as:
- Relief of pain, muscle spasms and joint contractures
- Relief of pain, muscle spasms and joint contractures that may be associated with:
 - Adhesive capsulitis
 - Bursitis with slight calcification
 - Myositis
 - Soft tissue injuries
 - Shortened tendons due to past injuries and scar tissues
- Relief of sub-chronic and chronic pain and joint contractures resulting from:
 - Capsular tightness
 - Capsular scarring

Contraindications

- This device should not be used for symptomatic local pain relief unless etiology is established or unless a pain syndrome has been diagnosed.
- This device should not be used when cancerous

lesions are present in the treatment area.

- This device should not be used when open wounds are present in the treatment area.
- This device should not be used on patients suspected of carrying serious infectious disease and or disease where it is advisable, for general medical purposes, to suppress heat or fevers.
- This device should not be used over or near bone growth centers until bone growth is complete.
- This device should not be used over the thoracic area if the patient is using a cardiac pacemaker.
- This device should not be used over a healing fracture.
- This device should not be used over or applied to the eye.
- This device should not be used over a pregnant uterus.
- This device should not be used on ischemic tissues in individuals with vascular disease where the blood supply would be unable to follow the increase in metabolic demand and tissue necrosis might result.

Additional Precautions

Additional precaution should be used when the ultrasound is used on patients with the following conditions:

- Over an area of the spinal cord following a laminectomy, i.e., when major covering tissues have been removed.
- Over anesthetic areas.
- On patients with hemorrhagic diatheses.



DANGER

Patients with an implanted neurostimulation device must not be treated with or be in close proximity to any shortwave diathermy, microwave diathermy, therapeutic ultrasound diathermy or laser diathermy anywhere on their body. Energy from diathermy (shortwave, microwave, ultrasound and laser) can be transferred through the implanted neurostimulation system, can cause tissue damage and can result in severe injury or death. Injury, damage or death can occur during diathermy therapy even if the implanted neurostimulation system is turned "off."

Potential for Burns

It is possible for ultrasound therapy to cause burns if the therapy is not performed properly. Skin burns can result from one or more of the following:

- If the intensity (power) is too high.
- If you are using too low a frequency.
- Using a stationary technique (holding the sound head in one place).
- Moving the sound head too slowly.
- Treating an area with sensory nerve damage (or the loss of normal skin sensations).
- Desensitized areas can be overheated or burned without the patient's knowledge. Use extreme caution with these patients (e.g., diabetes, neural damage, etc.).
- Bony prominences are especially vulnerable: they reflect sound waves and increase intensity to the periosteum.

Preventing Overheating of the Sound Heads

To prevent the sound head from becoming overheated, do the following:

- Check to be sure proper contact is being made throughout the treatment.
- When treating in water, make sure that the sound head is completely under water.
- For direct coupling, you may need to apply more conductive gel or lotion during the treatment to achieve better coupling.
- You can also reduce the power or duty cycle during the treatment if you are treating an area where it is difficult to obtain good coupling.

Preventing Adverse Effects

Perform the following procedures to avoid the negative effects of ultrasound therapy.

Sound Head Movement

If movement of the sound head is too slow, the patient may feel periosteal pain characterized by a deep ache or pain. If motion is too fast, or if the sound head does not maintain good contact with the skin, the therapeutic effect of the sound waves will be

reduced and the sound head may overheat.

Patient Susceptibility

Some patients are more sensitive to ultrasound output and may experience a reaction similar to a heat rash. Be sure to inspect the treatment area during and following treatment, and discontinue if an adverse reaction does occur.

Output Power

Choose a lower watt setting to reduce output or select a pulsed duty cycle. Higher output levels have a greater potential for patient discomfort.

