



## *User Manual*

# *SwissSTIM Fitness V 6.0*

SS-FI-V60-EN-V10

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## I. Introduction

The **Swiss<sub>STIM</sub>™ Fitness** is manufactured/distributed by VALMED SA, Sion, Switzerland.

The **Swiss<sub>STIM</sub> Fitness** is manufactured in accordance with the requirements of European Safety Standards **EN 60601-1, EN 60601-2-10** and meets all requirements of the American Safety Standards for Transcutaneous Stimulators as set forth in **ANSI/AAMI NS4 – 1985**. It is approved by the United States Food and Drug Administration (FDA) (K031611).

The **Swiss<sub>STIM</sub> Fitness** is a Class II Medical Device and conforms to the requirements of European Directive CEE 93/42 and holds certificate number **CE 0476**.



BF device IAW IEC 601-1 "External Placement on Body".



**Read this *User Manual*, especially Safety and Indications and Contraindications before using the **Swiss<sub>STIM</sub> Fitness** .**

Manufacturer is not liable for any damage caused by the improper use of the **Swiss<sub>STIM</sub> Fitness** neuromuscular stimulator.

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### III. Safety and Precautionary Guidelines

#### A. *Special Warnings*

The **Swiss<sub>STIM</sub> Fitness** is intended for use by **ADULTS** and **ONLY** on healthy muscles. NEVER use the **Swiss<sub>STIM</sub> Fitness** on muscles that are:

- Atrophied
- Painful
- Suffer spasms, or
- On a limb with painful or otherwise afflicted joints

The **Swiss<sub>STIM</sub> Fitness** is not intended for the treatment of any medical condition or disease nor is it intended for physiotherapy or muscle rehabilitation. It is contraindicated for use on any muscle that is injured or diseased. Do NOT attempt to use the **Swiss<sub>STIM</sub> Fitness** for:

- Muscle reeducation
- To prevent muscle atrophy or spasms
- Improving range of motion
- Blood flow deficiencies/venous thrombosis

#### B. *Contraindications*

Do **NOT** use the **Swiss<sub>STIM</sub> Fitness** if you have any of the following medical conditions:

- An implanted cardiac pacemaker, defibrillator or other implanted electronic or metallic devices
- Pain syndromes

#### C. *Warnings*

- Long-term effects of chronic electrical stimulation are unknown.
- Apply electrodes **ONLY** to normal, intact, clean skin. Do not apply electrodes over open wounds or over swollen, infected or inflamed areas or skin eruptions, e.g., phlebitis, thrombophlebitis, varicose veins, etc.
- **DO NOT APPLY STIMULATION:**
  - Over frontal area of the neck (near site of carotid sinus nerves).
  - Over the neck or mouth. Severe spasms of the laryngeal and pharyngeal muscles may occur with contractions strong enough to close the airway and/or cause difficulty in breathing. Stimulation over the neck could also have a adverse effects on the heart rhythm or blood pressure.
  - Transcerebrally.
  - Over swollen, infected or inflamed areas of skin eruptions (e.g., phlebitis, thrombophlebitis, varicose veins, etc.).
  - Across the chest because the introduction of electrical current into the chest may cause rhythm disturbances to the heart, which could be fatal. Consult with your physician before using this device because it maybe possible to cause lethal rhythm disturbances to the heart in susceptible individuals.
  - Over, or in proximity to, cancerous lesions.
  - If you are epileptic
  - After experiencing acute trauma or fracture

- Following recent surgery
- If you have a hernia (abdominal or lingual)
- To the frontal, laryngeal and temporal regions of the neck.
- Never use the **Swiss<sub>STIM</sub> Fitness** while driving, operating machinery or during activities in which involuntary muscle contractions may endanger the user or others.
- The effects of stimulation of the brain are unknown. Therefore, do not apply stimulation across the head and do not place electrodes opposite sides of the head.
- Do not use the **Swiss<sub>STIM</sub> Fitness** in the bath or shower.
- Persons with suspected heart problems or epilepsy should obtain appropriate medical advice.
- Never use the **Swiss<sub>STIM</sub> Fitness** while sleeping.
- NEVER immerse the **Swiss<sub>STIM</sub> Fitness** unit in any liquid.

