



OMRON Healthcare Europe B.V.

Service Manual

HeatTens HV-F311-E



Revision 01.00

Section 00	Cover
Section 01	Index
Section 02	Revision list
Section 03	Specifications
Section 04	Operating Instructions
Section 05	Q&A end-users
Section 06	Q&A technical - not applicable
Section 07	Technical Reference
Section 08	Disassembly - not applicable
Section 09	Reassembly - not applicable
Section 10	Compliance checks & Adjustments – not applicable
Section 11	Compliance check result form – not applicable
Section 12	Trouble shooting table explanation – not applicable
Section 13	Trouble shooting table
Section 14	Diagrams (block diagram) – not applicable
Section 15	Exploded view drawing - not applicable
Section 16	Parts list

Reference sources:

- PTF (Product Technical File)
- Instruction manual

Technical Data

Product Category	Electroanalgesic Transcutaneous Stimulators
Product Description	Pain Reliever
Model (code)	HeatTens (HV-F311-E)
Power Source	AC Adapter (INPUT 100V-240V~ 50Hz-60Hz, 10-15VA) Lithium-ion battery built in (3.7 V; Approx. 1510 mAh)
Battery Life	Will last for 500 times usage when fully charged and in normal temperatures of 23 °C
Frequency	Approx. 0.7 to 108 Hz
PULSE Duration	100 µsec
Maximum Output Voltage	70 V (during 500 Ω load)
Power Control	20 intensity levels
Operating Temperature, Humidity, Air Pressure	+10 to +40 °C / 30 to 80 % RH / 700 to 1060 hPa
Storage Temperature, Humidity, Air Pressure	0 to +40 °C / 30 to 80 % RH / 700 to 1060 hPa
Temperature during battery charging	+5 to +35 °C
Transportation Temperature, Humidity, Air Pressure	-20 to +60 °C / 10 to 95 % RH / 700 to 1060 hPa

Technical Data

Weight	Approx. 220 g
Outer Dimensions	Approx. 71 (W) × 165 (H) × 30.5 (D) mm
Package Contents	Main Unit, Cord with Pads, Pad Holder, Gels (2 pairs), Instruction Manual, AC Adapter
Classifications	Internally powered (Operating), Class II (AC Adapter), Type BF (Applied part: Gels), IP22 (Ingress Protection)

NOTE: These specifications are subject to change without notice.

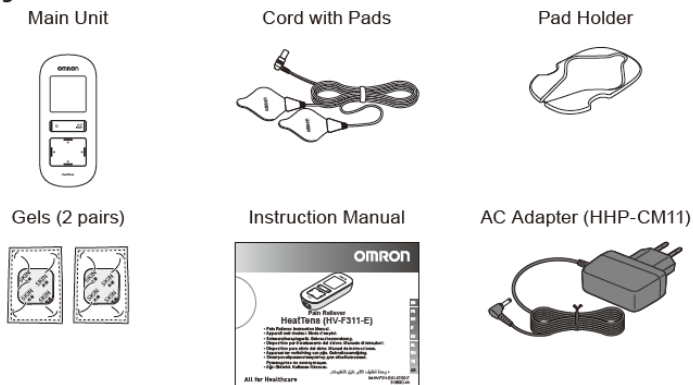
This OMRON product is produced under the strict quality system of OMRON HEALTHCARE Co., Ltd., Japan.

Designed for a minimum of 5 years life expectancy except gels. Gels can be used up to 30 times.

CE0197 This device fulfils the provisions of EC directive 93/42/EEC (Medical Device Directive).

Know Your Unit

Package Contents



EN

Optional Medical Accessories

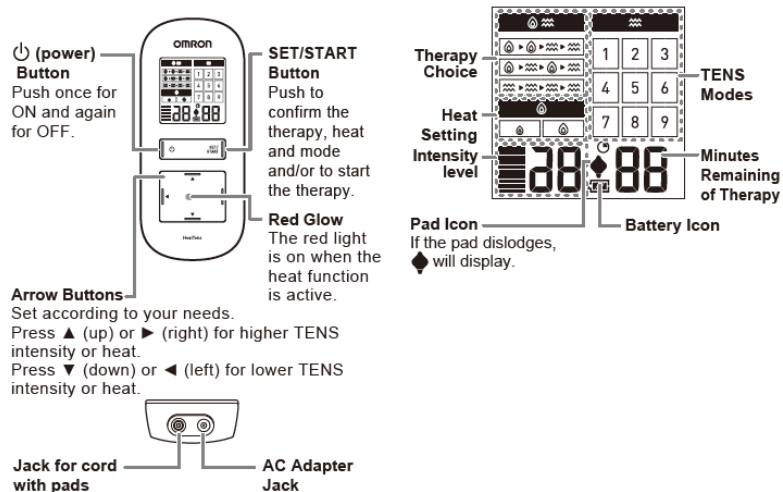
(within the scope of EC Medical Device Directive 93/42/EEC)

