# SIS MACHINES

## Woessner-Malter
# CYCLIC AMP STIMULATOR (model WMcAMP)

# OPERATING MANUAL_v2.8_WMcAMP

This operating manual is downloadable from https://siselectromed.com/cyclic-amp-stimulator/

**CAUTION:** Due to periodic revisions, always check that you are reading the most up to date version of this manual.

**Please read this manual carefully before using the SIS equipment.**

 

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# DELIVERY AND UNPACKING

Please unpack the shipping package carefully and inspect contents immediately on receipt. You must check that all ordered equipment is included in the shipping box and notify SIS Manufacturing Ltd NZ immediately of any missing items from your order. Visible damage or tampering to shipping boxes must be recorded before signing the delivery receipt. Please take photographs of any received damaged items. Report the damage or tampering immediately to the shipping carrier. You must notify SIS Manufacturing Ltd NZ immediately of any items received damaged or tampered or of any lost shipments.

# ⚠ WARNING FOR BIOLOGICAL APPLICATIONS

THE WMcAMP STIMULATOR IS ELECTRONICALLY CALIBRATED WITH EXTREME PRECISION FOR THERAPEUTIC BIOLOGICAL ELECTRO-STIMULATION ONLY IN COMBINATION WITH ELECTRODES APPROVED FOR BIOLOGICAL CONTACT AND MEDICAL/THERAPEUTIC APPLICATIONS. READ THE CONTRAINDICATIONS AND SAFETY INSTRUCTIONS IN THIS MANUAL BEFORE USING THE DEVICE.

# DEVICE DESCRIPTION

The WMcAMP Stimulator is designed to increase or modulate the production and utilization of Cyclic AMP (3′,5′-cyclic adenosine monophosphate) cellular second messenger for therapeutic, research and experimental laboratory purposes. The device can also be used for inserted needle or surface electrode electro-acupuncture. Read 13. MANUFACTURER'S DECLARATION.

# 1. POWER SOURCE

The WMcAMP Stimulator is powered by replaceable AA type batteries (not included with delivery for air shipping safety reasons). Rechargeable batteries can be used and do not compromise the correct function of the device.

⚠ Do not use zinc-carbon batteries, which can leak and damage the device.

### 1.1. Inserting AA Batteries

**a.** Power OFF the device if it is operating.
**b.** Remove the shockproof silicon cover from the casing.
**c.** Remove the battery compartment cover.
**d.** Insert 4 × AA batteries. Ensure correct polarity of the batteries—follow the battery diagram and ⊕⊖ polarity symbols inside the battery compartment.
**e.** Replace the battery compartment cover.
**f.** Replace the shockproof silicon cover over the casing; maintain on at all times to protect the device.

# 2. CONNECTING ELECTRODE CABLE

Insert the cable (harness) connector plug all the way into the connection socket (jack) in the top end panel of the device; two small clicks occur during insertion. Screw tighten the connector locking-ring to the socket, to secure the connection.

# 3. ELECTRODES

Two electrodes must be used with the WMcAMP Stimulator; the electrodes are physically interchangeable.

### 3.1. ELECTRODE TYPE

Two types of electrode can be used with the WMcAMP Stimulator:

| ELECTRODE TYPE | TYPICAL CIRCUIT RESISTANCE | NOTES |
|---|---|---|
| SIS silver-nylon cloth | ≤50-100kiloohm. Contributes lower circuit resistance than standard electrotherapy electrodes; superior for signal transmission. | Follow INSTRUCTIONS FOR USE (IFU) on the IFU card inside each SIS electrode pack. Electrodes MUST BE KEPT MOIST DURING USE. |
| Self-adhesive hydrogel electrotherapy electrodes | ≥500kiloohm. | Check that the black or blue hydrogel layer of the electrode remains sticky; re-wet/replace if needed. Only use high quality electrodes. |

NOTE: SIS silver-nylon electrodes are the optimal electrodes to use with the WMcAMP Stimulator for maximum signal transmission.

Also refer to 6.3.1. SPECIAL APPLICATIONS for use of the SIS electrodes over medical dressings.

