# Sys*Stim® 206

## Instruction Manual

IR6–05 Rev. D_12/09

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# Section 1: Introduction

## 1.1 Introduction to the Sys*Stim 206

Thank you for purchasing the Sys*Stim 206 one-channel neuromuscular stimulator. The microprocessor controlled Sys*Stim 206 produces electrical stimulation currents through one channel.

There are four waveforms available—narrow, wide and AC pulses along with continuous direct current. All pulsed waveforms are electrically balanced with zero net charge.

There is a surge mode set at 6 seconds on and 18 seconds off at either 35 or 83 pulses per second.

The Sys*Stim 206 is portable and can be combined with any Sonicator® therapeutic ultrasound unit for combination therapy.

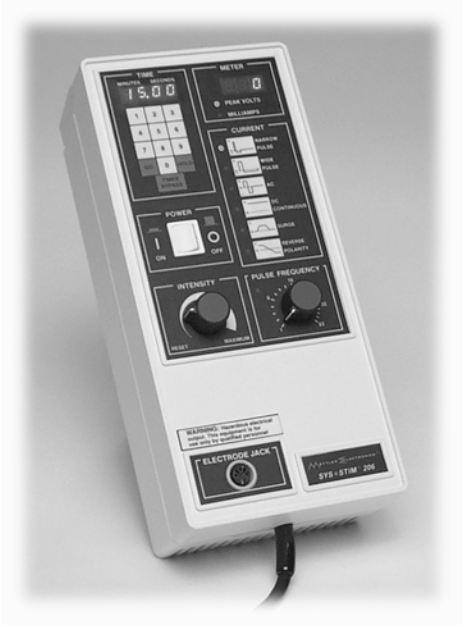



Figure 1.1— Sys*Stim 206

## 1.2 Introduction to This Manual

Read the contents of this manual before treating patients with the Sys*Stim 206.

This manual has been written to assist you with the safe operation of the Sys*Stim 206. It is intended for use by the owners and operators of the Sys*Stim 206. The goal of this manual is to direct the correct operation and maintenance of this unit.

The specifications and instructions presented in this manual are in effect at the time of its publication. These instructions may be updated at any time at the discretion of the manufacturer.

## 1.3 Safety Precautions

The Sys*Stim 206 operates with high voltages. Only qualified biomedical technicians with training in neuromuscular stimulator service should perform servicing of the Sys*Stim 206 or it should be returned directly to the factory. To maximize safety during use, the unit should be plugged into a grounded wall outlet. General safety guidelines for medical electronic equipment should be followed.

Service may be obtained from the manufacturer by sending the Sys*Stim 206 in its original shipping container to Mettler Electronics Corp., 1333 South Claudina Street, Anaheim, CA 92805, ATTN: Service Department. (Telephone toll free: (800) 854–9305, Email: *service@mettlerelectronics.com*, *Alternate telephone number: 1 (714) 533–2221*)

NOTE: All warranty repairs must be performed by Mettler Electronics Corp. or by a service facility authorized by Mettler Electronics to perform warranty repair work.

A service manual for the Sys*Stim 206 is available from Mettler Electronics Corp. for a nominal charge.

## 1.4 Caution

Federal law restricts the sale of this device to, or on the order of, a physician, dentist, veterinarian or any other practitioner licensed by law of the state in which he practices.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to electrical energy. The electric energy delivered by this device may possibly be lethal. Treatment should be administered only under the direct supervision of a health care professional.

## 1.5 Shipping Damage

Your new Sys*Stim 206 is shipped complete in one carton. Upon receipt, please inspect the carton and the unit for visible and hidden damage. If you discover any damage, hold all shipping materials, including the carton, and call the shipping agent who delivered the unit. They are responsible for all damage in transit; therefore, all claims should be filed directly with them. The factory will not be responsible for any damage in shipment, nor allow any adjustments unless proper formal claim has been filed by the receiver against the carrier.

The carton in which your new Sys*Stim 206 was received is specially designed to protect the unit during shipping. Please retain all shipping materials in the event that you will need to return your unit for servicing.

