Med-Fit Pro Certified Therapeutic Ultrasound

med▸fit

Medically Certified
Ultrasound CE 0197

User Manual and Treatment Guidelines

Please read this User Manual before using your Ultrasound

Telephone: 0161 429 7330

Introduction

Welcome to the Med-Fit® Pro Ultrasound therapy device, designed and manufactured using advanced digital signal processing. The result is a unit with excellent versatility based on simplicity of operation.

This manual has been written for the owners and operators of the Med-Fit® Pro Ultrasound. It contains general instructions for operation, precautionary instructions and maintenance recommendations. In order to obtain maximum life and efficiency from your Med-Fit® Pro Ultrasound and to assist in the proper operation of the unit, read and understand this manual thoroughly and become familiar with the controls on the panel as well as the accessories that come with the unit before operation of the unit.

The specifications put forth in this manual were in effect at the time of publication.

Liability Disclaimer

Before administering any treatment to yourself or a patient please read this user manual and operating instructions within the manual. Please read all precautionary instructions listed below.

Techniques of Applications

The Med-Fit Pro Home Ultrasound now features a pulsed and continuous ultrasound output

Low setting ▮ one bar setting, automatically sets a pulsed mode. This is ideal for acute conditions where low intensity is required.

Medium settings ▮▮ two bar setting, automatically sets the pulse mode, this is a longer pulsed mode, ideal for more sub-acute conditions.

High settings ▮▮▮ three bar setting, automatically sets a continuous mode. Ideal for chronic conditions or treating larger muscle groups for example quadriceps hamstrings and deep-seated muscles with long standing injuries.

Methods of Soundwave Transmission

1. Apply a generous amount of coupling medium to clean dry skin.
2. Move transducer in either a circular or stroking pattern.
3. Turn intensity up to treatment level.
4. Each circle / stroke should overlap the previous by ½.
5. Treatment area limited to 2 times size of transducer.
6. Slow and deliberate (moving the soundhead approximately 4 cm per second).
7. Always keep the ultrasound in contact with the skin during treatment.

Techniques of Applications

Treatment area

The skin should be clean and dry before applying the coupling gel. The treatment area should be no more than twice the size of ultrasound transducer head.

Transmission media (couplant)

The higher the water conductive medium, the less the ultrasound energy is absorbed by the medium and the more energy is available to produce thermal effect. Less efficient mediums heat up, resulting in surface warmth to patient. In order of efficiency:

1. Water
2. Aqueous gel (conducts 96% of sound)
3. "Hydro" gel, (brand x), 68% of sound conducted
4. Mineral oil
5. Coupling lotion

Treatment time

Treatment time is generally between 5 and 10 minutes. Never treat over 15 minutes regardless of treatment area.

Frequency of treatment

Conditions may be treated using low intensity ultrasound once or even twice daily for 6 to 8 days until acute symptoms such as pain and swelling subside. In chronic conditions. Ultrasound treatment should continue as long as there is improvement. If no improvement is noted following three or four treatments, ultrasound should be discontinued, or different parameters (i.e., duty cycle, frequency) employed. Typically recommended treatment times are between 5 and 10 minutes.

Ultrasound treatments are similar to exercise session in that each session builds on the previous one. For most conditions and whenever possible, daily ultrasound treatments will provide the most benefits to the patient.

Ultrasound Sensation and Tolerance

It is important to remember that everyone's tolerance to ultrasound is different, and therefore the intensity should always be adjusted to the correct level. You should not feel warmth during the treatment as ultrasound is absorbed deep inside the tissues and surrounding underlying structures. If the transducer feels hot at the skin surface, it is likely that the coupling medium is inadequate. If you feel a deep aching sensation during the treatment, stop immediately.

