

# **ARISTA** EMS *PLUS* Electronic Muscle Stimulator



**Instruction Manual**

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# ELECTRONIC MUSCLE STIMULATION (EMS)

**EMS** is the process of using very weak electrical impulses to contract and relax muscles. It produces "passive" exercise by sending electrical impulses or signals to the selected muscle or muscle groups to contract and relax them. In "active" exercise the signals are sent by the brain. It is not new : it has been used for hundreds of years. However, modern scientific developments in such specialized **EMS** medical research centers as the Rehabilitation Engineering Section of Rancho Los Amigos Hospital near Los Angeles have produced improved wave forms (the technical shape and cycles of the electrical impulses), increased controls of rise time, duration of contractions, fall time, and rest time, comfortable tolerance of higher intensity by improving types of electrodes, and a versatility in the designing of a therapy program to meet the individual needs and select the specific muscles of each patient.

**EMS** is known by other names. "Neuromuscular Stimulation" (**NMS**) is a term becoming popular in some circles of the United States . "Electronic Muscle Exercise" (**EME**) is widely used outside of the United States. Many other terms in EMS are fading from use because of mis-use or obsolescence, such as "feradic" and "galvanic" . They are still used, but primarily by manufacturers of devices for the European market, and some older models of EME devices which are not legally allowed into the United States for distribution.

# APPLICATIONS

- Relaxation of muscle spasms : The **EMS** can relax a "tense" , " tight" , or spasmodic muscle. Common candidates for **EMS** include those in high stress situations who experience muscle tension in the upper back and neck areas, and those who suffer from chronic tension headaches.
- Increasing range of motion : The **EMS** is especially useful for those suffering from simple arthritic symptoms or "stiffness" in joints, muscle groups, or back areas.
- Reduction or prevention of muscle atrophy : The **EMS** will increase motion, range, and response of muscles restricted from disuse or from atrophy from another cause. It is helpful following activity restrictions, such as after surgery or being in a cast.
- Re-education of muscles : Muscle fibers lose their ability to contract if they are not adequately used. The **EMS** repeats contractions of designated muscles re-educating muscle fibers. This is particularly beneficial to orthopedic patients recovering from being in a cast or a splint, or bed-ridden patients who are not able to maintain their muscles (disuse atrophy).
- Increasing local blood circulation : (Self explanatory).

The **EMS** can be used in the clinic or at home in comfort and privacy with complete safety following the prescription and proper instruction from a physician/therapist.

## PRECAUTIONS

- Do not use **EMS** while operating power equipment or machinery, or while driving an auto.
- Physicians should use caution in recommending **EMS** during pregnancy : its safety during pregnancy has not been conclusively determined.
- Effectiveness is dependent upon patient selection.

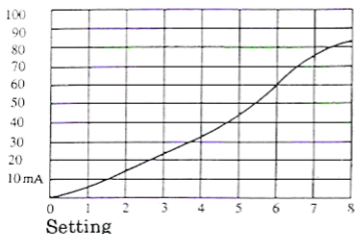
## CONTRAINDICATIONS

- **EMS** should not be prescribed for persons using demand-type cardiac pacemakers, or with patients known to have myocardial diseases or arrhythmias or with cardiac patients in general.
- **EMS** electrodes should not be placed over the carotid glands, or over the pharyngeal or laryngeal muscles.
- **EMS** electrodes should not be placed over healing fractures in such a manner as possibly to cause stress in the fracture area.
- Any electrode placement that causes current to flow transcerebrally (through the head) is not allowed .

# TECHNICAL SPECIFICATION

- Channels :** dual, isolated between channels
- Wave Form :** Modified square wave with zero net direct current (DC) component
- Pulse Amplitude :** Constant current 0 to 80mA each channel, adjustable
- Pulse Rate :** 5, 30, 100 Hz
- Pulse Ramp :** 1, 3, 5 seconds
- Contraction :** Variable control (1-30 Sec.)
- Relaxation :** Variable control (1-45 Sec.)
- Power Source :** 9V alkaline battery or similar rechargeable cell , adaptor .
- Size :** 24×64×95mm
- Weight :** 130 grams (including battery)