Product description	Model
Gels (Contents: 4 pairs)	HV-PAD-3E

11

Know Your Unit

Buttons and Their Functions



12

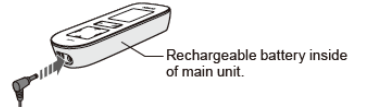
Inspect Unit and Charge Battery

Before using, check that:

1. The cord is not broken.
2. The gels are not damaged.
3. The connection between cord and pad is not damaged.
4. The unit is intact.

Before first time use:
We recommend charging the battery to a full 100% charge. It takes about 5 hours to charge once battery is empty. Once fully charged, the battery will last for 4 times 30 minutes uses on average.
Note: If you have not used it for 3 months, recharge it.

STEP 1 – Connect the AC Adapter to the Jack on the Unit



STEP 2 – Insert the Power Plug into an Outlet



- When charging the battery, the battery icon blinks on the display.

Charging



- When fully charged, the battery icon will display shortly on the display, then power off. Press the ⏻ (power) button to see if the battery is fully charged.

EN

Inspect Unit and Charge Battery

Battery Icon

Note: While the battery is charging, the main unit does not work.

Display	Contents
	Battery charge is full.
	Battery charge is half.
	Battery is close to low.
	Battery is depleted.

Battery life
Rechargeable battery will last for 500 times usage for 30 minutes when fully charged and in normal temperatures of 23 °C. Battery life depends on usage and storage conditions.

Note: Ambient temperature during battery charging should be between +5 and +35 °C.

STEP 3 – Unplug Power Plug Once the Battery is Fully Charged



Assembly Steps

STEP 1 – Prepare Pads

Put the jack into the bottom left side of the main unit.



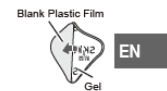
Note: Do not turn the unit on, until pads are on your skin.

STEP 2 – Place Gels onto the Pads

Remove the gels from the sealed plastic bag.

Note: Each gel has a film on each side of the gel. One film is blank (without text) the other side has text (“SKIN”).

Remove the blank plastic film.



Place the gels onto the black side of the pads.



Note: Make sure the gel lays evenly and securely with no bubbles, bending or missing pieces.

Assembly Steps

The gel should read “SKIN” on top. Remove the “SKIN” side’s plastic film and place the pads onto the skin.



STEP 3 – Attach the Pads to the Body

Clean and dry the applicable skin area so it is free of all lotions/oils/sweat/ointment. Make sure that pads stick to the skin.



Note: Please refer to next chapter for pad placement.

For optimal therapy:

⚠ Place pads on either side of the pain, not directly on the pain.

⚠ Place pads at least 2.5 cm apart for optimal results.

⚠ For therapy to work: always use two pads.

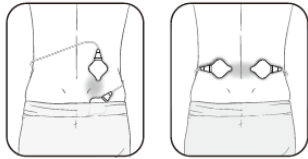
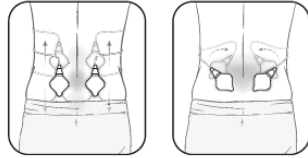
⚠ Do not overlap pads or put on top of each other.

Note: Unplug the AC Adapter when using the unit.

Get Started with Your Therapy

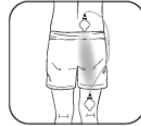
STEP 1 – Pad Placement

Clean and dry the proper area so it is free of all lotions/oils/sweat/ointment.



LOWER BACK

Attach both pads on the lower back according to your pain. Place pads on muscle of the back, not on spine, for optimal therapy.



LOWER BACK

Attach 1 pad below and above the region in pain, both on same side.



ARM

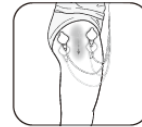
Attach both pads on either side of the area with pain.

EN



**JOINT
(ELBOW)**

Attach both pads on either side of the joint with pain.

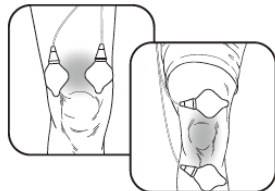


**LEG
(HIP & THIGH)**

Attach both pads on either side of the area with pain.