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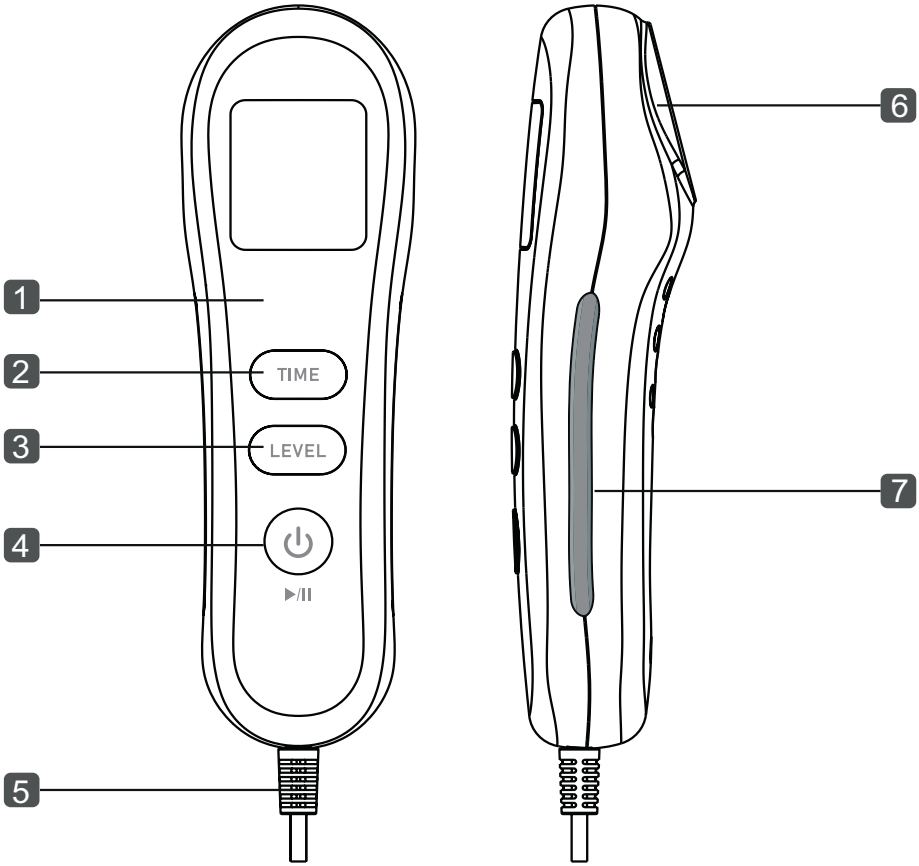
Functions and Controls



1. Main body
2. Treatment time button: press the button, the treatment timer display will be changed 0-5-10-15-0minutes.
3. Level setting button: press the button, intensity level settings will be changed L-M-H-L.
4. On/Off button, Pause/Continue button: press button long time, switch on or switch off the device, press button short time, pause or continue treatment.
5. DC power cord
6. Ultrasound head
7. Easy grip side bar

Functions and Controls

7. Ultrasound output indicator: the indicator will flash on and off when the treatment is beginning and ultrasound is being transmitted.
8. Treatment time indicator the indicator will be always on.
9. Intensity level settings:

Level L (one bar)

LEVEL M (two bars)

LEVEL H (three bars)

10. Treatment timer settings: the first treatment timer display is set at 0, pressing the treatment time button automatically sets the timer at 5 minutes and will countdown.
    The treatment timer is adjustable 5-10-15-0-5 minutes.

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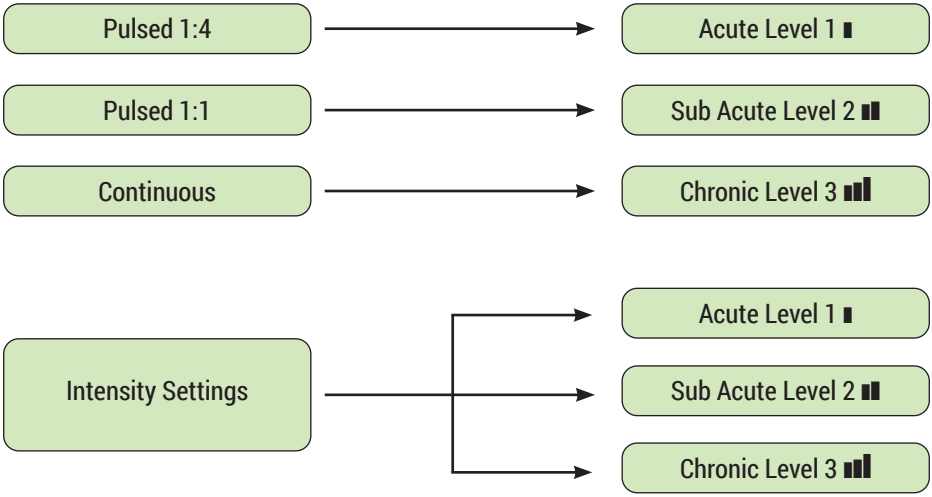
Ultrasound Treatment Settings



FAQs

Q: When should I do the treatment, in the morning or night?

A: You may do treatment at anytime that fits your schedule. We recommend a maximum of two treatments in any 24 hour period.

Q: Can I go outdoors after treatments?

A: There are no restrictions.

Q: Is there any pain when using the Ultrasound Device?

A: When using your ultrasound device, it is sometimes possible to feel a slight warmth. However this sensation should never feel painful or unpleasant. If pain occurs, please stop use.