All values have 10%± tolerance

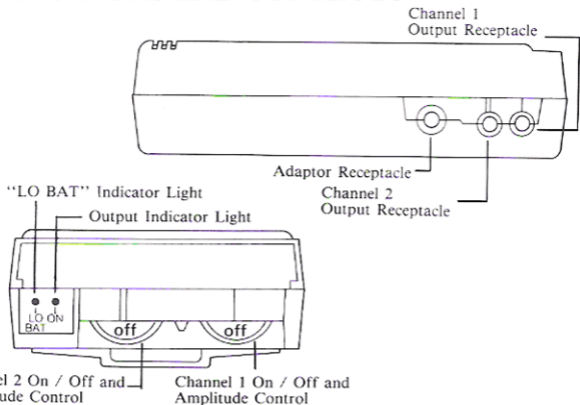


Pulse amplitude per setting over 500Ω load

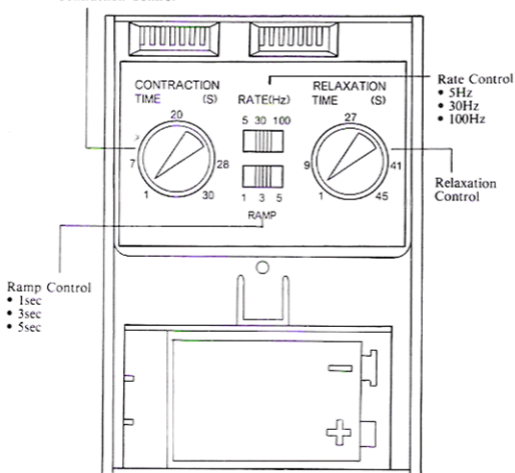


Wave Form: 500Ω load  
80 mA

# INDICATORS AND CONTROLS



## Contraction Control



# PREPARATION FOR USE

## 1. Check Battery :

Insure that you are using a fresh battery .

## 2. Prepare Skin :

Before applying electrodes , be sure to confirm correct electrode placement as recommended by your physician or therapist . Each location should be washed , rinsed and thoroughly dried .

## 3. Prepare Electrodes :

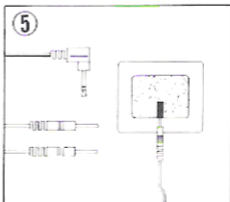
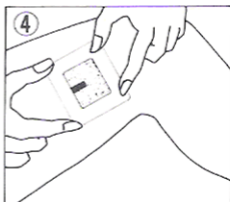
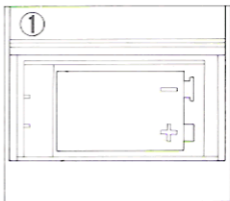
Nothing to prepare since the electrodes are self-adhesive.

## 4. Attach Electrodes :

Simply apply electrode to the area of skin you cleaned earlier. Press firmly and it will hold.

## 5. Electrode Lead Wires :

Output Plug (plugs into output receptacle) and Pin Connectors (Plug into electrodes)

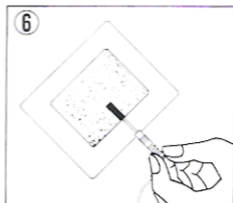


# INSTRUCTIONS FOR USE

## 6. Insert Pin into

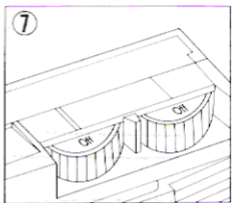
### Electrode Socket :

Insert Pin Connector into electrode as shown .  
(When inserting or removing Pin Connector , hold connector to protect cord .) For some electrode locations , it may be preferable to insert the Pin Connector prior to taping the electrode to the skin .



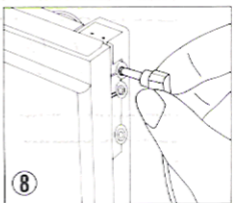
## 7. Adjusting the Controls :

Ensure that Amplitude Controls for both Channels 1 and 2 are turned to the "off" position .



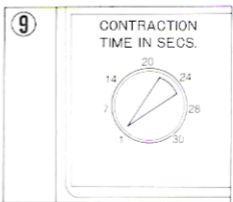
## 8. Connect Leads to EMS Unit :

Insert L shaped end of lead wire into the Channel Output Receptacle to be used (1 and/or 2) . Pushing plug all the way in .



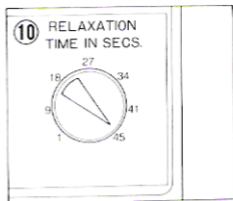
## 9. Adjust Contraction :

Turn the Contraction control to the setting recommended by your medical professional .