## 1.6 Package Contents

Your new Sys*Stim 206 comes complete with all the necessary components to perform neuromuscular electrical stimulation. Below is a list of items that are included in the shipping carton.

1. Sys*Stim 206
2. One electrode cable set, (ME 2260)
3. Four gray pin to banana adapters, (ME 2027)
4. Four (4" x 4") sponge electrodes (ME 2002),
5. One (3.5" x 7") sponge electrode (ME 2004)
6. One bifurcation cable set, 2 cables, one red and one black, pin termination (ME 2030)
7. Two (48") electrode straps (ME 2009)
8. Mounting plate and screws (ME 1004)
9. Detachable U.L. listed, hospital–grade line cord, (ME 7293)
10. Instruction Manual and Warranty Card

## 1.7 Limited Warranty

The Sys*Stim 206 neuromuscular electrical stimulator is warranted against defects in materials and workmanship for a period of one year from date of purchase. During the applicable warranty period Mettler Electronics Corp. will, at its discretion, either repair or replace the Product without charge for these types of defects.

For service under this warranty, the Product must be returned by the buyer within the applicable warranty period to Mettler Electronics Corp. **Shipping charges to Mettler Electronics Corp. under this warranty must be paid by the buyer. The buyer must also include a copy of the sales receipt or other proof of the date of purchase. If the Product is returned without proof of the date of purchase, it will be serviced as an out–of–warranty product at Mettler Electronics Corp.'s prevailing service rates.**

**Alteration, misuse, or neglect of the Product voids this warranty. Except as specifically set forth above, Mettler Electronics Corp. makes no warranties, express or implied, including without limitation any implied warranty of merchantability or fitness for a particular purpose, with respect to the Product. If any implied warranties apply as a matter of law, they are limited in duration to one year.**

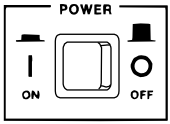
**Mettler Electronics Corp. shall not be liable for any indirect, special, consequential or incidental damages resulting from any defect in or use of the Product.**

Any legal action brought by the buyer relating to this warranty must be commenced within one year from the date any claim arises and must be brought only in the state or federal courts located in Orange County, California.

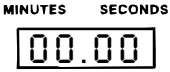
Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to the buyer. This warranty gives the buyer specific legal rights, and the buyer may also have other rights which vary from state to state.

# Section 2—Control Descriptions and List of Abbreviations

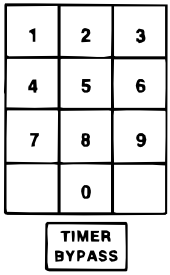
## 2.1 Control Descriptions




Mains power is controlled by an On/Off toggle switch. The unit is off when the switch is pressed to the right and on when pressed to the left.



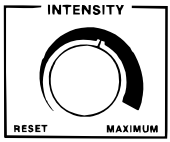

Time display shows time in treatment in minutes and seconds.



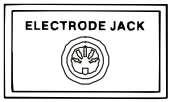

The timer keypad consists of eleven touch-type buttons labeled 0-9 and timer bypass. Prior to starting an operation, these buttons allow for entering the desired treatment time from 1 to 29 minutes, or a continuous run by depressing timer bypass. Either treatment time remaining will be displayed on the treatment time indicator, or elapsed time with flashing dashes when in timer bypass mode. Bypass elapsed time is shown in even seconds and restarts at 0:00 after each 29 minute time period.


The “Go” button starts timer and begins the treatment by providing the AC, pulse, or DC energy to the electrode jack output if the intensity control is in fully counterclockwise position (Reset) at the time the Go switch is depressed.

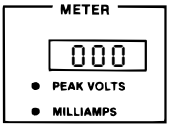

The “Hold” button” halts the timer without disturbing the remaining treatment time and stops the electrical output when activated. The remaining treatment time will be indicated.




Intensity is controlled by a three quarter turn adjustment knob. This control varies the output voltage, or current, to the patient during operation. Output increases with a clockwise rotation, and decrease with a counterclockwise rotation. Reset is achieved at the fully counterclockwise position. Operation does not begin until the Intensity control is returned to the Reset position.



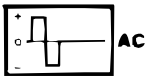

This is the electrode output jack for plugging in electrode cables. Use Mettler part number, ME 2260 to achieve best results.