#### **D. Precautions**

- The safety of neuromuscular stimulation during pregnancy has not been established.
- Use caution when/if:
  - User has skin areas that lack normal sensation.
  - Following surgical procedures if muscle contractions might impede the healing process.
  - Over a menstruating or pregnant uterus.
  - There is a tendency to bleed internally following acute trauma or fracture.
- Place electrodes in accordance with illustrations in this User Manual.
- Users should ensure that extremities are isometrically fixed (braced) during treatment sessions to prevent movement that results from stimulation.
- This unit should not be used while driving, operating machinery or during any activity in which involuntary muscle contractions may place the user at undue risk of injury.
- Some users may experience skin irritation or hypersensitivity due to the electrical stimulation or the conductive medium.
- **Keep the Swiss<sub>STIM</sub> Fitness neuromuscular stimulator out of the reach of children.**
- Application of moderate heat (thermal wrap) to muscles as well as moistening skin prior to treatment improves treatment efficacy; use of cold packs on treated muscles after treatment is likewise recommended.
- This unit should only be used with the leads, electrodes and accessories provided by the manufacturer.

#### **E. DO NOT use the Swiss<sub>STIM</sub> Fitness IF YOU**

- Have an implanted cardiac pacemaker, defibrillator or other implanted electronic or metallic devices
- Have been diagnosed with cancer
- Are pregnant
- Have suffered acute trauma or surgical procedure in the past six (6) months
- Have cardiac problems or cardiac disease
- Have epilepsy
- Have painful and/or atrophied muscles
- Have abdominal or inguinal hernia
- Have limited range of motion in skeletal joints
- Have blood circulatory problems

## ***F. Electrode Guidelines***

The PalsFlex electrodes that are supplied as a standard accessory with your **Swiss<sub>STIM</sub> Fitness** mold easily to your body contours and are reusable. The specific instructions for electrode use are indicated on the factory sealed storage pouch. The recommended sizes are oval 3" by 5" electrodes for large areas (e.g., leg muscles) and round 3" electrodes for smaller areas such as forearm muscles.

- Use only skin pads (electrodes) supplied by manufacturer. Other electrodes may not stimulate correctly and may render the treatment ineffective.
- Apply electrodes only to clean, intact, normal skin.
- Do not apply electrodes over open wounds, inflamed, swollen or infected skin area or over any skin eruptions such as varicose veins, phlebitis, etc.
- Do not share electrodes with other users. Multiple users may result in adverse skin reactions.
- Replace self-adhesive electrodes when they do not adhere (stick) firmly to the skin

## ***G. Potential Adverse Reactions***

Skin irritation and burns beneath the electrodes has been reported from use of some neuromuscular stimulators.

## IV. Indications for Use

The **Swiss<sub>STIM</sub> Fitness** is intended for stimulation of healthy muscles in order to enhance and facilitate improved muscle performance. The **Swiss<sub>STIM</sub> Fitness** is therefore properly considered as a technique or means for muscle training.

The **Swiss<sub>STIM</sub> Fitness** is **NOT** intended for use in any therapy or for treatment of any medical conditions or diseases. The **Swiss<sub>STIM</sub> Fitness** training programs are not designed or optimized for injured or otherwise impaired muscles and use of the **Swiss<sub>STIM</sub> Fitness** on such muscles is contraindicated.