Q: Are all skin types suitable for use with the Ultrasound Device?

A: Yes. Ultrasonic therapy is suitable for all people and all skin types except for peoples and body parts of contraindications.

Guidelines for Treatment Settings & Conditions

Indications for use

A. Soft tissue injuries
B. Chronic connective tissue and joint dysfunction
C. Osteoarthritis
D. Periarthritis
E. Bursitis
F. Tenosynovitis
G. Tendonitis, bursitis, capsulitis
H. Chronic sprains/strains
I. Muscle spasm

The following guidelines indicate the most appropriate settings for treating some common conditions. To achieve the best results from the ultrasound therapy it is most important to apply a generous amount of gel to the treatment area and always keep the ultrasound head moving in a slow circular motion.

A. Level ▮ - ▮▮	Pulsed - Time 4-6 Minutes
B. Level ▮▮	Pulsed - Time 5-8 Minutes
Level ▮▮▮	Continuous - Time 5-8 Minutes
C. Level ▮▮	Pulsed - Time 10 Minutes
D. Level ▮▮▮	Continuous - Time 10 Minutes
E. Level ▮▮▮	Continuous - Time 10 Minutes
F. Level ▮▮	Pulsed - Time 7-10 Minutes
G. Level ▮▮▮	Continuous - Time 7-10 Minutes
H. Level ▮▮▮	Continuous - Time 7-10 Minutes
I. Level ▮	Pulsed - Time 5-7 Minutes
Level ▮▮▮	Continuous - Time 5-7 Minutes

The treatment times relates to any area approximately twice the size of the ultrasound transducer, larger areas will need longer treatment times. We recommend using the ultrasound a maximum of twice in any 24 hours on the same treatment area.

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1. Foreword

1.1 General

This manual has been written for the users of UT1053. It contains general information on the operation, precautionary practices, and maintenance information of the device. In order to maximise the use, efficiency, and life of the device, please read the manual thoroughly and become familiar with the controls, as well as the accessories before operating the device.

Pay attention to the following before using the UT1053:

1. Keep yourself informed of the contraindications.
2. The device may not be used in close proximity (i.e. less than 2 Metres) to shortwave equipment.
3. The device may not be used in so-called "wet rooms" (hydrotherapy rooms).
4. The device can be used at home. And the patient is an intended operator.

The manufacturer cannot be held responsible for the results of using this apparatus for any purposes other than those described in these operating instructions.

1.2 Therapy possibilities

UT1053 is a therapy apparatus that offers ultrasound therapy. Pain effects the quality and enjoyment of life, especially for those who suffer chronic pain. The applicator has a radiant surface of 4.0cm^2 and frequency of 1MHz.

Treatment time

Treatment time is generally between 5 and 10 minutes. Never treat over 15 minutes regardless of treatment area.

1.3 Applicator

The ultrasound applicator for UT1053 has one-frequency head. This applicator can now supply 1 MHz ultrasound. The head has excellent beam characteristics, fully meeting the requirements of the existing standards. The excellent beam characteristics, ergonomic design and effective contact control of the single-frequency applicator make optimal treatment possible.

2. Safety Precautions

2.1 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 definitions of these symbols are as follows:

CAUTION:

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

WARNING:

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

DANGER:

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

2.2 Caution

⚠ CAUTION:

1. 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.
2. Keep informed of the contraindications.
3. Do not operate the device when connected to any other medical device.
4. Do not operate this device in an environment where other devices used, intentionally radiate electromagnetic energy in an unshielded manner.
5. Ultrasound should be routinely checked before each use to ensure that all controls function normally.
   Check intensity control – make sure it properly adjusts the intensity of the ultrasonic power output in a stable manner.
   Check treatment time control – make sure it terminates ultrasonic power output when the timer counts down to zero.
6. Do not use sharp objects such as pencil point or ballpoint pen to operate the buttons on the control panel.
7. Handle the ultrasound applicator with care. Inappropriate handling of the Ultrasound applicator may adversely affect its characteristics.
8. Before each use, inspect the Ultrasound Applicator for cracks to avoid the ingress of conductive fluid.
9. Inspect Applicator cables and associated connectors before each use.
10. The ultrasound therapy control unit is not designed to prevent the ingress of water or liquids. Ingress of water or liquids may cause malfunction of internal components of the device and therefore create risk of injury to the patient.
11. Caution should be used with patients suspected or diagnosed with epilepsy and with patients suspected or diagnosed with heart problems.