Coupling

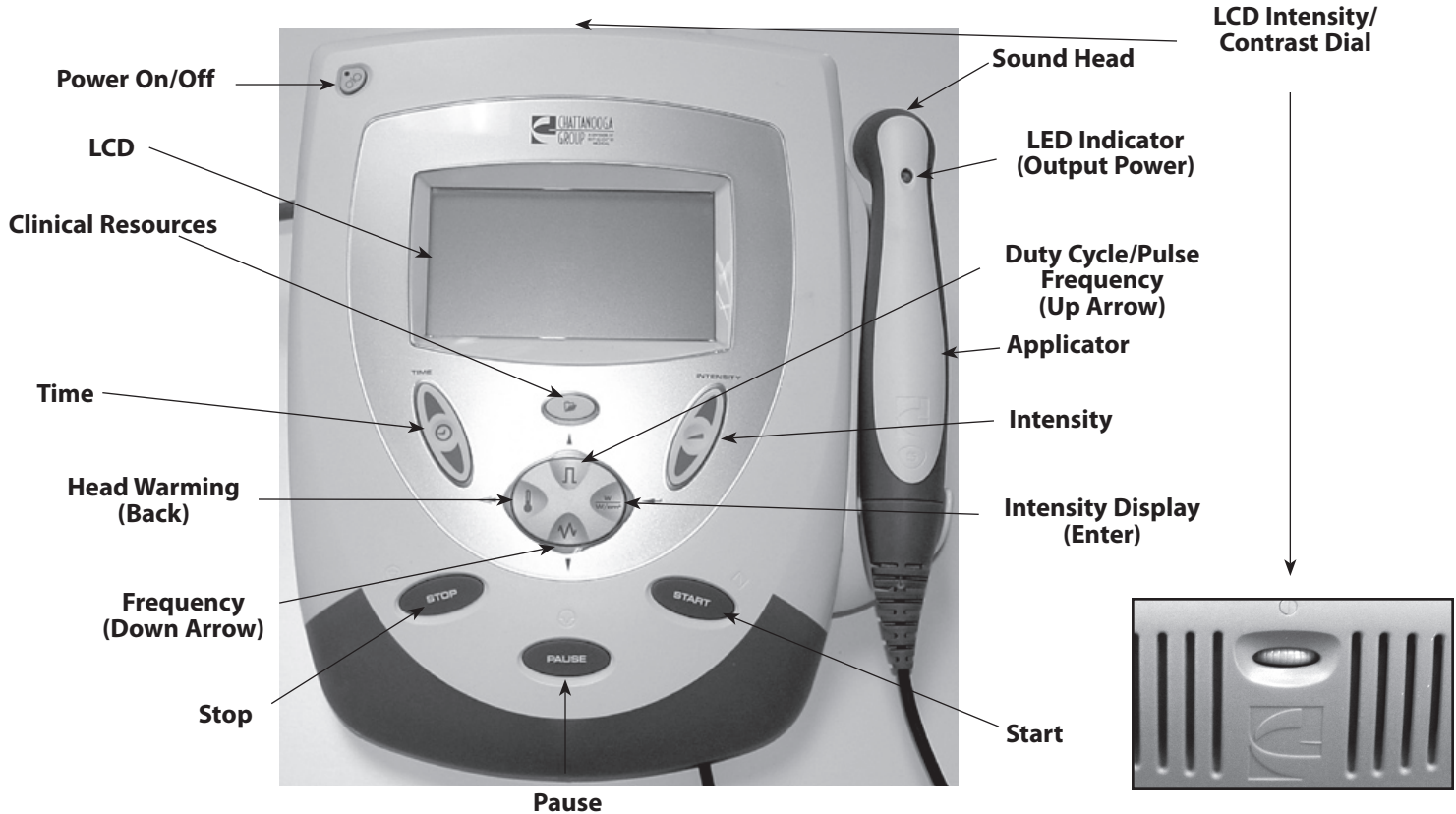
Coupling is described as contact between the sound head and the treatment site and may be accomplished through the use of a coupling agent, such as gel, lotion or water (underwater treatments only). Anything used as a coupling agent must be highly conductive. Air is a very poor conductor of ultrasonic waves.

Head Max. Temp. Disclaimer

Head Max. Temp. is for the protection of the equipment, not for the protection of the patient.

NOMENCLATURE

IntelectTranSport® Ultrasound



Sound Head

The aluminum face of the applicator that contacts the patient's skin. It covers a transducer mechanism that converts electrical energy to mechanical energy in the form of a vibrating crystal.

Power On/Off

The Power On/Off button controls the flow of electricity to the unit.

LCD

The LCD (Liquid Crystal Display) allows the user to view and monitor the information displayed during ultrasound therapy. The following information is displayed on the LCD:

- Frequency
- Duty Cycle
- Power
- Treatment Time
- Clinical Indications



Clinical Resources

Select this button to access the following functions:

- Utilities
- Retrieve User Protocols
- Save User Protocols

Use the Up and Down arrow buttons to navigate through the available options.



Time

Press the Up or Down arrow buttons to set total treatment time of therapy.



Head Warming

Select this button to warm the sound head prior to treatment. The sound head is warmed to slightly above body temperature to increase patient comfort. A small icon of a thermometer will appear, and a fan will turn on indicating that head warming is on.

NOTE: The Head Warming function is only possible prior to touching the Start button initiating a treatment, and while the intensity is at 0. When the Start button is pressed, Head Warming is turned off.

Also note that when the Head Warming feature is used, a small amount of ultrasound energy is being emitted.



Frequency

Select this button to change to a frequency of 1 MHz or 3.3 MHz. The Frequency of ultrasound determines the depth of penetration. One megahertz penetrates approximately 3 to 5 centimeters, and 3.3 megahertz penetrates less than, or equal to 2 centimeters. Both 1 and 3.3 MHz frequencies are available and can be changed throughout the course of treatment by pressing the Frequency button.



Start

Select Start to begin a treatment session or to accept a protocol.



Pause

Use this button to pause the treatment session. When pressed, the  icon displays. To restart therapy, press the PAUSE button.



Stop

Select this button to stop a treatment session.



Intensity Display

Select this button to change display from W/cm^2 (Intensity) to Watts (Power).



Intensity

Use the Up or Down arrow to increase or decrease output power intensity.

Applicator

The hand held assembly used to deliver ultrasonic energy. The applicator includes the sound head, transducer, and related electronics.



Duty Cycle

Select this button to change to a duty cycle of 10%, 20%, 50%, or Continuous.



Battery Indicator

When displayed on the LCD, this symbol indicates the battery pack option is present on the Intelect TranSport Ultrasound. This symbol also displays the charge status of the battery.



LCD Intensity/Contrast Dial

If the intensity of the LCD display diminishes, turn the dial until the display contrast is optimal.



Charge Indicator

This symbol displays when the unit is connected to mains power and the battery pack is charging.

NOTE: During battery operation, if the unit is left on, but not active, for more than five minutes, it will power off to conserve battery power. To restore power, press the Power On/Off button.

Applicator Symbols



This symbol indicates that although the applicator is plugged in, no ultrasound energy (other than the ultrasound energy required to warm the sound head) is being emitted from the applicator.



This symbol indicates that therapy has been started, but the sound head has become uncoupled with the patient's skin.



This symbol indicates that therapy is in progress, the sound head is adequately coupled with the patient's skin, output is being distributed to the patient, and the applicator is functioning normally.