**Swiss<sub>STIM</sub> Fitness** provides six muscle stimulation training programs. Each program is for specific application/indication and stimulation of skeletal muscles, as follows:

1. **Potentiation** training Program
2. **Endurance** training Program
3. **Resistance** training Program
4. **Strength** training Program
5. **Explosive Strength** training Program
6. **Active Recovery** training Program

### A. *Guidance for Effective Training with the Swiss<sub>STIM</sub> Fitness*

Muscles gain strength when exposed to resistance (loads) that exceed approximately seventy (70) percent of maximal voluntary contraction (MVC) force. The **Swiss<sub>STIM</sub> Fitness** achieves this level of MVC forces and, in fact, produces forces that range from 70-100 percent of your MVC; optimal training results, occur when muscles are stimulated *isometrically*, that is, the arm(s) or leg(s) that is being stimulated is firmly secured to prevent movement of that limb (which may result from muscle contractions).

Neuromuscular stimulation and physical exercise results in the most positive fitness gains.

### B. *Scheduling*

Neuromuscular stimulation works by inducing specific contractions at varied, user selected, intensity levels. When starting neuromuscular training, it is not unusual to experience some aching. These aches are similar to aches that one experiences after "eccentric" work such as long downhill walks or intense jumping. Scheduling of specific muscle groups is recommended; avoid intensive stimulation of the same muscle groups on consecutive days. Intensive stimulation tires the muscles and adequate recovery time is essential to attain improved muscle performance (this phenomenon is known as overcompensation). Taking the following steps will help minimize aching:

- Increase intensity levels (workload) gradually
- Saunas and hot baths accelerate recovery after heavy exercise due to increased blood supply to muscles.

### C. Training Complements

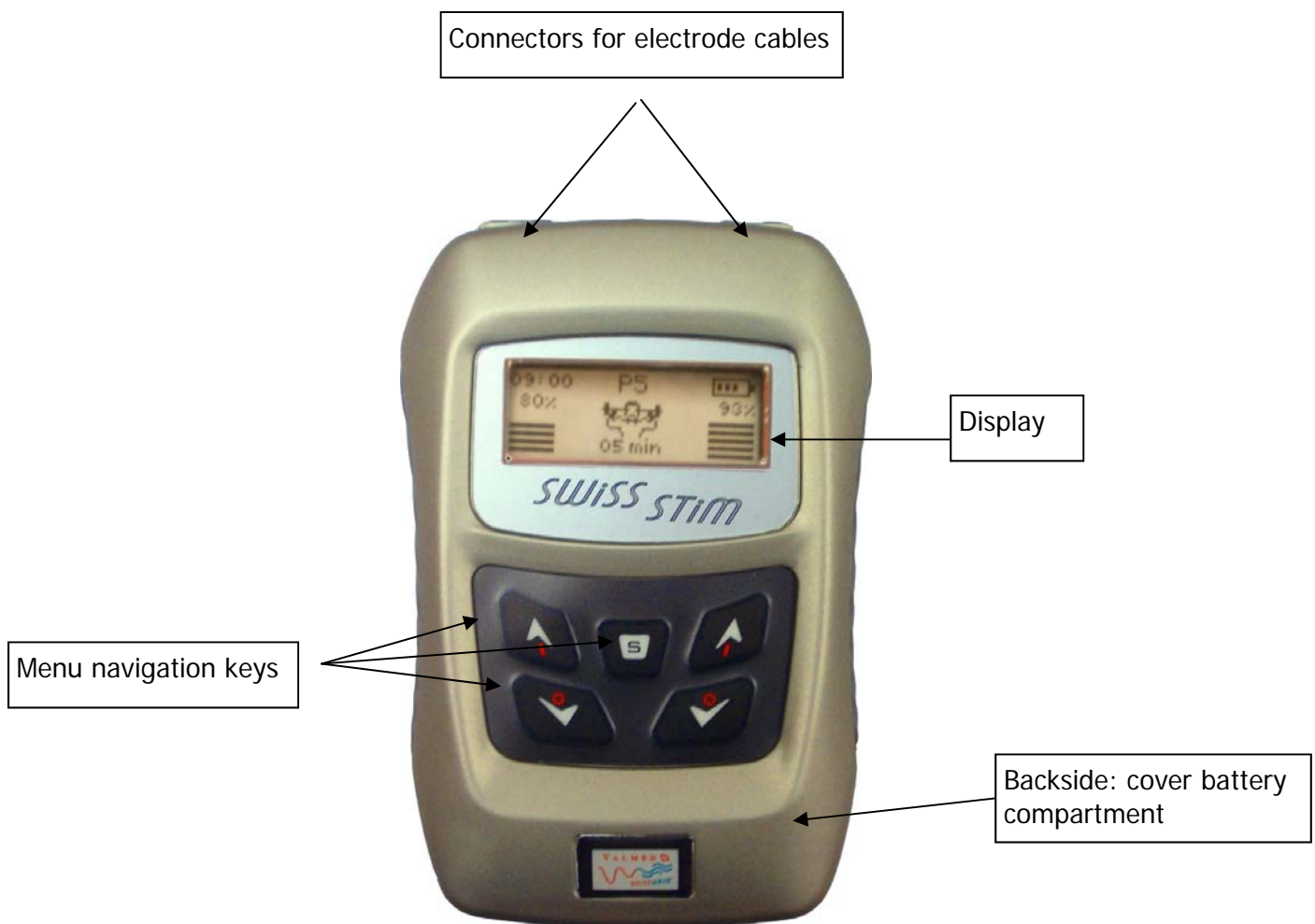
Optimal muscle strength improvement is obtained when you combine different methods of muscle exercise. Neuromuscular stimulation, in conjunction with regular, moderately intense exercise, is especially effective in attaining maximum strength gains and is recommended for the serious athlete or physical fitness focused individual.