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12. Caution should be used in the presence of the following:
    When there is a tendency to hamorrhage following acute trauma or fracture.
    Following recent surgical procedures when muscle contraction may disrupt the healing process.
    Menstruating or pregnant uterus.
    Over areas of the skin which lack normal sensation.
13. The device should be kept out of the reach of children. Avoid inhalation or swallowing of small parts. And the cable may cause strangulation.
14. Do not use in the bath or shower. The device should not be submerged in water or other liquids as this will possibly damage.

2.3 Warning

⚠ WARNING

To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

1. Care must be taken when operating this equipment around other equipment.
2. Potential electromagnetic or other interference may occur to either this device or to the other equipment, or both. Minimise this interference by not using this device in conjunction with the other equipment.
3. This device may not be used in close proximity (i.e. less than 2 Metres) to short-wave equipment.
4. Avoid exposure to direct sunlight, rain, excessive dust, moisture, mechanical vibrations and shocks.
5. This device may not be used in so-called “wet rooms” (hydrotherapy rooms).
6. Before administering any treatment, you should become acquainted with the operating procedures for each program of treatment, as well as the indications, contraindications, warnings, and precautions. Consult other resources for additional information regarding the application of ultrasound.
7. Do not use solvents to clean this device.
8. Do not use this device if it is damaged in any way.
9. This device must only be serviced, repaired and opened by individuals at authorised sales centers.
10. Dispose of this device in accordance with local regulations. Keep the operating instructions with the device.
11. Not to be used while pregnant.
12. Avoid use over or near bone growth centers until bone growth is complete.
13. Treatment time should not exceed 30 minutes a day.
14. Do not use a mobile phone while operating the device.
15. Patients with sensitivity to the coupling gel should use caution when using the device.
16. Always keep the ultrasound head in constant motion.
17. Use ample conductive gel with the ultrasound head to ensure good coupling throughout the treatment. If needed, apply more when setting intensity.

18. Consult your doctor or physiotherpist if you are in any doubt whatsoever.
19. Disassembly and modification of equipment is prohibited.
20. If you have had medical or physical treatment, consult with your physician before using this device.
21. If your pain does not improve, becomes seriously chronic or severe, or continues for more than five days, stop using the device and consult with your physician.
22. The mere existence of pain functions as a very important warning telling us that something is wrong. Therefore, if you suffer from any serious illness, consult your physician in order to confirm that it is advisable for you to use.

2.4 Danger

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".

2.5 Adverse reaction

• Skin irritation and inflammation are potential adverse reactions.
• Perform the following procedures to avoid the negative effects of ultrasound therapy.

Applicator Movement

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

Coupling

Coupling is described as contact between the applicator and the treatment area and may be accomplished through the use of a coupling agent, such as gel or lotion. Anything used as a coupling agent must be highly conductive. Air is a very poor conductor of ultrasonic waves.

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3. Intended Use

The UT1053 is a portable ultrasound device that generates deep ultrasonic waves within body tissues for the treatment of selected medical conditions such as pain relief, muscle spasm, and joint contractures.

4. Contraindications

1. Do not use over or near bone growth centers (epiphyseal discs) until bone growth is complete.
2. Do not use over a healing fracture.
3. Do not use over the eyes.
4. Do not use over the heart.
5. Do not use over brain tissue.
6. Do not use on patients with demand type cardiac pacemakers.
7. Do not use on someone who is pregnant.
8. Do not use on testicles.
9. Do not use on patients post laminectomy.
10. Do not use on areas of the body that lack sensation.
11. Do not use on areas of post-traumatic sequelae.
12. Do not use if the patient has an endoprosthesis / metal implants.
13. Do not use on patients with implanted neurostimulation systems.
14. Do not use to treat malignancies nor in the region where tumors or malignant tumors are present.
15. Do not use on patients who have thrombophlebitis and/or varices.
16. Do not use on patients experiencing septic inflammation.
17. Do not use on patients who have diabetes mellitus.
18. Do not use on patients who have osteoporosis.
19. Do not use over ischemic tissues in patients with vascular disease where the blood supply would be unable to follow the increase in metabolic demand.
20. Do not use over the carotid sinus nerves or arteries, laryngeal or pharyngeal muscles.
21. Do not use on patients with hemorrhagic diatheses (excessive bleeding disorders).
22. Do not use over an area of the spinal cord following a laminectomy.
23. Do not use over areas that are under anesthesia.
24. Do not use on acute injuries
25. Do not use on open wounds.
26. Do no use if patient is feverish (pyrexia).
27. Do not use on patient with tuberculosis.
28. Do not use on patients who have localised inflammation.