This symbol indicates that the Pause button has been pressed, and no output is being emitted from the applicator.



This symbol indicates that the applicator has been unplugged from the unit.

SPECIFICATIONS

Intelect TranSport® Ultrasound

UNIT SPECIFICATIONS

DIMENSIONS

Height (with base).....	6.4 in (16.3 cm)
Width (with applicator).....	11.3 in (28.8 cm)
Width (without applicator).....	9.4 in (23.9 cm)
Depth (front to rear).....	12.9 in (32.8 cm)

WEIGHT

Standard Weight (with applicator and base)..... (2.3 kg)	5.07 lb
Battery Pack.....	1.87 lb (0.85 kg)

POWER

Input.....	120 - 240 V ~, 50/60 Hz 75 VA
Electrical Class.....	CLASS I
Electrical Type.....	TYPE B



Battery Type.....	Nickel Metal Hydride (NiMH)
.....	(1.2V x 20 size AA)

DESCRIPTION OF DEVICE MARKINGS

The markings on the unit are assurance of its conformity to the highest applicable standards of medical equipment safety and electromagnetic compatibility. One or more of the following markings may appear on the device:

Classified by Intertek Testing Services, NA Inc



Refer to Instruction Manual/Booklet



Equipment capable of delivering output values in excess of 10 mA r.m.s. or 10V r.m.s. averaged over any period of 5 s



Type B Equipment



Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide



SPECIFICATIONS

ULTRASOUND TECHNICAL SPECIFICATIONS

Sound Heads..... 1 cm², 2 cm², 5 cm², 10 cm²

Duty Cycles

Pulsed 10%, 20%, and 50%

Continuous..... 100%

Pulse Frequency..... 100 Hz

Pulse Duration..... 1 msec, +/-20% (10% Duty Cycle
..... Pulsed Mode)

..... 2 msec, +/-20% (20% Duty Cycle
..... Pulsed Mode)

..... 5 msec, +/-20% (50% Duty Cycle
..... Pulsed Mode)

Output accuracy +/- 20% above 10% of maximum

Amplitude 0 to 2.5 W/cm² in Continuous mode,
..... 0-3 W/cm² in pulsed modes

Temporal Peak to Average Ratios:

2:1, +/- 20%, for 50% Duty Cycle

5:1, +/- 20%, for 20% Duty Cycle

9:1, +/- 20%, for 10% Duty Cycle

Maximum Treatment Time..... 30 Minutes

Output

Pulsed 1 MHz or 3.3 MHz signal,
modulated 100% by the
100 Hz rectangular wave
with the selected Duty Cycle.

Continuous 1 MHz or 3.3 MHz, nominal signal
that is activated as long
as the timer is operating.

Timer Accuracy..... +/-0.2 minute

ULTRASOUND TECHNICAL SPECIFICATIONS (CONTINUED)

1 cm² Sound Head

Frequency	3.3 MHz (+/- 5%)
Power	0 watt to 2 watts
Effective Radiating Area	0.7 cm ² – 1 cm ²
Maximum beam non-uniformity ratio.....	5.0:1
Beam Type	Collimating

2 cm² Sound Head

Frequency	1 MHz, 3.3 MHz (all +/- 5%)
Power	0 watt to 4 watts
Effective Radiating Area	1.4 cm ² – 2 cm ²
Maximum beam non-uniformity ratio.....	5.0:1
Beam Type	Collimating

5 cm² Sound Head

Frequency	1 MHz, 3.3 MHz (all +/- 5%)
Power	0 watt to 10 watts
Effective Radiating Area	3.5 cm ² – 5 cm ²
Maximum beam non-uniformity ratio.....	5.0:1
Beam Type	Collimating

10 cm² Sound Head

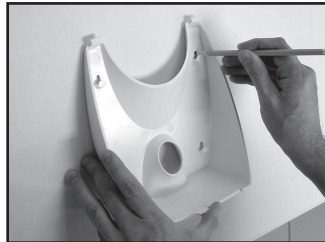
Frequency	1 MHz, 3.3 MHz (all +/- 5%)
Power	1 MHz: 0 watt to 20 watts 3.3 MHz: 0 watt to 10 watts
Effective Radiating Area	6.8 cm ² – 10 cm ²
Maximum beam non-uniformity ratio.....	5.0:1
Beam Type	Collimating

MOUNTING THE UNIT ON THE WALL

The Intelect TranSport Ultrasound can be operated while the unit is resting on a flat surface, or mounted on a wall. The hardware required to mount the unit is not included. To mount the unit on a wall, do the following:

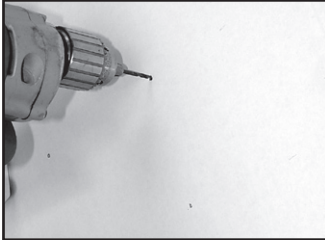


1. Remove the mounting bracket from the back of the unit.

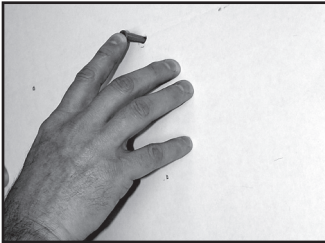


2. Using the bracket as a guide, mark the 4 wall holes with a pencil or pen.

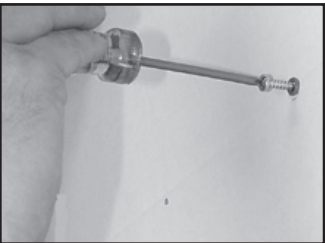
MOUNTING THE UNIT ON THE WALL (CONTINUED)



3. Using a 9/64 (3.6 mm or 0.357 cm) drill bit, drill four holes you marked in the previous step.



4. Press 4 appropriately sized drywall anchors into the wall so that the drywall anchor is flush with the wall.



5. Screw four #8 flathead wood screws (2.54 cm or 1 inch) into the wall anchors. Make sure you leave 0.635 cm (1/4 of an inch) between the wall and the head of the screw.