### 3.2. CONNECTING ELECTRODE HARNESS TO ELECTRODES

It is usually easier to position and secure the electrodes to the body first and then connect the electrode harness (cable) to the two electrode wires.

Insert the two gold metal 'banana plugs' at the ends of the electrode cable into the plastic connectors at the ends of the electrode wires; insert the banana plugs all the way in until they are no longer visible.

! NOTE: Do not tape the connections of the cable to the electrode wires, as this can put excessive mechanical strain on the electrode cable if the device is dropped or pulled away from the body strongly while in use.

### 3.3. ELECTRODE CONNECTION POLARITY

- The electrode that is connected to the red wire of the electrode harness is denoted the positive (+ve) electrode.
- The electrode that is connected to the black wire of the electrode harness is denoted the return (-ve) Electrode.

Polarity of connection of the electrode harness to the +ve and -ve electrodes on the body can be either way around.

See 6.2. ELECTRODE POSITIONING instructions for electrode positioning instructions.

### 3.4. SECURING ELECTRODES TO BODY

- If SIS silver-nylon cloth electrodes are used, follow the INSTRUCTIONS FOR USE (IFU) on the IFU card included in each SIS electrode pack.
- If self-adhesive hydrogel electrodes are used, apply directly to the skin.

# 4. CONTROLS

### 4.1 POWERING ON THE DEVICE

Hold down the push-button-rotary-dial on the face panel of the device continuously for 2 seconds to power ON the device (LCD display turns on).

NOTE: The device has a factory set, automatic power-down timer that powers OFF the device after a continuous treatment session duration of 10 hours (see 5.2. below).

#### 4.1.1. OPERATIONAL MODE PROGRAMMING

The operational mode of the WMcAMP Stimulator is factory set to stimulate the up-regulation and utilization of the cellular second messenger, 3′,5′-cyclic adenosine monophosphate (Cyclic AMP).

### 4.2. MENU ACCESS AND CONTROLS

After powering ON, again press and hold the push-button-rotary-dial continuously for 5 seconds until the **ENTER MENU?** prompt appears. Rotate the push-button-rotary-dial to select **YES**, then press and release (click) the push-button-rotary-dial to select—the main **MENU** screen will be displayed.

NOTE: If no user input is detected during 10 seconds after the **ENTER MENU?** prompt appears, then the device returns to the the main operating screen.

To exit from the main **MENU** back to the main operating screen, rotate the push-button-rotary-dial and scroll to **EXIT MENU**, then press and release the push-button-rotary-dial to select—the device will return to the main screen.

NOTE: If no user input is detected during any 30 second period within any menu selection procedure, then the device automatically powers off.

#### 4.2.1. POWERING OFF THE DEVICE

In the main **MENU** screen, rotate the push-button-rotary-dial to scroll to **POWER OFF**, then click to select—the device will power off (display turns off).

### 4.2.2. OUTPUT VOLTAGE SETTING (INTENSITY)

The minimum and default factory setting of the Output Voltage is 70millivolts (mV). The Output Voltage resets to the default setting each time the device is powered off.

In the main **MENU** screen, rotate the push-button-rotary-dial to scroll to **INTENSITY**, then click to select—the **INTENSITY** adjustment screen will be displayed.

► Click the push-button-rotary-dial once, slowly rotate the dial to adjust the peak Output Voltage intensity in steps of 10millivolts (mV), then click the dial again to set the Output Voltage.

Rotate the push-button-rotary-dial to scroll to **EXIT TO MENU**, then click the dial to exit back to the main **MENU** screen.

### 4.2.3. CABLE (HARNESS) TEST

! NOTE: Perform a cable test at the start of each new session to ensure stimulation is being delivered by the device.

In the main **MENU** screen, rotate the push-button-rotary-dial to scroll to **CABLE TEST**, then click to select—the **CABLE TEST** screen will be displayed.

Follow these steps:

► **A.** Connect the cable (harness) to the machine.

**B.** Hold the gold ends of the cable in continuous contact with each other.

**C.** Click the push-button-rotary-dial to select **TEST**, then wait approximately 5 seconds until the result of the test is displayed.