Recreational athletes should combine neuromuscular stimulations with other dynamic exercises; these exercises can include endurance sports, team sports, sport training, etc.

### THE BOTTOM LINE?

The **Swiss<sub>STIM</sub> Fitness** is a truly valuable adjunct for training various muscle groups.

### V. Swiss<sub>STIM</sub> Unit Components





## VI. Operating Instructions

### A. Key Symbols and Functions

#### S Select Key

Use this KEY to select a program, select a program "phase" and to **START** a selected program. Once a program has started, use this KEY to make further selections in the program.

#### ↑ Multiple Function/Scroll Keys

- Use either key to turn the **Swiss<sub>STIM</sub> Fitness ON**
- When the **Swiss<sub>STIM</sub> Fitness** is ON, use these keys to scroll through the programs
- Once a stimulation program has started, use these keys to **increase** the stimulation *Intensity* (one key for each channel).

#### ↓ Multiple Function/Scroll Keys

- When the **Swiss<sub>STIM</sub> Fitness** is ON, use these keys to scroll through the programs
- Once a stimulation program has started, use these keys to **decrease** the stimulation *Intensity* (one key for each channel)
- After stimulation program is completed use either key to turn the **Swiss<sub>STIM</sub> Fitness OFF**

### B. Display (LCD Screen) Indications

#### Swiss<sub>STIM</sub> Fitness START SCREEN



```
FITNESS
FDA VERSION
v.6.0. ENGLISH
6 Programs
```

Example Program Screen



```
▲▼ SELECT P6
ACTIVE RECOVERY
24 min Phase 03
```

▲▼ MENU NAVIGATION KEY SCROLL INDICATORS

PROGRAM NUMBER INDICATOR

P6

ACTIVE RECOVERY PROGRAM NAME INDICATOR

PROGRAM DURATION INDICATOR (minutes)

24 min

Phase 03 PROGRAM PHASE NUMBER INDICATOR



20:00 **SELECTED PROGRAM PHASE DURATION INDICATORS (minutes)**



11 min

**WARM-UP PHASE AND DURATION INDICATOR**

Indicate that warm-up phase is selected (dark background) and lasts eleven minutes