MOUNTING THE UNIT ON THE WALL (CONTINUED)



6. Replace the mounting bracket on the back of the unit.



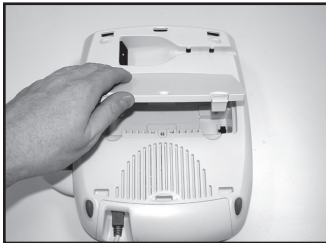
7. Line up the screw heads with the holes on the mounting brackets, and slide the unit down slightly until the screw heads are securely fastened to the mounting bracket.

INSTALLING THE BATTERY PACK

The Intellect TranSport Ultrasound accommodates both AC mains power and an optional battery pack. The pack contains 20 Nickel Metal Hydride (NiMH) drycell batteries. The unit can operate with the rechargeable power supply for approximately five hours of continuous use. To install the battery pack in the Intellect TranSport Ultrasound, do the following:



1. Locate the battery access door at the bottom of the unit and loosen the screw with a regular screwdriver.



2. Remove the battery access door and retain this cover.

INSTALLING THE BATTERY PACK (CONTINUED)



3. Connect the battery pack cable to the unit's battery connector in the bottom of the battery recess.



4. Put the battery pack into the unit, making sure to orient it as shown.



5. Replace the battery access door and re-tighten the screw using the screwdriver.
6. Reverse the steps in this section in order to remove the battery pack.

CHARGING & USING THE BATTERY PACK

CHARGING THE BATTERY PACK

The battery pack is automatically charged by the unit whenever there is mains power connected. Charging may be interrupted during operation of the unit by the control circuitry to limit total power consumption. A fully charged battery will provide 2-5 hours of treatment depending on the power, duty cycle, and frequency used.

NOTE: Even when the battery pack is connected, the unit will default to mains power.

USING THE BATTERY PACK

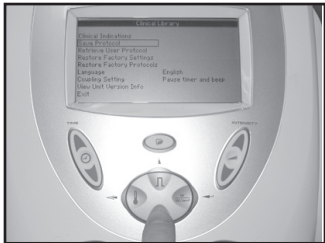
To save battery power, the Intellect TranSport Ultrasound is equipped with a “power off” function. This function is activated when the unit is powered on and has been left idle for approximately 5 minutes, at which time the unit powers off. To restore power, press the Power On/Off button.

CREATING A USER PROTOCOL

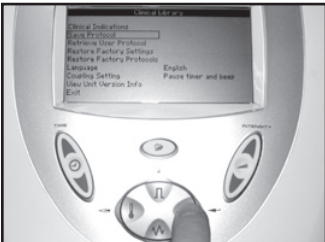
This is a library you create. You may store up to 10 protocols in the User Protocol Library. To create User Protocols, do the following:



1. Make the desired parameter changes.
2. Press the Clinical Resources button.
The Clinical Resources menu displays.

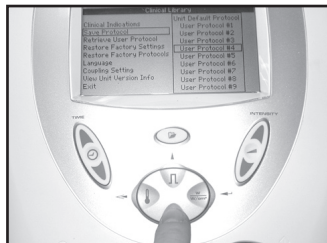


3. Press the FREQUENCY (down arrow) or DUTY CYCLE (up arrow) buttons to highlight the Save Protocol option.



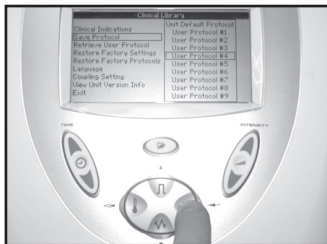
4. Press the DISPLAY (enter) button to accept the Save Protocol selection.
The Save Protocol menu displays.

CREATING A USER PROTOCOL (CONTINUED)



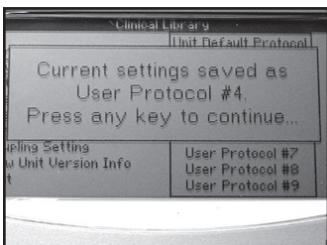
5. Use the DUTY CYCLE (up arrow) and FREQUENCY (down arrow) buttons to highlight any unused user protocol.

If you select Unit Default Protocol, this will become the protocol displayed when the unit powers up.



6. Press the DISPLAY (enter) button to accept the highlighted selection and save your custom protocol.

The User Protocol Confirmation window displays to indicate that the protocol is now saved as the number you specified.



7. Press any button on the Operator Interface.
The Clinical Resources menu displays and your new user-defined protocol is now saved.

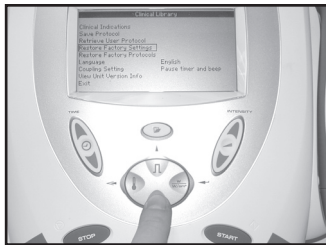
RESTORING FACTORY SETTINGS

Certain default utility settings on the unit may be changed to suit your requirements. These settings consist of the unit's language, coupling settings, and head warming activation. However, you may want to return the unit to its original settings.