5. Installation

5.1 Before use

Remove the device and all accessories from box. Inspect the device for damages or missing parts and/or accessories. Report any damage or missing parts or accessories.
The case contains the following accessories.

Part	Quantity
Portable Ultrasound Device UT1053	1
Operating instructions	1
Adapter AC 100-240V 50/60Hz, 0.8A	1
Ultrasound transmission gel	1

5.2 Connection

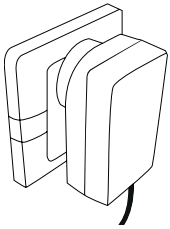
- Prior to connecting this device to the power supply, verify that the voltage and frequency stated on the rating label match the available power supply.
- The power adapter is a part of the supply circuit on which the device's safety depends on. The approvals for the UT1053 are only valid with this type of adapter we provide.

⚠ CAUTION:

It is not permitted to connect UT1053 to any other type of adapter other than adapter we provide.

5.3 Connection of the power adapter

- Connect the power adapter to the device's power cord.
- Connect the power adapter to the wall outlet.



5.4 Disconnect from power adapter

- Power off the device by pressing the On/Off button for approximately 3 seconds
- Remove the power adapter from the wall outlet.

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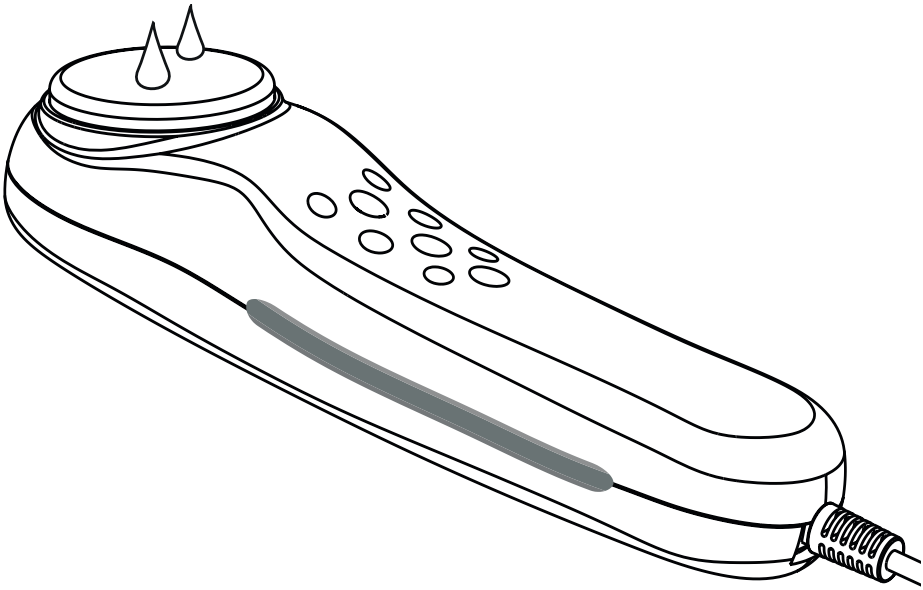
6. Operation

6.1 Measures with regards to treatments

Before treatment

- Ensure there is no contraindications to treatment. Clean the skin of the treatment area with soap or alcohol (70%).
- If the skin has excess hair, trim or shave hair for optimal treatment.
- Apply a liberal amount of ultrasound transmission/conductive gel to the treatment area. Use only the ultrasound gel with a CE mark.
- Place the probe horizontally, then apply several water drops on the surface of the probe, turn the device on and press the “treatment time” button to activate the ultrasound device. You will be able to observe the ultrasonic action as the water droplets will appear to be dancing on the sound head and you may notice a slight “steam” being released. The water droplets on the probe start to perform one million vibrations per second showing the atomisation phenomenon.



During treatment

- Move the ultrasound-head in a circular motion. The area treated should be two times the diameter of the applicator.
- If experiencing poor transmission of ultrasound energy, it is advised to add more gel or reposition the ultrasound-head.

CAUTION:

⚠ The ultrasound-head should be moved in a slow, flat, circular motion over the skin surface of the treatment area. Apply the sound head evenly (in time) over the treatment area, not too slow to avoid inducing heat; not too fast to prevent bad contact which would reduce the effectiveness of the treatment.

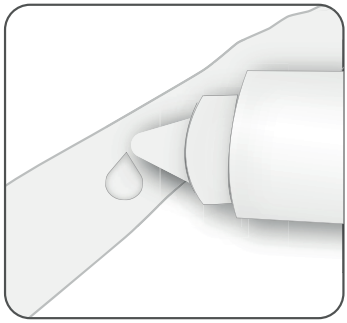
After treatment

- Clean the contact surface immediately after each treatment. Make sure that no ultrasound gel remains on the treatment head. We recommend cleaning the head and cable daily, using lukewarm water – do not immerse the device in water.
- The treatment heads can be disinfected using a cloth moistened with 70% alcohol.
- Check if there are any signs of improvement (e.g. pain, circulation or mobility).