If the result of the cable test is **PASSED** then the cable is OK.

If the result of the cable test is **FAILED**, repeat the cable test:

- Check 2. CONNECTING ELECTRODE CABLE instructions.
- Re-test the cable (steps **B** & **C**).
- If the cable test result is still **FAILED** then the cable has a fault and needs replacing.

Click **EXIT TO MENU** to return to the main **MENU** screen.

### 4.2.4. DISPLAY BRIGHTNESS ADJUSTMENT

The LCD display has a secondary backlight that automatically turns on at any time when the user operates the push-button-rotary-dial to control the device.

The default factory setting of the backlight brightness is 10%, and re-sets each time the device is powered OFF.

The backlight is factory set to turn off automatically after 10 seconds for power-saving if no further user operation is detected at any time.

In the main **MENU** screen, rotate the push-button-rotary-dial to scroll to **DISPLAY BRIGHTNESS**, then click the dial to select—the **DISPLAY BRIGHTNESS** screen will be displayed.

- ► Click the push-button-rotary-dial once, slowly rotate the dial to adjust the screen backlight brightness from 10% to 100% in steps of 10%, then click the dial again to set the brightness.

Rotate the push-button-rotary-dial to **EXIT TO MENU**, then click the dial to return to the main **MENU** screen.

NOTE: The backlight display brightness setting will affect overall battery life during extended operation.

### 4.2.5. DISPLAY INFORMATION ABOUT THE DEVICE

In the main **MENU** screen, rotate the push-button-rotary-dial to scroll to **ABOUT**, then click to select—the **ABOUT DEVICE** screen will be displayed.

The Model Code, Serial Number, Software and Firmware versions, and Build Date of the device are displayed.

Click **EXIT TO MENU** to return to the main **MENU** screen.

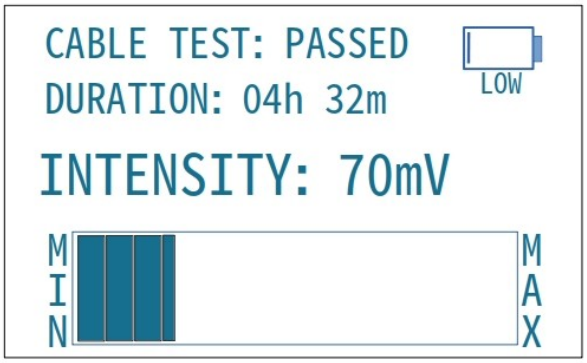
 

<table>
<tr><th colspan="6">MENU CONTROLS</th></tr>
<tr><td>ENTER MENU?</td><td>NO</td><td>Main operating screen</td><td colspan="3"></td></tr>
<tr><td></td><td>YES</td><td></td><td>Main menu options</td><td>Level 2 menu options</td><td colspan="2">Level 3 menu options</td></tr>
<tr><td></td><td></td><td></td><td>POWER OFF</td><td colspan="3"></td></tr>
<tr><td></td><td></td><td></td><td>INTENSITY</td><td>Set:<br>70-1000mV</td><td></td><td rowspan="5">EXIT TO MENU</td></tr>
<tr><td></td><td></td><td></td><td>CABLE TEST</td><td>TEST</td><td>Result:<br>PASSED<br>or<br>FAILED</td></tr>
<tr><td></td><td></td><td></td><td>DISPLAY BRIGHTNESS</td><td>Adjust:<br>10-100%</td><td></td></tr>
<tr><td></td><td></td><td></td><td>ABOUT</td><td>Information about device</td><td></td></tr>
<tr><td></td><td></td><td></td><td>EXIT MENU</td><td colspan="3"></td></tr>
</table>

# 5. DISPLAY

Main operating screen




**5.1.** The user-programmed peak Output Voltage **INTENSITY** is shown in millivolts (**mV**), and graphically displayed by the horizontal bar.

**5.2.** The session **DURATION** from the time of the last power ON is displayed in hours (**h**) and minutes (**m**), and is updated every 1 minute.

**5.3.** A low battery charge status (approximately 20% remaining) is indicated by **LOW** flashing below the battery icon appearing in the top right of the display.