To restore the original power up default settings on the unit, do the following:

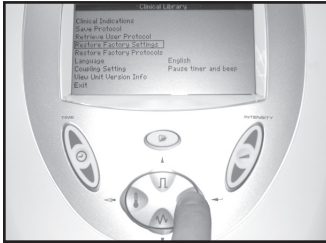


1. Press the Clinical Resources button.
The Clinical Resources menu displays.

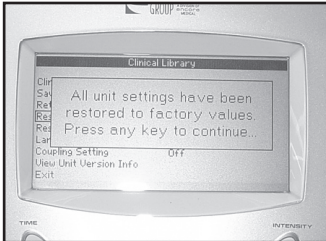


2. Press the DUTY CYCLE (up arrow) or FREQUENCY (down arrow) buttons to highlight the Restore Factory Settings option.

RESTORING FACTORY SETTINGS (CONTINUED)



3. Press the DISPLAY (enter) button to accept the highlighted selection.
The Restore Factory Settings Confirmation window displays.



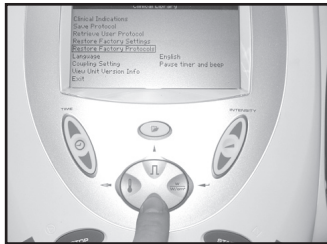
4. Press any button to confirm that you have restored the factory settings on your unit.
The default power up settings are restored and you are returned to the Clinical Resources menu.

RESTORING FACTORY PROTOCOLS

If necessary, you can choose to restore the user-defined protocols to the unit's original parameters when it was shipped to you. To do this, do the following:

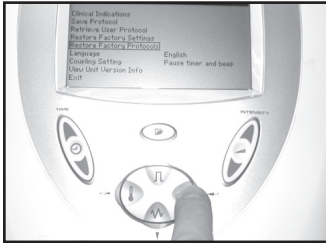


1. Press the Clinical Resources button.
The Clinical Resources menu displays.

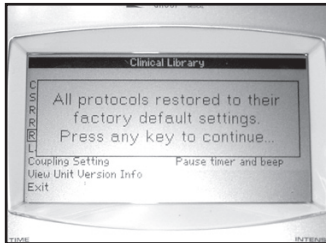


2. Press the DUTY CYCLE (up arrow) or FREQUENCY (down arrow) buttons to highlight the Restore Factory Protocols option.

RESTORING FACTORY PROTOCOLS (CONTINUED)



3. Press the DISPLAY (enter) button to accept the highlighted selection.
The Restore Factory Protocols Confirmation window displays.



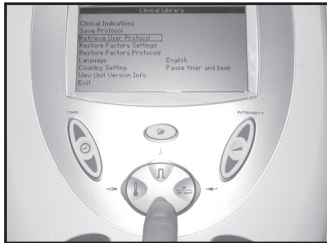
4. Press any button to confirm that you have restored the factory protocols on your unit.
The user-defined protocols are erased and restored to the original parameters.
You are returned to the Clinical Resources menu.

SELECTING A USER-DEFINED PROTOCOL

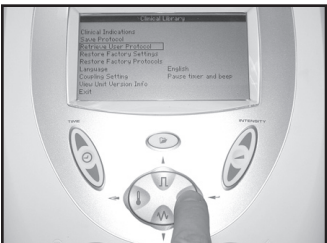
To select a predefined ultrasound therapy program, do the following:



1. Press the Clinical Resources button.
The Clinical Resources menu displays.

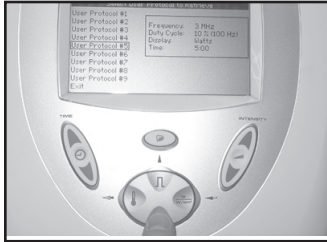


2. Use the DUTY CYCLE (up arrow) or FREQUENCY (down arrow) buttons to highlight the Retrieve User Protocol option.



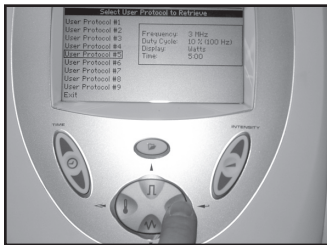
3. Press the Display (Enter) button to accept the highlighted selection.
A list of user-defined protocols displays.

SELECTING A USER-DEFINED PROTOCOL (CONTINUED)



4. Use the FREQUENCY (down arrow) button to highlight the appropriate protocol.

As you highlight each protocol, a description of the protocol's parameters displays to the right.



5. Press the Display (Enter) button to select the highlighted protocol.

The main screen displays with the parameters of the protocol you selected.



6. Verify the parameters of this program, and use the appropriate buttons on the Operator Interface to adjust any setting, if necessary. For example, to adjust the time, press the up and down arrows on the TIME button.
7. To begin therapy, perform all the procedures outlined in the section entitled "Preparing the Patient's Skin for Ultrasound Therapy" on [page 34](#). Then continue with [step 6](#) of the section entitled "Starting, Stopping, and Interrupting Therapy" on [page 37](#).

PREPARING THE PATIENT'S SKIN FOR ULTRASOUND THERAPY

Before applying the sound head to the patient, you must first prepare the patient's skin for ultrasound therapy. By properly preparing the patient's skin for ultrasound therapy, you will allow more ultrasound energy to reach the targeted areas and reduce the risk of skin irritation.

To prepare the patient's skin for ultrasound therapy, do the following:

1. Thoroughly wash the skin on which you intend to place the sound head with mild soap and water.
2. Dry the skin thoroughly.
3. Apply the ultrasound gel generously to the target area on the patient.