6.2 Operating the device

6.2.1 Apply Transmission Gel

Apply a layer of ultrasound transmission gel on the treatment area. The gel acts as a coupling substance and ensures treatment effectiveness. The area treated should be two times the diameter of the treatment head.



CAUTION:

⚠ Never apply the gel to the applicator. The applicator will register this as contact and may emit ultrasound energy, which could damage the applicator.

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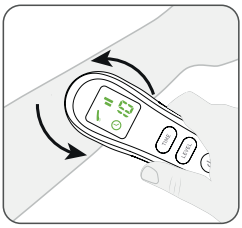
6.2.2 Switch on the device

Connect the power adapter according to section 5.3. Press the On/Off for 2 to 3 seconds to switch on the device, which will display treatment time 0, and intensity level L.

6.2.3 Select intensity level and treatment time

Press Level setting button to select intensity level L-M-H-L, press treatment time button to select treatment time 0-5-10-15-0 minutes.

6.2.4 Start treatment



- Press treatment time button will start ultrasound treatment, the treatment timer count down by minute, the ultrasound output indicator will flash on and off. Press the Pause/Continue button for 1 second to pause the treatment, and the treatment timer will stop countdown, the ultrasound output indicator will stop flash. Press Pause/Continue button for 1 second again to continue treatment.
- Move the treatment head in a flat, slow, circular motion over the skin surface of the treatment area that is covered with a layer of ultrasound transmission gel, apply the treatment head evenly(in time) over the treatment area.

6.2.5 Turn off device

After treatment timer ends of countdown, the treatment will stop, press the On/Off button for 2 to 3 seconds to switch off the device.

CAUTION:

With the treatment you should not feal warmth as ultrasound is absorbed deep inside the tissues and surrounding underlying structures.

The applicator is a precision instrument. Great care is taken in the development and production in order to obtain the best possible beam characteristics. Rough treatment (jarring or dropping) can adversely affect these characteristics, and must be avoided.

7. Helpful information on using your device

How Does Ultrasound Therapy Work?

Ultrasound therapy is another form of treatment to help ease the pain and stiffness of sore, injured and/or overworked muscles in addition to speed up healing.

Ultrasound Therapy Units produce soundwaves that emanate treatment through ultrasonic vibrations to the troublesome area. These waves move almost a million times per second creating a therapeutic vibration for targeted therapy care.

An ultrasound gel is utilised to reduce the static between the device and your skin and optimise penetration. This also ensures smooth movements over tender areas in need of pain relief. Ultrasound therapy feels excellent and is used for both for its corrective purposes in addition to relief.

Ultrasound therapy, sometimes called ultrasonic therapy is beneficial for muscle, tendon and soft tissue injuries. With the use of high-frequency sound waves that create a small amount of heat and draw blood to the injured area while breaking up scar tissue. The increased blood flow promotes healing within the injury.

Can Ultrasound Help if I have an OLD Injury & Lost Some Range of Motion?

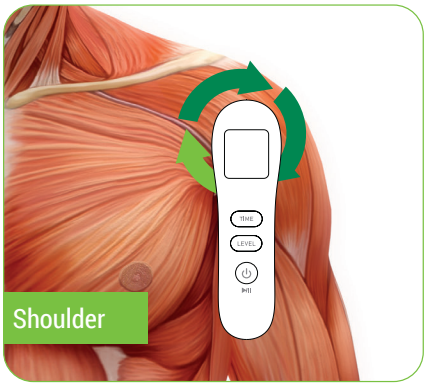
Ultrasound therapy can help breakdown scared tissue from previous injuries, which can limit range of motion. If the event that ultrasound therapy alone is not enough to restore optimal range of motion (ROM), your chiropractor may suggest Graston Therapy to break up the harder scared tissue, and pair it with ultrasound therapy and chiropractic adjustments and physical therapy exercises.

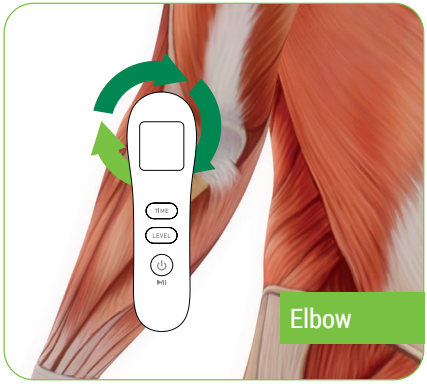
Ultrasound therapy helps calm muscle spasms, which allows for more movement and ease of range of motion.