**5.4.** The **CABLE TEST** status for the current treatment session is shown at the top of the display.

**CABLE TESTED: NO** is displayed at the start of each new session until a cable test has been performed. After a cable test has been completed, either **PASSED** or **FAILED** is displayed for the remainder of the current session.

# 6. APPLICATION INSTRUCTIONS

### 6.1. SELECTING ELECTRODE SIZE

Use electrodes that most closely match the anatomical size, geometry and planar (cross-sectional) direction of treatment of the target anatomical structure or tissue.

If SIS silver-nylon electrodes are used:

**DO** cut the SIS electrodes to size and shape as necessary.

**DO NOT** cut the SIS electrode wire inside the SIS electrodes.

## 6.2. ELECTRODE POSITIONING

Figure 1 illustrates the chief principle of electrode positioning for the WMcAMP Stimulator, using the adductor longus tendon as an example. The +ve and return (-ve) electrodes are shown positioned along the line of the tendon; the direction of treatment in relation to the target anatomical structure is cross-sectional in the transverse-sagittal planes.

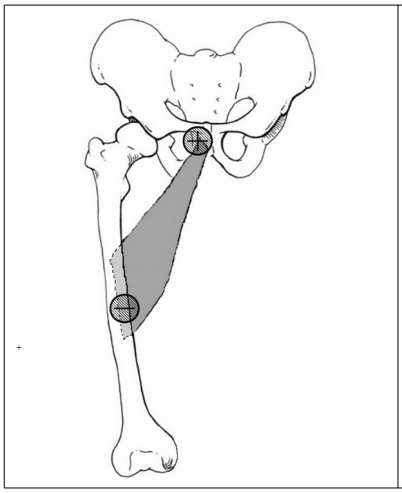


Figure 1: Anatomical planar cross-sectional treatment of the adductor longus tendon.

In general, depending on the chosen anatomical planar (cross-sectional) direction of treatment:

**A.** Position the +ve electrode onto intact skin directly over, across, or along the geometry/pathway of the target anatomical structure or tissue.

**B.** Position the -ve electrode in relation to the +ve electrode, onto intact skin, on the anatomically opposite surface of, across, or along the target anatomical structure or tissue.

### IMPORTANT NOTES

1. There are two types of pathology or treatment targets: longitudinal (e.g. a whole muscle or a section of nerve) and point (e.g. a joint or local blunt trauma).
2. Position the electrodes at each end of the target tissue or across the point target anatomical structure or tissue. Wherever possible, there should be target tissue along the straight line path between the electrodes; this is especially important for longitudinal targets.
3. For deeper anatomical targets, wherever possible, position the electrodes so that there is soft tissue along the straight line path between the electrodes.

4. Stimulation will affect all the smaller nerve fibers with thin or no myelin; ascending sensory C-fibers and A-delta fibers (mostly for pain and other irritating sensations) as well as descending C-fibers to arterioles should be affected in the target tissue.

### 6.3 INTENSITY SETTING

Overall, due to the advanced WMcAMP Stimulator technology, strong therapeutic effects can be readily achieved with very low intensity stimulation.

The adjustable **INTENSITY** setting of the device refers to the maximum positive offset (peak) Output Voltage, measured in millivolts (mV).

The default, minimum **INTENSITY** setting after powering on is 70mV. For many applications, this minimum setting is sufficient for significant therapeutic effect. For most applications, the maximum **INTENSITY** setting necessary is 250mV, even for strong and rapid therapeutic effect, e.g., pain 'blocking'.

In general, the main considerations for setting the Output Voltage **INTENSITY** are:

- Distance between electrodes—depending on anatomical target and electrode configuration, refer to 6.2. ELECTRODE POSITIONING
- Density of target tissue (bone, adipose, muscle, etc.)
- Type and size of electrodes used.

Greater distance between electrodes, and higher tissue density, might both or separately require higher **INTENSITY** stimulation; larger electrode size might also require higher **INTENSITY** stimulation.

A higher **INTENSITY** setting might also be needed when using TENS type hydrogel electrodes compared to SIS silver-nylon electrodes—refer to 3.1. ELECTRODE TYPE.