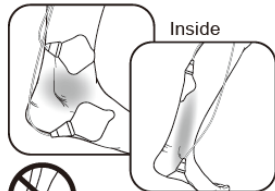
Get Started with Your Therapy

STEP 1 – Pad Placement



**JOINT
(KNEE)**

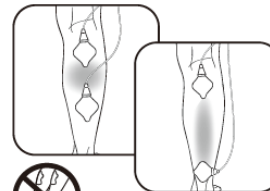
Attach both pads above the knee or above and below the joint with pain. Outside



**FOOT
(ANKLE)**

Attach the pads on the left for pain on the outside of your ankle/foot. Attach the pads on the right for pain on the inside of your ankle/foot.

⚠ Do not put the pads on the bottom of both feet at the same time.



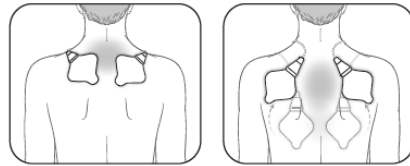
**LEG
(CALF)**

Attach both pads on the calf with pain.

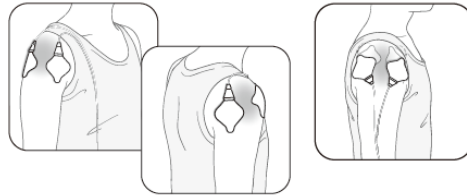
⚠ Pads should not be placed simultaneously on the calves of both legs.

Get Started with Your Therapy

STEP 1 – Pad Placement



SHOULDER
Attach both pads on the shoulder according to your pain.



SHOULDER
Attach 1 pad on the front and on the back of your shoulder.

EN



⚠ Do not use near the heart, on both sides of the thorax or across your chest because the introduction of electrical current may cause rhythm disturbances which could be lethal.

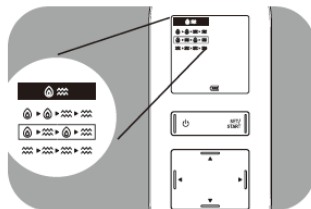
Get Started with Your Therapy

STEP 2 – Pick your Preferred Therapy

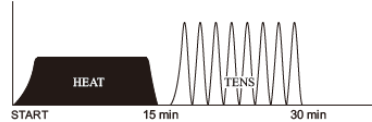
Push **⏻** (power) button to turn on. Select 1 out of 3 therapies using the **▲▼** (up/down) arrow buttons. Next, push **SET/START** to confirm therapy.

Note: All therapies automatically stop after 30 minutes. To change therapies, turn main unit OFF, then ON again.

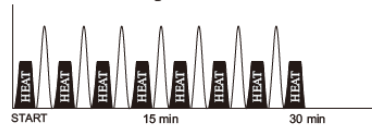
Three Therapies Available



🔥 Therapy
-Heat 15 min, TENS 15 min



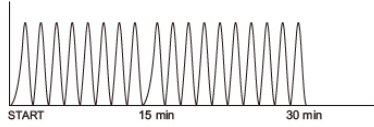
🔥⚡ Therapy
-Short sessions of HEAT / TENS/ HEAT / TENS alternating for 30 min.



Get Started with Your Therapy

Therapy

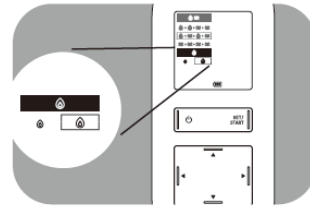
-Electrical Stimulation only (for 30 min).



STEP 3 – Pick Heat Setting

Select Heat (Low) or (High) using the (left/right) arrow buttons. Next, push SET/START to confirm heat setting.

Note: Heat setting applies only to / Therapies.



EN

Note: Heat (Low): 42 °C
Heat (High): 43 °C
Actual temperature that is experienced/felt may vary due to skin condition, age, location of pain and more.

Get Started with Your Therapy

STEP 4 – Pick 1 out of 9 TENS Modes

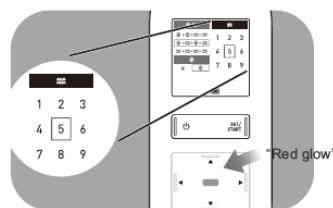
Select a (TENS Mode) using the 4 arrow buttons. Next, push SET/START to confirm the TENS mode.

Note: & therapies begin with "HEAT". Red glow is visible when the heat function is on.

How to select the right TENS mode

Any of the modes can be used on body parts or pains described in this manual. Select the mode that feels comfortable for your pain.