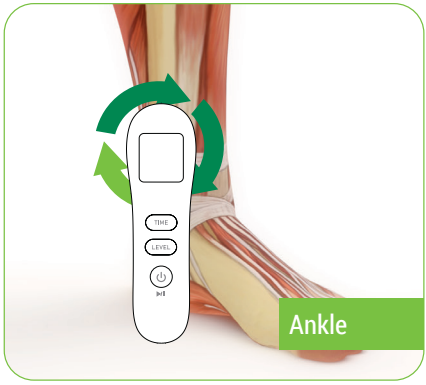
Does Ultrasound Therapy Hurt?

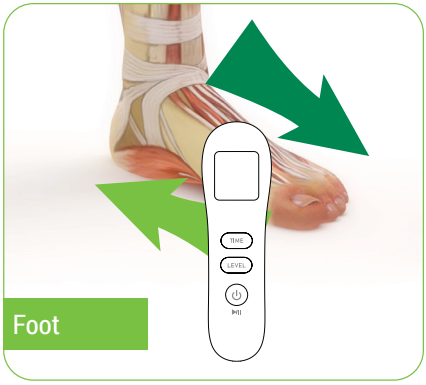
No, most people find ultrasound therapy VERY RELAXING. In fact, most people feel some immediate pain relief after the therapy is complete.

Possible treatment areas









8. Maintenance

7.1 Cleaning of the device

Switch off the device and disconnect it from the power supply. The device can be cleaned with a damp cloth. Use lukewarm water and a non-abrasive liquid household cleaner (no abrasive, no alcohol content solution). If a more sterile cleaning is needed, use a cloth moistened with an antimicrobial cleaner.

CAUTION:

⚠ Do not submerse the device in liquids. Should the unit accidentally become submersed, contact the dealer or Authorised Service center immediately.

Do not attempt to use the device that has been submersed in any liquid substrate until inspected and tested by a Service Technician Certified by an Authorised Service center.

Do not allow liquids to enter the ventilation holes.

7.2 Cleaning of the applicator

The applicator should be regularly inspected for damage, e.g. hairline cracks, which could allow the penetration of liquids. Clean the contact surface immediately after each treatment. Make sure that no ultrasound gel remains on the applicator. We further recommend cleaning the head and cable daily, using lukewarm water. The applicator can be disinfected using a cloth moistened with 70% alcohol.

7.3 Cleaning the wire and adapter

Periodically wipe the wire and adapter clean with a cloth dampened with a mild soap solution, and then gently wipe them dry. Use of rubbing alcohol on the wire will damage the insulation and dramatically shorten their life.

9. Storage

For a prolonged pause in treatment, place the unit with the adapter and manual back in the case. Store it in a dry room and protect it against heat, sunshine and moisture. Store the machine in a cool, well-ventilated place according to the storage condition as described earlier in this manual. Never place any heavy objects on the machine.

10. Disposal

Please dispose of the device in accordance with the legal obligation in your area.

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11. Troubleshooting

NOTE: If the following measures fail to alleviate the problem, please call your authorised agency or supplier.

Problem	Possible causes	Possible solution
Display fails to light up	Adapter contact failure	Ensure adapter is connected. Check the following contacts: • All contacts are in place • All contacts are not broken
Incomplete display	Circuit fault	Contact authorised agency or supplier
Device can not switch on	Circuit fault	Contact authorised agency or supplier

12. Warranty

Please contact your dealer or the device center in case of a claim under the warranty. If you have to send in the unit, enclose a copy of your receipt and state what the defect is.

The following warranty terms apply:

1. The service life and warranty period is two years and one year respectively from date of purchase. In case of a warranty claim, the date of purchase has to be proven by means of the sales receipt or invoice.
2. Defects in material or workmanship will be removed free of change within the warranty period.
3. Repairs completed under warranty do not extend the warranty period either for the unit or for the replacement parts.
4. The following is excluded from the warranty:
   - All damage which has arisen due to improper treatment, e.g. non observance of the user instruction.
   - All damage which is due to repairing or tampering by customer or unauthorised third parties.
   - Damage which has arisen during transportation from the manufacturer to the consumer or to the service center.