#### 6.3.1. SPECIAL APPLICATIONS

In some special applications of the WMcAMP Stimulator, the +ve and/or -ve electrode can be applied onto a wet gauze or other similar medical dressing, which is then applied directly onto or near the injured or pathological tissue or treatment area, e.g., onto intact peri-wound skin, directly onto an exposed

wound, or onto a pathological tissue growth such as neoplastic tissue.

In such instances, because the gauze will contribute extra electrical resistance to the stimulation circuit, and also in order to allow for the gradual drying out of the gauze with normal evaporation across the duration of treatment, a higher **INTENSITY** setting towards the 500-1000mV level may be necessary or optimal.

# 7. SPECIFICATIONS

| Parameter | Unit | Minimum | Typical | Maximum | Accuracy | Additional Notes |
|---|---|---|---|---|---|---|
| Input Battery Voltage | V | 4.6 | - | 6 | N/A | - |
| Output Voltage | V | 0.07 | - | ±1 | ±10mV | P-P |
| Input Current | mA | 50 | - | 100 | N/A | - |
| Output Current | mA | 0 | - | 10 | N/A | - |
| Internal Frequency | MHz | | | 48 | | - |
| Operating Temperature Range | °C | - | - | - | N/A | - |

# 8. CONTRAINDICATIONS AND SAFETY

**DO NOT** POSITION ELECTRODES OVER THE BRAIN. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES OVER THE HEART (CENTRAL AND LEFT SIDE OF CHEST). CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES ON THE ABDOMEN IF THE SUBJECT IS PREGNANT OR MIGHT BE PREGNANT.

**DO NOT** POSITION ELECTRODES NEAR A PACEMAKER OR OTHER IMPLANTED ELECTRO-STIMULATOR. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES ACROSS THE EYES. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES ACROSS THE ANTERIOR NECK (CAROTID SINUS). CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** USE IF THERE IS A HISTORY OF SEIZURES. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** USE IF THERE IS A SUSPECTED OF KNOWN SERIOUS INFECTIOUS DISEASE THAT REQUIRES HEAT OR FEVER TO BE SUPPRESSED. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** EXPOSE THE WMcAMP STIMULATOR TO WATER. DISCONNECT ELECTRODES FROM HARNESS (CABLE) OR REMOVE FROM BODY WHEN ENTERING WATER.

**DISCONTINUE USE** IF SKIN IRRITATION OCCURS.

**FOR EXTERNAL USE ONLY.**

**KEEP AWAY** FROM CHILDREN.

# 9. MEDICAL DISCLAIMER

NO ADVICE
Information provided for education and research information only. This manual contains general information about medical conditions and treatments. The information is not advice, and should not be treated as such. The information in this manual is made available on the basis that no professional advice on a particular medical matter is being provided. No liability is accepted for any injury, loss or damage incurred by use of or reliance on the information provided in this manual.

PROFESSIONAL ASSISTANCE
You must not rely on the information in this manual as an alternative to, or substitute for, medical advice from your professional healthcare provider. If you have any specific questions about any medical matter you should consult your professional healthcare provider. If you think you may be suffering from any medical condition you should seek immediate medical attention. You should never delay seeking medical advice, disregard medical advice, or discontinue medical treatment because of information in this manual.

LIMITATION OF WARRANTIES
The medical information in this manual is provided “as is” without any representations or warranties, express or implied. SIS Manufacturing Ltd NZ makes no representations or warranties in relation to the medical information in this manual. Without prejudice to the generality of the foregoing paragraph, SIS Manufacturing Ltd NZ does not warrant that: the medical information in this manual will be constantly available, or available at all; or the medical information in this manual is complete, true, accurate, up-to-date, or non-misleading. Nothing in this medical disclaimer will limit any of the liabilities of SIS Manufacturing Ltd NZ in any way that is not permitted under applicable law, or exclude any of its liabilities that may not be excluded under applicable law.