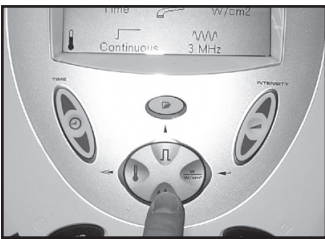
STARTING, STOPPING, AND INTERRUPTING THERAPY

The Operator Interface consists of buttons with a liquid crystal display (LCD). The operator is able to view parameter options on the display and make selections by pressing the buttons on the control panel. The LCD will provide continuous information during the treatments concerning power and elapsed time. Parameters are adjusted using control panel buttons on the front of the unit. The ultrasound output can be stopped by pressing the "PAUSE" or "STOP" buttons located on the control panel.

To apply ultrasound therapy, do the following:



1. Turn system power "ON" by pressing the Power On/Off Button.
The unit will go through self diagnostics, and the home screen displays on the LCD.



2. Press the Frequency button to select 1 or 3.3 MHz. When the button is pressed, the frequency will toggle from 1 to 3.3 MHz and back again as long as the button is being pressed.
An audible tone will be heard when changes are made.

NOTE: With the 2 cm², and 5 cm² sound head, switching from 1 to 3.3 MHz results in no change in power. When using a 10 cm² head with greater than 10 watts, changing from 1 to 3.3 MHz reduces power to 10 watts.

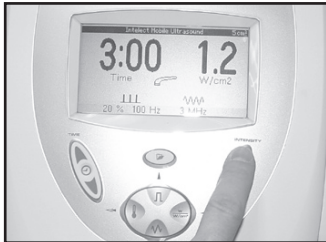
STARTING, STOPPING, AND INTERRUPTING THERAPY (CONTINUED)



3. Press the Duty Cycle (up arrow) button to select 10%, 20%, 50% or Continuous duty cycle. When the button is pressed, an audible tone will be heard as the duty cycle toggles through the options on the LCD.



4. Press the Time button and raise or lower treatment time using the up and down arrows.



5. Press the Intensity button and raise or lower the unit's output using the up and down arrows.

NOTE: The green light on the back of the applicator illuminates when ultrasound energy is being emitted through the sound head.

STARTING, STOPPING, AND INTERRUPTING THERAPY (CONTINUED)




6. Press the START button. The unit will beep 5 times and the ultrasound power will distribute the selected output.

NOTE: When treatment time has expired a tone will sound three times.



7. The therapy can be interrupted at any time by pressing the STOP or PAUSE buttons. When the STOP button is pressed, the applicator stops emitting ultrasound energy, and the unit returns to the default settings. To resume therapy, press the Start button.

When the PAUSE button is pressed, the  icon displays, the timer pauses, and the applicator stops emitting ultrasound energy. To resume therapy, press the PAUSE button again.



8. The parameters of the therapy can be changed at any time during the therapy session by pressing the appropriate button.
9. After therapy is complete, wipe excess ultrasound gel from the patient's skin and the sound head.

OPERATION

SYSTEM UTILITIES

Audible Tones

Audible tones will be heard in the following conditions:

- Any button is pressed.
- The Maximum Temperature for the sound head is exceeded.
- The rechargeable battery's power is low (in which case the Low Battery icon will display).
- Any error message is displayed.
- The therapy time reaches 0:00.

Changing Protocol Parameters

You can change any user protocol parameter prior to or during therapy. To change Frequency or Duty Cycle, do the following:



1. Press either the FREQUENCY (up arrow) or DUTY CYCLE (down arrow) buttons to browse through the provided options.

SYSTEM UTILITIES (CONTINUED)



2. To make INTENSITY and treatment TIME changes, touch the respective buttons and use the up or down arrows to advance to the desired settings.

Changing Power-Up Presets

The following power up presets can be changed and stored as new presets:

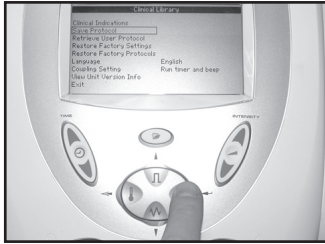
- Frequency
- Duty Cycle
- Treatment Time
- Intensity



To change the power up presets, do the following:

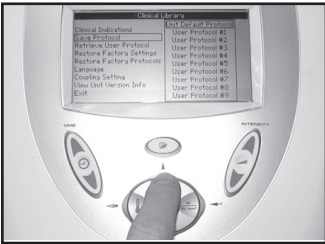
1. Make the desired changes.
2. Press the Clinical Resources button. The Clinical Resources menu displays.

SYSTEM UTILITIES (CONTINUED)

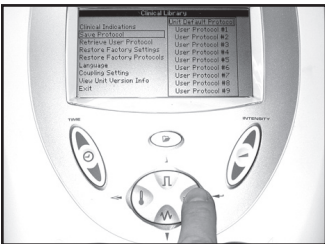


3. Press the DUTY CYCLE (up arrow) and FREQUENCY (down arrow) buttons to highlight Save Protocol, and press the DISPLAY (enter) button to accept the highlighted selection.

The Save Protocol window displays.



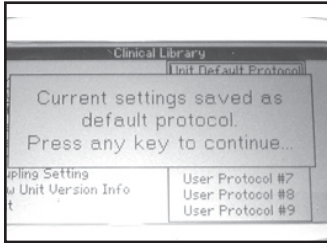
4. Press the DUTY CYCLE (up arrow) or FREQUENCY (down arrow) buttons to highlight Unit Default Protocol.



5. Press the DISPLAY (enter) button to accept the highlighted selection.

The User Default Protocol confirmation window displays.

SYSTEM UTILITIES (CONTINUED)



6. Press any key to confirm the settings.

You are returned to the Clinical Resources menu.