13. Specifications and Technical Data

General information

Adapter Input	AC100-240V, 50/60Hz, 0.8A
Output	DC15V/0.4A
Safety class	Class II, type BF
Dimensions	172.4mm(L)*52.6mm(W)*44.5(H)
Material of treatment head	Aluminum

Technical data of ultrasonic

Frequency	1MHz±10%
Output power	1.5W (duty cycle at 100%)
Effective intensity	0.375W/cm^2
Output power	L:0.3W±20%, M:0.75W±20%, H:1.5W±20%
Pulse repetition rate	100Hz±10%
Pulse duration	2ms,5ms
Duty factor	20%,50%,100%
Effective radiating area	4cm2±10%
RBN(max)	5.0
AER	4.0cm^2
Beam type	Collimated
Waveform	Pulsed, Continuous
Treatment time	5min,10min,15min adjustable

Environmental conditions

Operating conditions	Temperature:5~40˚C
	Relative humidity:10%~85%
	Atmospheric pressure:700~1060hPa
Storage and transportation conditions	Temperature:-20~55˚C
	Relative humidity:10%~93%
	Atmospheric pressure:700~1060hPa

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14. EMC Information

Important information regarding Electromagnetic Compatibilty (EMC)

- Use of accessories other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.
- Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.
- Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the device, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Table 1: Guidance and manufacturer's declaration electromagnetic Emissions

Declaration - electromagnetic emission		
The UT1053 device is intended for use in the electromagnetic environment specified below. The customer or the user of the UT1053 device should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The UT1053 device 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 B	The UT1053 device 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 61000-3-2	Complies	

Table 2: Guidance and manufacturer's declaration electromagnetic Emissions

Guidance and manufacturer's declaration – Electromagnetic immunity			
The UT1053 device is intended for use in the electromagnetic environment specified below. The customer or the user of the UT1053 device 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	±8kV contact ±15kV air	±8kV contact ±15kV air	Floors should be wood, concrete or ceramic tile. The floor 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 ± 1kV for input/ output lines	± 2 kV for power supply lines ± 1kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to lines, ± 2 kV line(s) to earth	± 1 kV line(s) to lines, ± 2 kV line(s) to earth	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% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	<5% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the use of the UT1053 device requires continued operation during mains power interruptions, it is recommended that the device be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field to IEC 61000-4-8	30A /m	30A /m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital
Note: UT is the a.c. mains voltage prior to application of the test level.			

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Table 3: Guidance and manufacturer's declaration electromagnetic Emissions

Guidance and manufacturer's declaration – Electromagnetic interference immunity			
The UT1053 device is intended for use in. the electromagnetic environment specified below. The customer or the user of the UT1053 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC61000- 4-6	3 Vrms 150kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the UT1053 device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance d= 1.2 √P , 150 KHz to 80 MHz d= 1.2 √P , 80MHz to 800MHz d= 2.3 √P , 800MHz to 2.7GHz 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 Metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site surveya, should be less than the compliance level in each frequency rangeb, Interference may occur In the vicinity of equipment marked with the following symbol: 
Radiated RF IEC61000- 4-3	10V/m 80 MHz to 2.7 GHz	10 V/m	
NOTE 1 : At 80 MHz ends 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 electromag-netic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the UT053 device is used exceeds the applicable RF compliance level above, should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the UT053. b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Table 4: Recommended Separation Distance Between Portable and Mobile RF Communications Equipment and the UT1053 Device

The UT1053 device is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the UT1053 device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the UT1053 device, 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 transmitterm		
	0.15 MHz to 80 MHz d= 1.2 √P	80 MHz to 800 MHz d= 1.2 √P	80 MHz to 2.7 GHz d= 2.3√P
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in Metres (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 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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14. Description of Symbols

CE 0197 — Complies with the European Medical Device Directive (93/42/EEC) and amended by directive 2007/47/EC requirements. Notified body TÜV Rheinland (CE0197)

IPX7 — Only for Ultrasonic head: Protected against the effects of temporary immersion in water

 Keep dry

IP22 — The first number 2: Protected against solid foreign objects of 12,5 mm Φ and greater. The second number: Protected against vertically falling water drops when enclosure tilted up to 15º. Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15º on either side of the vertical.

 Class II symbol

 Type BF applied part

 Please refer to instruction manual

 Disposal in accordance with Directive 2012/19/EU(WEEE)

 Date of manufacture

 The name and the address of the manufacturer

SN — Serial number.

EC REP — The name and the address of the Authorised EC-representative in Europe

 This way up

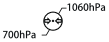
 Fragile, handle with care

 Stacking limit by number

 Recyclable Symbol

Transportation and storage temperature from -20 to 55˚C

Transportation and storage humidity limits from 10% to 93%



Transportation and storage atmospheric pressure limits from 700 hPa to1060 hPa

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