Note: See side of unit for easy reference of operation.



Get Started with Your Therapy

STEP 4 – Pick 1 of 9 Modes



Therapies designed for	Potential conditions	Sensation
Mode 1 - Tap	Stiffness, soreness, tight feeling.	Series of low rate tapping sensations.
Mode 2 - Knead	Stiffness, sore or achy, knotty muscles, tight feeling.	Series of medium rate pulsing sensations to mimic massage.
Mode 3 - Rub	Stiffness, sore or achy, knotty muscles, tight feeling.	Series of high rate pulsing sensations to mimic hands rubbing.
Mode 4 - Arm	Swelling, stiffness, sore or achy, muscle or nerve pain.	Series of low to medium rate tapping, tingling and pulsing sensations.

EN

Get Started with Your Therapy

STEP 4 – Pick 1 of 9 Modes



Therapies designed for	Potential conditions	Sensation
Mode 5 - Lower Back	Stiffness, soreness, muscle spasm, nerve pain.	Series of high rate to low tingling sensations, followed by tapping. With higher intensity, you may feel kneading or massage-like sensations.
Mode 6 - Leg	Swelling, fatigue, stiffness, muscle or nerve pain.	Series of low to medium tapping and rubbing sensations.
Mode 7 - Foot	Swelling, fatigue, chilly feeling, sore or achy.	Series of low rate tapping, pulsing sensations.
Mode 8 - Joint	Swelling, stiffness, sore or achy.	Series of medium to high rate tapping, pulsing sensations.
Mode 9 - Shoulder	Stiffness, sore or achy, tight feeling.	Series of low to high rate tapping, pulsing, kneading and massage-like sensations.

Get Started with Your Therapy

STEP 5 – Select the Preferred

Intensity Level (1 low - 20 high)

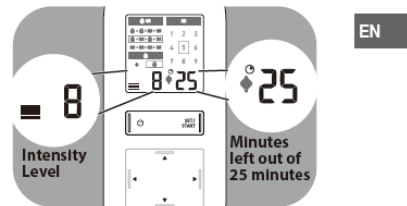
Push SET/START to start at the lowest intensity level and slowly increase it by pushing the ▲ (up) arrow button. You should feel a gentle pulsing sensation. When the main unit is in "TENS" stimulation, you can select the preferred intensity level.

How do I pick the right intensity level for my pain?

Select with the ▲▼ (up/down) arrow button the preferred intensity. If the stimulation sensation is too weak, increase it with ▲(up) arrow to your preference. If the stimulation feels uncomfortable, decrease with ▼(down) arrow or try a different TENS mode.

Duration of the therapy

The unit will operate for 30 minutes before it automatically shuts off. A maximum of one 30 minute therapy per session, up to 3 times/day, is recommended. The display shows you how many minutes are remaining.



How to Manage and Reduce Your Pain

When should I start therapy?

Use as soon as your pain begins. Start with 1 session (the unit automatically turns off after 30 minutes). Turn off with pads still on the skin.

Get to your pain early

If you get to your pain early, it may prevent the pain from becoming worse, or even chronic. It's better for you to get it under control sooner so that it does not reach a high pain threshold where it limits your daily activities.

How long should you use it?

Start with one 30 minute session. Always turn the unit off with pads still on the skin. Rate your pain before and after the therapy to check your progress, 1 low to 10 high. Stop therapy session if pain has reduced or stopped.

⚠ See precautions on page 10. Long-time treatment and strong stimulation may cause muscular fatigue and may generate adverse effects.

When to stop using the unit?

1. If you experienced an adverse reaction (skin irritation/redness/burns, headache or other painful sensation, or if you feel any unusual discomfort).
2. If your pain does not improve, becomes seriously chronic and severe, or continues for more than 5 days.

Remember, the unit does not cure original cause of the pain. It provides temporary relief or reduction of pain so that you can control your life and activities better.

Cleaning and Storage

The cord with pads, and the main unit can be cleaned, but you cannot clean the gels.

Cleaning the cord with pads

1. Remove the gel and discard before cleaning the pad.
2. When the pad have become dirty or soiled, wipe the surface with a soft cloth slightly moistened with water or a neutral detergent.



3. Let air dry before placing new gels onto the pads, do not use old gels.
4. Gels are replaceable and can be purchased.

Note: Refer to page 11.