Brightening or Dimming the LCD



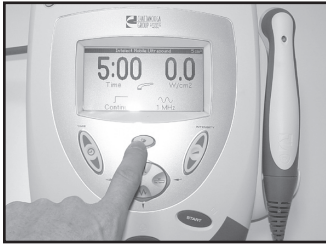
To brighten or dim the LCD, turn the contrast control dial until the display contrast is optimal.

SYSTEM UTILITIES (CONTINUED)

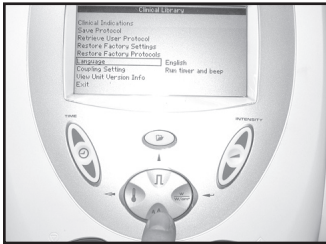
Changing Languages

You may change the language displayed by the Intelect TranSport Ultrasound to either English or Spanish.

To change the language displayed on the LCD, do the following:

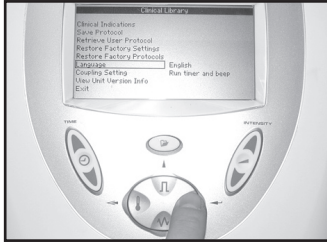


1. Press the Clinical Resources button.
The Clinical Resources menu displays.

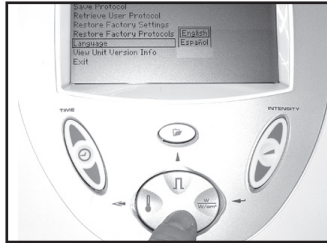


2. Use the FREQUENCY (down arrow) and DUTY CYCLE (up arrow) buttons to highlight the Language option.

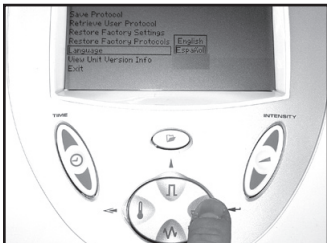
SYSTEM UTILITIES (CONTINUED)



3. Press the DISPLAY (enter) button to accept the highlighted selection.



4. Press the FREQUENCY (down arrow) and DUTY CYCLE (up arrow) buttons to highlight the appropriate language.



5. Press the DISPLAY (enter) button to accept the highlighted selection.
Your unit now displays the language you selected.

SYSTEM UTILITIES (CONTINUED)

Using the Sound Head Warming Feature

To use the Head Warming feature on the unit, do the following:



1. Press the Head Warming button.

The sound head will warm to slightly above body temperature. A small icon of a thermometer will appear on the LCD.



2. Press the Head Warming button again to disable the feature.

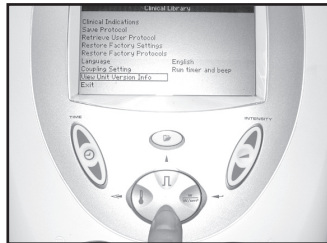
SYSTEM UTILITIES (CONTINUED)

Viewing Unit Version Information

Use this utility to verify that the unit is using the latest software available. To do this, do the following:

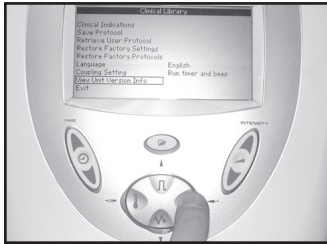


1. Press the Clinical Resources button.
The Clinical Resources menu displays.



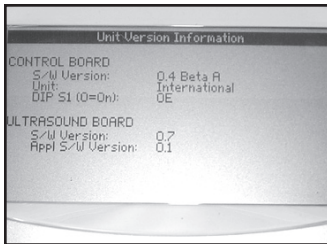
2. Use the FREQUENCY (down arrow) and DUTY CYCLE (up arrow) buttons to highlight the View User Info option.

SYSTEM UTILITIES (CONTINUED)



3. Press the DISPLAY (enter) button to accept the highlighted selection.

The Unit Version Information window displays.



4. Press any key to return to the Clinical Resources menu.

Standard Accessories

5 cm² Applicator-27383

Ultrasound Transmission Gel 9 oz bottle-4248

Power Supply Cord (US)-27325

Optional Accessories

1 cm² Applicator (Blue)-27381

2 cm² Applicator (Blue)-27382

10 cm² Applicator (Blue)-27384

Battery Pack-27478

Intelect TranSport Carrying Bag-27467

Ultrasound Transmission Gel 5 liters-4238

ERROR MESSAGES

Troubleshooting the Display



If you press the Power On/Off button, and the LCD remains blank longer than a few seconds, the contrast may require adjusting. To adjust it, turn the contrast control dial clockwise until the display contrast is optimal.

Troubleshooting Error Messages

The following messages are displayed in the “Status Area” of the LCD under the following conditions:

Message	Displayed When
  Head Over Temp.	sound head reaches a temperature which could damage the crystal
 No Head Detected	sound head not plugged in or faulty sound head

NOTE: Any error encountered by the unit will stop therapy immediately.

Maintaining the Intelect TranSport Ultrasound

The following items should be checked at least monthly to ensure proper operation of this unit:

- Power cord and plug: Check to make sure the cord is not frayed, kinked, and does not have torn or cut insulation.
- Applicator cable: Check to make sure the cable is flexible, free of kinks, not frayed, and the insulation is intact.
- Sound head face: Check to see that there is no build-up of gel or foreign material on the aluminum face.

Cleaning

To clean the accessories, use only soap and water. Alcohol may be used to disinfect the aluminum surface, but avoid the plastic area.

The Intelect TranSport Ultrasound case may be cleaned by wiping with a damp cloth or mild cleaning solution. Avoid abrasive cleansers.