# 10. MAINTENANCE

The device is maintenance free. Only wipe the external surfaces with a clean damp cloth. Do not use any kind of detergent or solvent. Avoid strong impacts on the device. Maintain the protective shockproof silicon cover on at all times during operation and storage.

## 10.1. STORAGE

Remove the batteries from the device during long-term storage to prevent damage from battery leaks and to avoid very gradual draining of charge of the batteries.

Keep the Seal Cap mated to the device connector socket (jack) when not in use to prevent ingress of dust and moisture.

Store the device in a place out of direct sunlight and with ventilation or air-conditioning. Do not leave on or next to heat-generating sources.

## 10.2. SIS ELECTRODES

The silver-nylon stimulation surface of an SIS electrode that has been applied only to normal intact skin can be cleaned by gently wiping with a clean damp cloth or cotton wool (use tap/other clean water).

# 10. WARRANTY

The WMcAMP Stimulator (the “Device”) carries a 5 year limited Warranty for defects in materials, components, assembly and operation of its electronic hardware.

This Warranty is subject to all of the following exclusions and conditions. The Device enclosure is not opened except the battery compartment nor tampered with in any manner. No modifications or repairs are made to the Device other than by our engineers. No voltage or current source is applied to the harness connection socket or to anywhere else on the Device. No power supply other than specified in the operating manual is applied to the Device. For biological applications, the Device has not been used with non-SIS electrodes that are not approved for skin contact, therapeutic and medical applications. The Device is not used beyond its intended applications. You can experiment with the Device if you wish, but subject to all other Warranty conditions and exclusions and not in such a way that could reasonably be expected to damage the Device in any way as determined by our engineers. SIS machine models M200/M200MA/W200/WMcAMP/LVtC must not be used in any manner that requires an IP rating above IP40 to protect them from ingress of dust or other sub-1mm particulate matter, or that requires protection from water or other liquids that can damage or interfere with the internal electronics of the Device. The SIS electrode harness (connecting cable) plug and jack of the WMcAMP model are IP68 rated when mated, and the jack is IP68 rated when it is mated with its Seal Cap. The electrode harness is included in this Warranty only for a period of three months. If a non-SIS electrode harness is used with the Device this warranty shall be void. This Warranty is expressly limited solely to the original purchaser of the SIS equipment and does not extend to any transferee or temporary user of the Device. This Warranty does not cover damage caused by improper connection of the components of the SIS equipment (harness, connectors, plugs, jacks, sockets, electrodes), damage caused by accident, abuse, misuse, neglect or improper maintenance, damage caused by unusual physical or electrical stress, nor cosmetic or mechanical damage from routine cleaning or normal use. Non-compliance to any degree with any one of these Warranty conditions shall automatically void this warranty completely. SIS Manufacturing Ltd New Zealand expressly disclaims all warranties not stated in this limited Warranty.

If the Device is found to be faulty, we will honor this Warranty as quickly and efficiently as we can and either repair or replace the defective device at our discretion. We will return to the original purchaser a fully and correctly functional Device that meets all of its design and functional specifications at our cost as speedily as possible.

# 11. RETURNS

Each SIS machine is assembled and factory calibrated in our factory in Australia. In case of suspected malfunction of an SIS machine, please contact SIS Manufacturing Ltd, New Zealand. Do not return any goods without obtaining prior approval and return instructions from SIS Manufacturing Ltd. Please include your name, contact details and a full description of the faults you suspect or have experienced with the equipment. Please keep your proof of purchase.

# 12. DISPOSAL


In case of replacement of any SIS machine part due to repair, exchange or future upgrade, we will optimally recycle the SIS equipment.

# 13. MANUFACTURER'S DECLARATION

The device is pending testing for AS/NZ/CE/FCC radiated emissions conformity.

**⚠ WARNING: DO NOT USE THE WMcAMP STIMULATOR WHILE ON AN AIRPLANE OR NEAR AVIATION GUIDANCE EQUIPMENT.**

The specifications, descriptions and data within this document are subject to change without notice. This publication supersedes all previous publications on this subject.

The SIS machines, SIS electrodes and SIS technology are patent pending devices. The SIS machine logo and “SIS” letters are Registered Trade Marks.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