05 min

**SPECIFIC WORK PHASE INDICATOR AND DURATION**

Indicate the specific work phase and five minutes duration



04 min

**FINAL COOL-DOWN PHASE INDICATOR AND DURATION**

Indicate the winding-down phase and four minutes duration



**BATTERY CHARGE INDICATOR**

Example



80%



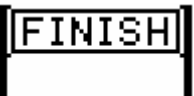
93%



**STIMULATION INTENSITY INDICATORS ON EACH CHANNEL**

Indicate stimulation *Intensity* level (independently set on the two channels)

Example



**END OF PROGRAM INDICATOR**

The session is over. Switch the unit OFF by pressing one of the two keys with a downward pointing arrow (↓)



### SMART CARD ABSENT INDICATOR

The smart card on which the programs are recorded is not in place, or is not properly inserted. Switch unit OFF, open the back battery slot and insert the smart card or check that card is correctly positioned.



### SMART CARD INVALID INDICATOR

The smart card inserted in the back slot is not valid. Switch unit OFF, open the back battery slot and insert a valid smart card.

## INFORMATION ON FUNCTIONS DURING TREATMENT



mode during treatment



**STOP:** Enables user to stop the program before pre-set time



**RESUME:** Enables user to quit PAUSE mode and resume treatment from where it was stopped.



**CHANGE PHASE OPTION:** Enables the user to return to the phase menu and repeat or lengthen one particular phase or skip to the following phase.

### C. Inserting New Batteries

Slide back cover until battery compartment is open. Insert new battery; use ONLY a 9 volt alkaline, lithium (high quality), or rechargeable battery and ensure proper polarity (+/-).

### D. Inserting or Replacing "Smart Card"

The "Smart Card" contains the specific program information for your **Swiss<sub>STIM</sub> Fitness**. If the card needs to be installed, do so ONLY when your **Swiss<sub>STIM</sub> Fitness** is OFF. Open battery compartment and insert the "Smart Card" into its slot, making sure that the card is properly positioned (LOGO on the card facing up).

## E. Turning Your Swiss<sub>STIM</sub> Fitness ON

Press one of the scroll keys marked **↑** to turn the **Swiss<sub>STIM</sub> Fitness** ON. This activates the LCD screen and sound but not the *Intensity* function. This function is only activated after a program selection has been made. If the **Swiss<sub>STIM</sub> Fitness** log does not appear or if the display indicates low battery strength, your **Swiss<sub>STIM</sub> Fitness** will not function properly. If the message "SWITCH OFF NOW AND INSERT CARD" appears, turn the **Swiss<sub>STIM</sub> Fitness** OFF by pressing one of the **↓** scroll keys. Insert "Smart Card". If the message "INVALID CARD CHANGE CARD" appears, an invalid card has been inserted.

## F. Selecting a Stimulation Program

Make sure your **Swiss<sub>STIM</sub> Fitness** is ON. The LCD display will indicate the number of programs. Scan the programs by using the scroll keys and select desired program. Once a program is selected by using the **S Select** KEY, the LCD display will show specific information about the program (name, total program time and program phases/phase length). The program will start with the first program phase (unless a specific phase is selected) and will complete ALL phases of the program unless the user selects only a specific program phase.

## G. Selecting a "Phase" of a Stimulation Program

Selecting only a program phase is possible. Once a program has been selected, icons for the program phases will appear on the LCD display. Use the **↑** scroll keys to highlight the desired phase and press the **S Select** KEY to select the phase.

## H. Automatic Program OFF Function

If no scroll key is pressed within 60 seconds, the **Swiss<sub>STIM</sub> Fitness** will automatically switch OFF to conserve battery life.

## I. Selecting Program Intensity

Once a program has been selected, the *Intensity* controls on the **Swiss<sub>STIM</sub> Fitness** are activated. There are 2 scroll keys (a **↑** and a **↓**) for each (right and left) channel of the **Swiss<sub>STIM</sub> Fitness**. Use the **↑** scroll key for each channel to **increase** Intensity and the **↓** scroll key to decrease the Intensity level. The *Intensity* scale is a 100 step scale, with 100 % corresponding to the maximum *Intensity* level.