The three-digit output display shows the peak output voltage for narrow, wide, and AC pulse modes, or the electrical current (Milliamps) for the DC continuous mode while treatment output is active. The meter function is dependent upon the current mode selected prior to the start of operation. Two green indicators, one for peak volts and one for Milliamps specify what is being displayed by the meter. When treatment output is inactive (Hold mode) and when Surge is selected, the meter will display the currently selected surge pulse frequency. (F35, for 35Hz, or F83 for 83 Hz).

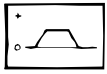

Press the “Narrow Pulse” button to enter the Narrow Pulse mode. The green indicator to its left illuminates when activated to show that the Narrow pulse is selected. Selection of this current type provides electrical pulses with current flow for 100 µs of one polarity followed by ¼ amplitude for 400 µs of reversed polarity. This results in a net DC current flow of zero. The intensity is set by the Intensity control. Frequency is set by the pulse frequency control when not in Surge mode.


Press the “Wide Pulse” button to enter the Wide Pulse mode. The green indicator to its left illuminates when activated to show that the Wide pulse is selected. Its shape is the same as the Narrow pulse shape except that the pulse duration is 300 µs of one polarity followed by ¼ amplitude for 1200 µs of reversed polarity.



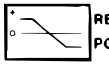

Press the “AC Pulse” button to enter the AC Pulse mode. The green indicator to its left illuminates when activated to show that the AC pulse is selected. Selection of this current type provides electrical pulses that automatically change current direction to achieve a net current flow of zero. Each current cycle is 300 µs of one polarity followed by 300 µs of the same amplitude of reversed polarity. The intensity is set by the Intensity control. Frequency is set by the Pulse frequency control when not in Surge mode.


Press the “DC Continuous” button to enter the DC Continuous mode. The green indicator to its left illuminates when activated to show that DC Continuous is selected. Selection of this current type provides an output current in one direction with the intensity set by the Intensity Control up to a maximum of 30 milliamps (ma). The frequency control is inoperative in this mode. Caution: applications of galvanic (DC) current can produce skin irritation. Please review contraindications.

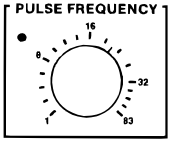



Press the “Surge” button to enter the Surge mode. The green indicator to its left illuminates when activated to show that the Surge mode is selected. Selection of this mode is in conjunction with selection of any one of the pulse current types. The one time only initial 15-second period of the Surge mode (after”Go” when the green pulse frequency indicator is on) is intended for adjusting the peak intensity to be attained during the Surge cycle. The intensity level set during this period will not be exceeded during the Surge cycle. At the end of this 15-second period, the output level falls to zero and the Surge cycle begins. The pulse current will rise linearly from 0 to a level set by the Intensity Control (during the initial 15-second adjustment period) in 3.06 seconds, hold at the intensity for 5.88 seconds, and fall at a linear rate to 0 in 3.06 seconds. The output will remain at 0, or rest, for 18 seconds and repeat the cycle until the end of treatment, or the Hold button is depressed. It is recommended that the intensity be increased only during the initial 15-second period described above. The green indicator next to Pulse Frequency control is on during that period of time.

The pulse frequency in the Surge mode is displayed in the meter when Surge is selected and output is inactive (Hold mode). Two frequencies are available, 35Hz or 83 Hz by depressing the button of the currently selected pulse waveform. Each successive depression of the selected waveform will cause the frequency to alternate between the two frequencies. The frequency displayed (F83 or F35) at the initiation of treatment (depressing the Go button) will be the frequency used in treatment. The selected frequency for the Surge mode will remain intact until changed in the Hold mode by depressing the currently selected waveform button or turning power off and then on which will default to 83Hz.




Press the “Reverse Polarity” button to reverse polarity of the treatment waveform. The indicator to its left indicates normal polarity when Off and reverse polarity when On. Normal polarity sets the patient output such that the red wire (Anode) of the cable is positive with respect to the black wire (Cathode). Reverse polarity sets the patient output such that the red wire is negative (Cathode) with respect to the black wire (Anode). The result is a change of current flow direction.