Cleaning the unit

1. Turn the unit off and disconnect the cord with pads from the unit.
2. Clean with a cloth lightly moistened or soaked in a neutral (mild) cleaning solution and wipe gently.
 - Do not use chemicals (like thinner, benzene).
 - Do not let water get into the internal area.

EN

When should you replace the gels?

If the gel no longer sticks firmly to your skin or if more than 25 % of the gel's surface is not in contact with your skin.

Cleaning and Storage

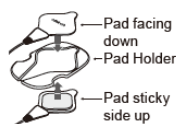
Storing the pads with gels

1. Turn the unit off and remove the cord from the bottom of the unit.



Note: Otherwise, it may damage the cord.

2. Remove the pads from your body.
3. Place the pads on the pad holder, 1 pad on each side with the sticky side of each pad on the pad holder.



4. Wrap the pads with gels cord around the pad holder.



Storing the main unit and the pads with gels



Storage temperature
0 to +40 °C / 30 to 80 % relative humidity.

For information about how to dispose of the unit, refer to section "Correct Disposal of This Product" on page 37.


Troubleshooting

In case of any of the below problems occurs during use, first check that no other electrical device is within 30cm. If the problem persists, refer to the table below.

If this happens...	Possible causes...	Try this solution...
The intensity is not felt. Very weak intensity level.	Are you using only 1 pad?	Put the other pad on your skin. You must use both pads for therapy to work.
	Have you removed the transparent film from the gels?	Peel off the film on the adhesive surface of gels.
	Are the pads stacked together or do pads overlap?	Check placement of pads. Refer to "Pad Placement".
	Is the cord properly connected to the unit?	Connect the cord plug correctly into the jack at the bottom of the unit.
	Is the intensity setting too low?	Press the ▲ (up) arrow button.
	Is the gel damaged?	Replace the gel.
	The battery may not have enough charge.	Charge the battery fully.
The skin turns red or feels irritated.	Is the gel dirty?	Replace the gel.
	Therapy time may be too long.	Use less than 30 minutes.
	Are the 2 pads attached properly to the body?	Refer to the "Pad Placement" and attach correctly.
	Is the gel surface worn out?	Replace both gels at the same time.

EN

Troubleshooting

If this happens...	Possible causes...	Try this solution...
Display not working.	The battery may be depleted.	Recharge the battery fully.
	Is the battery properly charged?	Check if the AC Adapter is properly connected to the unit. Check if AC Adapter is connected to a power outlet.
Operation stops during use.	The battery charge may be extremely low.	Recharge the battery fully.
	The cord with pads may be broken.	Refer to the warranty conditions.
	Are you using only 1 pad?	Put the other pad on your skin. You must use both pads for therapy to work.
Battery icon is empty or close to empty. 	◆ (pad icon) is displayed.	
	The battery is empty or close to empty.	Recharge the battery fully.

Troubleshooting




If this happens...	Possible causes...	Try this solution...
The gel does not stick to skin.	Have you removed the transparent film from the gels?	Peel off the film on the adhesive surface of gels.
	Is the pad wet? Or is your skin too wet?	Air dry the pads. Or dry the skin.
	Is there any lotions/oils/sweat/ointment on skin?	Clean and dry skin.
	The gel may be damaged.	Replace the gel.
	Is there too much hair on your skin?	Shave the immediate area for proper pad adhesion.
	Were the gels stored under high temperature, high humidity, or direct sunshine?	Replace both gels.
The main unit or the AC Adapter is abnormally hot when charging the battery.	The main unit or the AC Adapter may be damaged.	Unplug the AC Adapter from the outlet and the cord plug from the main unit immediately. Refer to the warranty conditions.

EN

Troubleshooting

If this happens...	Possible causes...	Try this solution...
◆ is displayed.	Only 1 pad is attached, or both pads are not attached.	Re-attach dislocated pad(s) onto the skin firmly.
	Was transparent film removed from the gel?	Peel off the film on the adhesive surface of gels.
	Is the cord properly connected to the main unit?	Connect the cord plug correctly into the jack at the bottom of the main unit.
	Is the adhesive surface of gels dirty or dry?	Replace the gels.
The pads are not getting hot. The red glow in the arrow ▲▼◀▶ area is not visible.	Is the cord properly connected to the unit?	Check if the cord is properly connected.
	The cords with pads may be broken.	Refer to the warranty conditions.
The pads with gels are too hot on the skin and there is a burning scent.	The pad with gel may be broken or bent, or the cord with pads may be short-circuited.	Stop using the unit immediately, and refer to the warranty conditions.
E 1 is displayed.	Is the cord properly connected to the unit?	Check if the cord is properly connected. If the error is still displayed, the cord may be broken. Refer to the warranty conditions.