## J. Using "Pause" Function

Any **Swiss<sub>STIM</sub> Fitness** program can be paused by pressing the **S Select** KEY once. When this is done, the following choices can be made:



STOP – Stops program



RESUME – Program resumes from point it was stopped



CHANGE PHASE – Returns user to program phase menu and allows user to repeat a phase, skip to next phase or repeat the entire program

### K. Switching Your Swiss<sub>STIM</sub> Fitness OFF During Treatment.

Press both ↓ scroll keys until the *Intensity* level falls to 0 %; press one of the scroll keys again and the unit will beep and switch OFF.

### L. Connections

Please refer, as needed, to the control schematic of the **Swiss<sub>STIM</sub> Fitness (page 8)**

1. **Ensure that the unit is OFF.**
2. Connect the skin pads (electrodes) to each output cable.
3. Position the skin pads (electrodes) on the motor points of the muscles to be treated (refer to **page 19** in this manual for proper positions).
4. Connect the output cables to the **output socket** of the **Swiss<sub>STIM</sub> Fitness** unit. The two (2) cables can be connected to either output socket on the **Swiss<sub>STIM</sub> Fitness**; the **Swiss<sub>STIM</sub> Fitness** unit will function properly

### M. Automatic Switch-OFF

The **Swiss<sub>STIM</sub> Fitness** will automatically switch OFF three (3) minutes after completion of a program. To turn the unit OFF immediately, press one of the ↓ scroll keys.

### N. Troubleshooting

If your **Swiss<sub>STIM</sub> Fitness** unit is not working, please check the following:

1. Is the battery correctly inserted?
2. Are the cable connectors properly inserted into the **Swiss<sub>STIM</sub> Fitness** unit?
3. Are the skin pads (electrodes) connected to the cables?
4. Are the skin pads (electrodes) adhering to the skin? If not, wet the pad surfaces sparingly with water.

With incorrect, non-symmetrical, stimulation feeling please check the following:

1. Electrodes may be dry or greasy
2. Electrodes not positioned correctly
3. Battery almost empty
4. Non-symmetrical positioning of the electrodes (See Section X.)
5. Intensity on the two channels are set differently

## VII. PROGRAM DESCRIPTIONS

The **Swiss<sub>STIM</sub> Fitness** has six muscle stimulation programs. Each program addresses a specific stimulation application for skeletal muscles.

Always stimulate muscles isometrically; make sure that the limb in which a muscle is being stimulated is firmly secured to prevent the movement of the limb (resulting from muscle contraction).

The **Swiss<sub>STIM</sub> Fitness** programs are defined as follows:

### **Program 1: Potentiation**

The Potentiation Program prepares muscles to work faster and easier at the very beginning of training. This program features two continuous (no pause) stimulation patterns. Muscle contractions are tetanic or subtetanic in the first pattern and the frequency of impulses is variable. Contractions in the second pattern are twitch-like. The two patterns are alternatively repeated ten times.

Recommended frequency is before all neuromuscular stimulation training sessions and also before any physical exercise or activity.

### **Program 2: Endurance**

Impulse sequences in this program are designed to improve the body's resistance to fatigue (improved endurance) and consist of warm-up and workout periods. During the warm-up period, the stimulation is continuous and muscle contractions are twitch-like. In the work period, stimulation is intermittent and consists of ON and OFF periods. During the ON period, contractions are subtetanic while during the OFF period there is a pause with no stimulation and no muscle contractions.

Recommended frequency is two to three times weekly on major muscle groups.

### **Program 3: Resistance**

The impulse sequences in this program are intended to increase the time a muscle is able to maintain high power work over short time periods. The intensive contractions of stimulated muscles may induce an exhaustion state in these muscle fibers without psychological fatigue and little cardiovascular stress. The Resistance Program activates the anaerobic metabolism and induces the production of lactic acid. This program consists of warm-up and workout periods. During the warm-up period, the stimulation is continuous (no pauses). During the workout periods it alternates between tetanic and twitch contractions. There are no pauses during the workout phase.