Frequency is controlled by a three quarter turn adjustment knob. This control varies the repetition rate of pulses applied to the patient during all pulse modes except when the Surge mode is selected. It is inoperative in the DC Continuous mode. At the fully counterclockwise position the pulse frequency is approximately one pulse per second. In the fully clockwise position the pulse frequency is approximately 83 pulses per second. Frequency increases with a clockwise rotation and decreases with a counterclockwise rotation. A green indicator located under the word pulse near the pulse frequency control is illuminated when the pulse energy is present at the electrode jack (output).

O

Mains Off.

Type BF Equipment—Class I

Attention, consult instruction manual.

## 2.2 List of Abbreviations

| | | |
|---|---|---|
| Hz | — | Hertz (pulses per second) |
| LED | — | Light Emitting Diode |
| µs | — | Microsecond (1 x $10^{-6}$ second) |
| mA | — | Milliampere (1 x $10^{-3}$ ampere) |
| S/N | — | Serial Number |
| VAC | — | Volts AC |

# Section 3—Installation

## 3.1 Installation Instructions

1. Plug the attached line cord into a grounded wall outlet that is rated at 120 VAC (±10%)/60Hz *(220 VAC/50Hz for export models)*. Your power supply must match the voltage requirements listed on the serial number label of your device. **Do not connect the Sys*Stim 206 to a power supply rated differently than that described above.**
2. The line cord comes equipped with a standard 3–prong plug. This plug provides grounding for the Sys*Stim 206. Do not defeat its purpose by using 3–to–2 prong adapters or any other means of attaching to a wall outlet.
3. Plug the electrode cable (ME 2260) into the electrode jack.
4. The Sys*Stim 206 may be susceptible to interference originating from shortwave diathermy units operating in close proximity to it. Avoid operating the Sys*Stim 206 adjacent to and simultaneously with operating shortwave devices.
5. Once you have verified proper functioning of your Sys*Stim 206, using the instructions in Section 4, please fill in the enclosed self–addressed Warranty Registration Card and mail it to Mettler Electronics.

# Mode Indication Table

| Waveform | Current | Function | Output Indication | Characteristics | Use |
|---|---|---|---|---|---|
|   | AC | Pulse frequency | Peak Volts | Pulse frequency control, adjust pulse repetition rate from 1 – 83 Hz | Large muscles or muscle groups |
| | | Surge | | AC output will rise, hold and fall at a present rate when Surge is selected. The cycle will continue to repeat until Hold is pressed or treatment time expires. | |
| | | Polarity | | Polarity is reversible by depressing the Reverse Polarity switch. | |
|   | Narrow Pulse | Pulse frequency | Peak Volts | Same as AC. | Small muscles or muscle groups or pain management |
| | | Surge | | Same as AC except Narrow Pulse is surged. | |
| | | Polarity | | Same as AC. | |
|   | Wide Pulse | Pulse frequency | Peak Volts | Same as AC. | Medium muscles or muscle groups |
| | | Surge | | Same as AC except Wide Pulse is surged. | |
| | | Polartiy | | Same as AC. | |
|   | DC Continuous | Polarity | Milliamps | Polarity is reversible by depressing the Reverse Polarity button. | Denervated muscle or iontophoresis |