NOTE: The sound head must be cleaned with alcohol between each therapy session.

Service

The Intelect TranSport Ultrasound must be recalibrated annually. It is recommended that all Chattanooga ultrasound products be returned to the factory or an authorized servicing dealer for repairs or recalibration. Recalibration is also recommended after the replacement or repair of any major component. Should the Intelect TranSport Ultrasound unit require service, contact the selling dealer or DJO, LLC Service Department.

All units returned to the factory for service must include the following:

WARRANTY REPAIR/OUT OF WARRANTY REPAIR

1. Written statement containing the following information:

- RA Number- Obtain from Factory
- Unit Model Number
- Unit Serial Number
- Contact person with Phone and Fax Numbers
- Billing Address (for Out of Warranty Repair)
- Shipping Address (Where to Ship Unit after Repair)
- Detailed Description of Problem or Symptoms

2. Copy of original invoice issued at purchase of the unit.

3. Ship unit to Factory in the original container with all accessories and information as required in item one above to:

DJO, LLC
Chattanooga Repair Center
47492 SD Hwy 22
PO Box 709
Clear Lake, SD 57226 USA

Service to these units should be performed only by Service Technicians certified by DJO, LLC. Ultrasound requires annual calibration, from the date placed in service, by a Service Technician certified by DJO, LLC. Council Directive 2002/96/EC concerning Waste Electrical and



Electronic Equipment (WEEE). Indicates a requirement not to dispose of WEEE as municipal waste. Contact your local distributor for information regarding disposal of the unit and accessories.

The Intelect TranSport Ultrasound Service Manual is available for purchase and can be requested from the selling dealer or DJO, LLC Service Department. The Service Manual contains safety precautions, nomenclature, specifications, troubleshooting, removal and replacement instructions, general maintenance, calibration instructions, parts lists, schematics, warranty and other information which would assist a certified service technician to repair the unit.

WARRANTY

Intellect TranSport® Ultrasound

DJO, LLC, ("Company") warrants that the Intellect TranSport Ultrasound ("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, the 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 applicators is one year (12 months).

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

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. Written claims made to the Company should be sent to:

DJO, LLC
1430 Decision St
Vista, CA 92081 USA
Phone: 1-800-592-7329 USA
Phone: 1-423-870-2281 or 1-317-406-2250
Fax: 1-317-406-2014

and

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 state to state or location to location.

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.

APPENDIX A - EMC TABLES

TABLE 1: GUIDANCE AND MANUFACTURER’S DECLARATION–ELECTROMAGNETIC EMISSIONS

The Intelect TranSport Ultrasound unit is intended for use in the electromagnetic environment specified in the table below. The user of the Intelect TranSport Ultrasound unit should assure that it is used in such an environment.

Emission Tests	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	Group 1	The Intelect TranSport Ultrasound uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment
RF emissions CISPR 11	Class A	The Intelect TranSport Ultrasound 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 fluctuations/Flicker Emissions IEC 61000-3-3	Complies	

APPENDIX A - EMC TABLES

Intellect TranSport® Ultrasound

TABLE 2: GUIDANCE AND MANUFACTURER'S DECLARATION—ELECTROMAGNETIC IMMUNITY

The Intellect TranSport Ultrasound is intended for use in the electromagnetic environment specified in the table below. The user of the Intellect TranSport Ultrasound should assure that it is used in such an environment.


Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±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_i (>95% dip in U_i) for 0.5 cycle 40% U_i (60% dip in U_i) for 5 cycles 70% U_i (30% dip in U_i) for 25 cycles <5% U_i (>95% dip in U_i) for 5 sec	<5% U_i (>95% dip in U_i) for 0.5 cycle 40% U_i (60% dip in U_i) for 5 cycles 70% U_i (30% dip in U_i) for 25 cycles <5% U_i (>95% dip in U_i) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Intellect TranSport Ultrasound requires continued operation during power mains interruptions, it is recommended that the Intellect TranSport Ultrasound be powered from an uninterrupted power supply or a battery.
Power frequency (50/60Hz) 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_i is the a.c. mains voltage prior to application of the test level.

APPENDIX A - EMC TABLES

TABLE 2: GUIDANCE AND MANUFACTURER'S DECLARATION-ELECTROMAGNETIC IMMUNITY (CONTINUED)

The Intellect TranSport Ultrasound is intended for use in the electromagnetic environment specified in the table below. The user of the Intellect TranSport Ultrasound unit 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 Intellect TranSport Ultrasound, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
			Recommended separation distance:
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	$d = \frac{[3.5]\sqrt{P}}{V_1}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	±1 kV differential mode ±2 kV common mode	$d = \frac{[3.5]\sqrt{P}}{E_1}$ 80 MHz to 800 MHz $d = \frac{[7]\sqrt{P}}{E_1}$ 800 MHz to 2.5 GHz
			where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a , should be less than the compliance level in each frequency range ^b . Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Intellect TranSport Ultrasound is used exceeds the applicable RF compliance level above, the Intellect TranSport Ultrasound should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Intellect TranSport Ultrasound.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

APPENDIX A - EMC TABLES

TABLE 3: RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE INTELECT TRANSPORT ULTRASOUND

The Intellect TranSport Ultrasound unit is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Intellect TranSport Ultrasound can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Intellect TranSport Ultrasound as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter W	Separation Distance According to Frequency of Transmitter m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 800 MHz
	$d = \frac{[3.5]\sqrt{P}}{V_1}$	$d = \frac{[3.5]\sqrt{P}}{E_1}$	$d = \frac{[7]\sqrt{P}}{E_1}$
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

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

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