Recommended frequency is three times weekly on target muscle groups.

### **Program 4: Strength**

This program imposes high power work on the muscle fibers and is intended to develop the maximum contractile force in a muscle. The program consists of warm-up and workout periods. Stimulation is subtetanic (twitch) and continuous during the warm-up phase and alternates between strong tetanic and weak twitch contractions during the workout phase. Intensity of stimulation during the continuous twitch periods is automatically reduced in order to provide some rest between strong tetanic contractions. There are no silent pauses during the workout phase.

Recommended frequency is not less than twice weekly.

## Program 5: Explosive Strength

This program increases the speed at which maximum muscle force is achieved. This program consists of warm-up and workout phases. During warm-up, the stimulation is continuous at subtetanic (twitch) frequency, while during the workout phase, the stimulation alternates between short and strong tetanic and long periods of twitch contractions. There is no pause during these phases.

Recommended frequency is as frequently as desired.

## Program 6: Active Recovery

This program consists of low frequency muscle twitches that simulate a massage and induce increased blood flow. The program is one continuous (no pause) low frequency subtetanic stimulation. The frequency of impulses and the impulse phase duration are constant during the entire program.

Recommended frequency is after each stimulation training session.

The timing sequences and frequencies for the **Swiss<sub>STIM</sub> Fitness** programs are provided in this table:

		<b>Program 1</b>	<b>Program 2</b>	<b>Program 3</b>	<b>Program 4</b>	<b>Program 5</b>	<b>Program 6</b>
Stimulus frequency, maximum with tetanic contractions	Hz Max	83	83	83	80	83	10
Max Impulse duration	µs	200	275	240	180	240	180
Program time (total)	min	4	90	27	30	30	24

## VIII. Useful Information

### A. *Inserting or Replacing Batteries*

The battery charge indicator will indicate when the battery weakens and requires replacement. If the battery is not replaced, your **Swiss<sub>STIM</sub> Fitness** will cease to operate within one (1) hour.

Remove (slide) the cover of the unit. Remove old battery and insert a fresh 9-volt lithium, alkaline or rechargeable NiCd/NiMH battery (recharger and batteries provided in some countries). Ensure proper battery polarity; your **Swiss<sub>STIM</sub> Fitness** will not operate if polarity is reversed.

### B. *Warnings Concerning Battery Handling*

Always read and follow the specific instructions provided by battery manufacturers. Note the following:

- Ensure that battery polarity is correct.
- Do not expose batteries to temperatures exceeding manufacturer's specifications.
- Do not store and/or ship this unit with batteries inserted.
- Do not attempt to recharge alkaline or lithium batteries.
- Do not dispose of any battery in fire.
- Note that batteries may present burn or fire hazard if short-circuited.
- Improper battery handling may result in explosion, leakage or flames.

### C. *Handling/Cleaning the Swiss<sub>STIM</sub> Fitness Unit*

Use soft brush or soft cloth to clean unit case; do not use liquid cleansers. Use same procedure with electrical leads. Your **Swiss<sub>STIM</sub> Fitness** is designed to be maintenance free.

### D. *Storage Conditions*

The **Swiss<sub>STIM</sub> Fitness** may be stored for prolonged periods with no degradation. ENSURE that the battery is removed when the unit is not used on a regular basis.

### E. *Battery Disposal*

Always dispose of batteries in accordance with battery manufacturer instructions.

### F. *Warranty*

Free replacement\*, for two (2) years, except for accessories (incl. batteries) and shipping charges. Free replacement will be made if defect is in manufacture of unit; free replacement does not apply when damages are related to improper use or abuse of unit.



## **IX. Swiss<sub>STIM</sub> Fitness Technical and Safety Data**

### **A. Unit Technical Characteristics**

#### **Stimulation Channels**

Two, independent, isolated channels. Separate *Intensity* control levels for each channel.