Troubleshooting

If this happens...	Possible causes...	Try this solution...
 E2 is displayed.	The cord with pads may be short-circuited.	Stop using the unit immediately, and refer to the warranty conditions.
 E3 is displayed.	Device error.	The main unit may be broken. Stop using the unit immediately, and refer to the warranty conditions.
 E4 is displayed.	The unit is being used outside of the operating temperature.	Leave the unit within the operating temperature +10 to +40 °C for a while before use.
The operating time is short, or the unit does not operate, even when the battery is fully charged.	This may be due to the life of the rechargeable battery. However, the battery cannot be replaced. Please dispose of the unit.	

EN

How does TENS and HEAT work?

Physical therapists have been using the combination of heat and TENS for decades. The HEAT warms and relaxes the muscle for soothing relief while improving the blood circulation. TENS provides pain relief and has a triple effect:

1. Blocks the pain message towards the brain.
 - By applying low-frequency signals to the painful area, the nerves near this area undergo excitation, which affects the pain-transmission mechanism ('inhibits' pain messages) towards spinal cord. Has relatively short effect. Frequencies: 50~100Hz.
2. Increases the production of the body's natural pain killer, such as endorphins.
 - Electrical waves also stimulate the human body to produce natural morphine-like substances (endorphins).
May have long effect (5~12 hrs); Frequencies: 1~5 Hz. Short pain relief function: 1200 Hz.
3. Improves the blood circulation (as result of repeated muscle contracting and relaxing).
 - By applying low-frequency electrical waves to a body area with stiffness/tiredness, muscles extend (relax) and contract.
 - Muscle relaxed: fresh blood rushes in.
 - Muscle contracts: blood containing 'waste' is flushed out.
 - By this repeated 'muscle pumping' process, blood flow is improved.
 - As a result, shoulder stiffness, tired legs and cramps are relieved.

OMRON HeatTens is a Pain Reliever intended for reducing and relieving muscles and joints pain, stiffness and numbness in the back, arms, legs, shoulders and feet by applying electrical nerve stimulation to the surface of the skin near the site of the pain. The HeatTens offers both soothing heat and relieves pain using TENS technology. It should be applied to normal, healthy, dry, and clean skin of adult patients. Any of the modes can safely be used on body parts or pains described in this manual. Just find one that feels good and is comfortable on your pain. It can be successfully used in conjunction with any other pain treatment or medication. Since the 1970s, pain relief based on TENS has been widely used by many healthcare professionals, such as physiotherapists and pain specialists.

SECTION 13 - TROUBLESHOOTING TABLE
HeatTens



Failure state	Check Procedure	Action
Nothing is displayed when the power button is pressed.	Insert the AC adapter and check if the battery icon is displayed. If it is not displayed, the main unit has failed.	Replace the main unit
Although it can be powered on by pressing the power button, therapy type is not displayed even when Set/Start button is pressed.	<ol style="list-style-type: none"> 1. Press the power button. 2. It is determined to be a main unit failure if the LCD indication does not change even when Set/Start button is pressed. 	Replace the main unit
Although it can be powered on by pressing the power button, mode cannot be changed even when buttons (▲/▶/▼/◀) are pressed.	<ol style="list-style-type: none"> 1. Press the power button. 2. Press Set/Start button to set the therapy course to "HEAT". 3. It is determined to be main unit failure if the LCD indication (mode) does not change even when the buttons (▲/▶/▼/◀) are pressed. 	Replace the main unit
E3 is displayed when the power button is pressed.	<ol style="list-style-type: none"> 1. Press the power button. 2. It is determined to be main unit failure if E3 is displayed. 	Replace the main unit

SECTION 13 - TROUBLESHOOTING TABLE
HeatTens



Failure state	Check procedure	Countermeasure
E1 is displayed.	<ol style="list-style-type: none">1. Press the power button.2. Select either of COMBO 1 or COMBO 2 and start therapy.3. It is determined to be Thermal Electrode Cord failure if E1 is displayed.	Replace Thermal Electrode Cord
E2 is displayed.	<ol style="list-style-type: none">1. Press the power button.2. Select either of COMBO 1 or COMBO 2 and start therapy.3. It is determined to be Thermal Electrode Cord failure if E2 is displayed.	Replace Thermal Electrode Cord

SECTION 16 - PARTS LIST
HeatTens



Item nr.	Partnumber	Item
1	4096879-7	Electrode Cord