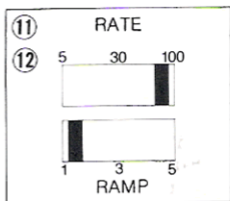
**10. Adjust Relaxation :**

Turn the Relaxation control to the setting recommended by your medical professional .



**11. Adjust Rate :**

—3 section rate  
—5,30,100Hz selector recommended by your medical professional .

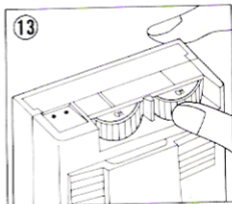


**12. Adjust Ramp :**

—3 section ramp  
—1, 3, 5 sec selector recommended by your medical professional .

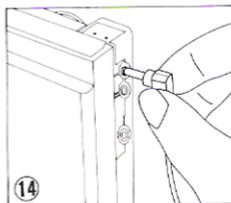
**13. Adjust Output :**

Turn Amplitude Control knob for Channel 1 or 2 clockwise . The indicator will light up while the unit is in operation . Slowly turn the channel control in a clockwise direction until you reach the setting recommended by your medical professional . Repeat for the other channel , if both channels are to be used .



**14. Turning Unit Off :**

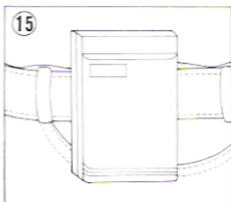
Turn both channel controls to "off" . Then unplug the electrode lead wires , grasping them by the plug , not the cord .



# CARE AND MAINTENANCE

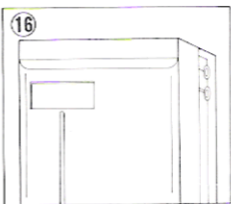
## 15. Portability :

Your EMS is portable and may be clipped to a belt, shirt pocket, bra or other clothing.



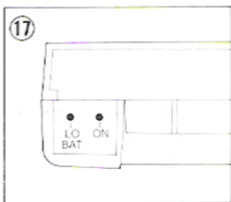
## 16. Front Cover :

A removable panel covers the controls for Contraction, Relaxation, Rate, Ramp and Battery Compartment. Your medical professional may wish to set these controls for you and request that you leave the cover in place.



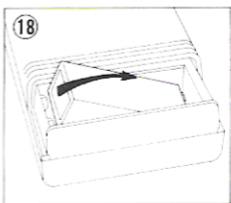
## 17. "LO BAT" indicator :

Lighting of the indicator signifies that the battery should be replaced with a new one as soon as possible. However, the stimulator will continue to operate for several more hours.



## 18. Battery :

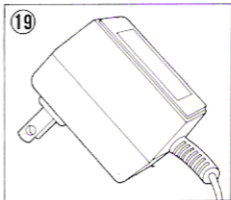
To replace battery, remove front cover (see above), and extract battery. Replace with 9 volt alkaline or similar rechargeable battery, taking care that the battery is inserted correctly. (See diagram inside Battery Compartment).



### 19. Adaptor :

You also can use adaptor instead of battery . Insert adaptor plug into the Adaptor Receptacle to be used , pushing all the plug in .

Whenever you use adaptor , the power supply of battery will be cut off automatically.



**NOTE :** The Specifications of Adaptor

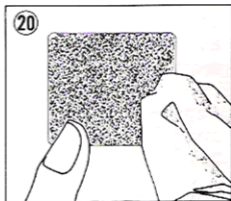
Input : 120V AC , 60Hz , 6W

Output : 9V DC , 200mA



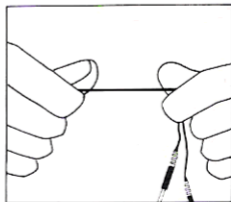
### 20. Care of Electrodes :

To avoid skin irritation and ensure good contact with your skin , clean silicone rubber electrodes with soap and water frequently . Allow to dry completely before using .



### 21. Care of Electrode Cords :

Clean the electrode cords by wiping with a damp cloth . Coating them lightly with talcum powder will reduce tangling and prolong life .



# TROUBLESHOOTING

If your EMS unit does not seem to be operating correctly, refer to the chart below to determine what may be wrong. Should none of these measures correct the problem, the unit will need servicing.

**The "ON" indicator lights up but unit does not function properly.**

**None of the indicators light up.**

Check all control settings. Are they set to values prescribed by your medical professional?

Replace battery with a new one.

Are electrodes in proper position?

To obtain service, contact your supplier.

Check lead wires. Be sure all connectors are firmly sealed.

Replace cord set with another to check for broken wires