#### **Adjustments**

5 keys control all stimulation functions and *Intensity* levels.

#### **Display**

The graphical LCD 100 X 30 pixels (46x16 mm) signals all stimulation functions, stimulation intensity per channel, length of program, battery charge status etc.

#### **Output**

Current waveform (during training): Asymmetrical biphasic with fast rise and zero net current.  
Voltage waveform (open circuit): Low voltage, rectangular, compensated monophasic impulse.  
Peak open circuit voltage during each impulse: 45 Vp  $\pm$ 10%.

#### **Maximum Output at 500 $\Omega$ Load**

RMS voltage:  $\leq 5$  V (volts)  $\pm$  10%.

Peak open circuit voltage during treatment: 90mA (milliamperes)  $\pm$  10%.

#### **Power Supply**

One 9 Volt lithium, alkaline or NiCd / NiMh rechargeable battery. Battery charge lasts approximately 10 hours, according to stimulation intensity. The output and program timing parameters are stable ( $\pm$ 2%) throughout the life of the battery.

#### **Standard Accessories**

Four skin pads (nonpolar, self-adhesive, reusable electrodes)

One alkaline 9 Volt battery

One 9 volt battery charger

Two 9 volt rechargeable batteries

2 cables

Carrying case and User Manual.

#### **Size**

Unit size is approximately 12.5\*8.1\*2.6 cm. Weight is 200 grams or approximately 7 oz.

#### **Cleaning/Maintenance**

Use soft brush or soft cloth to clean unit case; do not use liquid cleansers. Use same procedure with electrical leads. Your **Swiss<sub>STIM</sub> Fitness** is designed to be maintenance free.

## **B. Safety**

The **Swiss<sub>STIM</sub> Fitness** meets the requirements of ANSI/AAMI NS4 1985 American Standard and the IEC-601-2-10 European Safety Standard.

### **Specific Safety Features and Measures to Prevent Misuse**

The **Swiss<sub>STIM</sub> Fitness** is inherently designed so that improper or accidental application of this unit **cannot** produce cardiac rhythm disturbances. ***This does not include individuals with implanted cardiac pacemakers!***

This inherent safety is due to the minimal electric charge of all stimulating impulses in the **Swiss<sub>STIM</sub> Fitness**. In all programs of stimulation, the typical impulse is below 10 micro coulombs and the maximum possible impulse is 20 micro coulombs, zero net current. Moreover, this maximum charge of 20 micro coulombs is significantly below the cardiac rhythm disturbance safety margin of 25 micro coulombs per pulse, the standard as established by the Association for Advancement of Medical Instrumentation (AAMI) in AAMI/ANSI standard NS4-1985 and acknowledged by the U.S. Food and Drug Administration (FDA).

Specific safety features in your **Swiss<sub>STIM</sub> Fitness** include:

1. Impossible for users to modify the embedded programs; users can only modify the intensity of stimulation
2. All programs begin with minimal electrical *Intensity*; the user must increase the *Intensity* to the desired training level.
3. Maximum possible electrical impulse is 20 micro coulombs.
4. Cable design prevent the possibility of accidental connection to a power source, such as an AC power outlet.
5. Automatic control of stimulation current density precludes excessive current density at the electrode-skin interface and ensures skin safety.

## X. Electrode Placement

### A. Leg Electrode Placements



Quadriceps



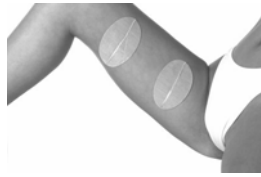
Quadriceps



Tibia



Calfs



Thighs



Femoral Biceps



Femoral Biceps

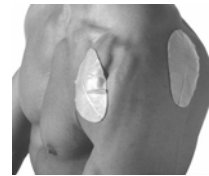
### B. Arms Electrode Placements



Forearm



Biceps



Deltoid



Triceps



Abdominals



Back