# Section 4—Operating Instructions

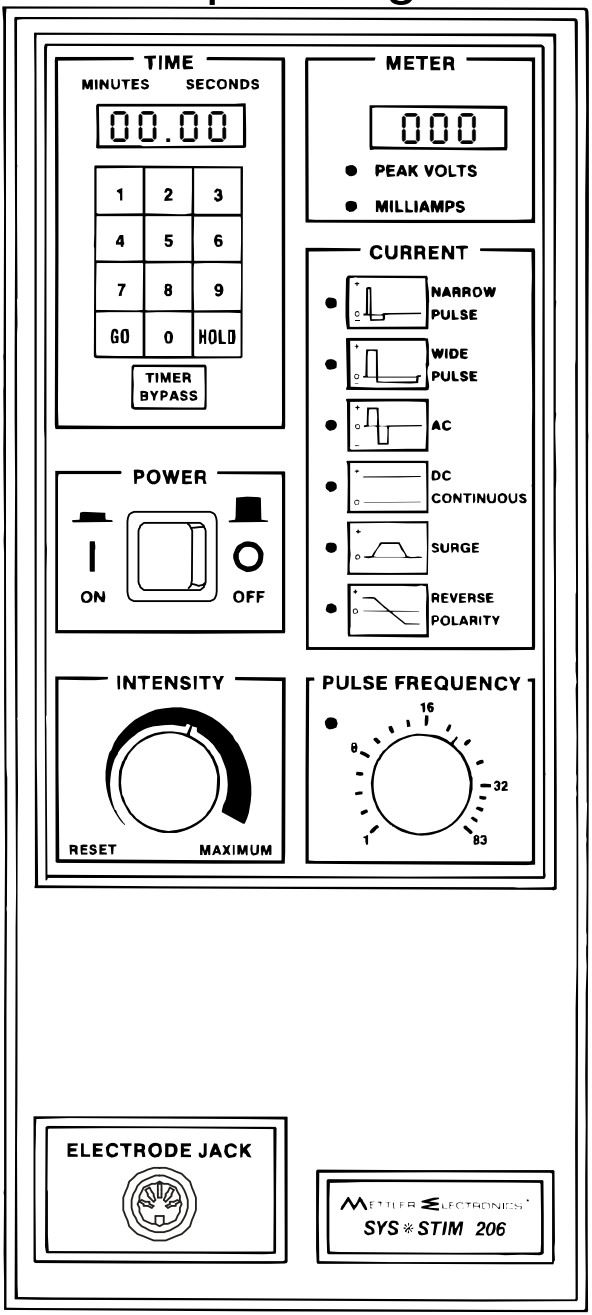



Figure 4.1—Front membrane panel and LED indicators

## 4.1 A Note about Electrodes

To ensure safe operation of the Sys*Stim 206, follow the recommendations listed below:

1. Current is introduced to the body by means of two electrodes, one Active (black and negative) and one Dispersive (red and positive). The Dispersive electrode normally is three to four times larger than the Active and acts as the exit point for the current path, whereas the Active electrode, being smaller, has a greater current density, or concentration, and is the entry point.
2. We strongly encourage careful maintenance of the electrode system. This includes the lead wires as well as the pads themselves. Worn cables and/or poor pads (or the wrong sized pads) can have a significant impact upon treatment results.
3. When using self-adhesive electrodes, do not exceed the number of recommended uses listed on the instructions for V Trodes or other reusable self–adhesive electrodes.
4. Make sure that the entire surface of the electrode is contacting the patient.
5. Do not use moist hot packs to secure electrodes.
6. To avoid skin irritation due to high current density, do not use electrodes smaller in surface area than 2" in diameter.
7. Do not use conductive carbon electrodes with this product especially in the DC Continuous mode.
8. Most self-adhesive electrodes are inappropriate for use with DC Continuous stimulation and may be permanently rendered inoperable if DC Continuous is used with them.
9. To insure efficient current conduction necessary for proper treatment, certain preparations must be made. Any impairment to current conduction on the patient's skin such as an oily or dry surface, or excessive hair coverage, should be eliminated by cleaning, wetting, or use of sonigel couplant (supplied with each unit). Shaving may be necessary depending upon the density of hair coverage. Failure to provide for maximum current conduction efficiency could result in skin irritation relating to an increase in current density at the electrode site.
10. Whenever clinically possible, utilize the largest possible pads to reduce local increases in current density. In situations where small pads are required, use the lowest stimulation intensity necessary to achieve the desired clinical results.

## 4.2 General Operating Instructions:

Before you start.

a) Review precautions, contraindications and side effects/adverse reactions listed in Section 5.

b) Use Mettler Electronics electrodes to ensure safe and effective operation.

c) Verify connection of the line cord to a grounded wall receptacle.

d) Connect the electrode cable (ME 2260) into the electrode jack.

e) Note: Descriptions of the symbols used on controls are in Section 2.

## 4.3 Operating Instructions

1. Set the Intensity control to reset (minimum).
2. Set the Pulse frequency control to Minimum.
3. Insert treatment cords into electrode pads and insert the dual cord plug into the Sys*Stim 206 electrode jack. To assure conductivity across the electrode-to-patient interface, saturate electrode sponges with tap water or other conductive fluids (except when using carbon flex Tens electrodes where the use of conductive gel is required).
4. Depress the Main power control to the On position. The following indications should be present (if not, refer to the troubleshooting guide at the end of this manual.):

   Narrow pulse: green indicator lit.
   Timer indicator: decimal point only.
   Output meter: “0”
   Peak volts: green indicator lit.

5. Place electrode pads over area to be treated using proper technique. (Note: To reduce skin-to-pad resistance, strap the sponge electrode firmly to the skin without impairing circulation.) Note: No straps are necessary when using self-adhesive electrodes.
6. Enter the treatment time using the Treatment Time selector. (Treatment time must be entered using two digits.)

   a. For times up to 9 minutes, enter “0” followed by the second digit. (Example: For 9 minutes, enter “0” then “9”.)

   b. For 10 to 29 minutes, enter a “1” or “2” followed by the second digit. (Example: For 15 minutes, enter a “1” then “5”.)

   c. If an incorrect time is entered accidentally, or to change the entered time, depress the Timer bypass switch (a row of dashed lines should appear in the indicator) and reselect the desired treatment time.

   For combination ultrasound / stimulation treatment only – depress Timer bypass to allow a straight 29-minute count up in even seconds. The Sonicator treatment time selector is used for determining

treatment time in combination treatment. However stimulation continues until hold button is depressed on the Sys*stim 206.

7. Select the desired current mode by depressing one of four selector keys: 1) Narrow pulse; 2) Wide pulse; 3) AC; or 5) DC Continuous. (a green indicator light will come on next to the mode key that is selected.)
8. The surge feature is available for AC and pulse modes only. Depress the control once and F35 is displayed. Press the waveform button and F83 is displayed. These codes indicate the set frequency for the selected Surge Mode.
9. Reverse polarity is available for all modes.
10. After completing steps 1-8, depress “Go” to initiate the selected treatment. Note: Refer to the mode/indication table for the specific output indication display for each mode and option combination.
11. Rotate the Intensity Control clockwise to increase output to the desired treatment level. (Adjust intensity in Surge mode only when the green Pulse Frequency indicator shows pulses present during the first 15 seconds of initial Surge mode operation. After that you will only be able to adjust the intensity level up during the “On” time of the Surge cycle.)
12. Rotate the Pulse Frequency Control clockwise to increase pulse repetition to desired rate (green indicator next to this control flashes with every output pulse.) Note: The Pulse Frequency Control is defeated in DC Continuous and Surge modes.
13. Treatment can be stopped at any time by pressing the Hold switch. The output will fall to zero and the Timer will stop but hold its time remaining. Restart treatment by rotating the Intensity Control fully counterclockwise to reset position then pressing the Go switch. Proceed from step 11. Note: A two-second beeper activates at the end of treatment time except in timer bypass mode.

# Section 5—Indications, Contraindications, Precautions and Adverse Reactions

## 5.1 Indications

The application of pulsating electric currents to the body via electrodes elicits responses from nerves which conduct pain sensation and muscle contraction information. Stimulation of sensory fibers will help block pain while the stimulation of motor fibers will generate pulsatile contractions of the muscle groups innervated by the nerves being stimulated.

Based on this information, some of the indications for use are as follow:

1. Symptomatic relief of chronic intractable pain, acute post traumatic pain or acute post surgical pain. *(Narrow pulse only)*
2. Temporary relaxation of muscle spasm.
3. Prevention of post–surgical phlebo–thrombosis through immediate stimulation of calf muscles.
4. Increasing local blood circulation.
5. Prevention or retardation of disuse atrophy.
6. Muscle re–education.
7. Maintaining or increasing range of motion.
8. Denervated or partially denervated muscles may be stimulated using the pencil electrode to turn on and off the stimulus.

## 5.2 Contraindications

1. Application of galvanic (DC) current can produce skin irritation leading to possible damage. (Knowledge of physiological effects of continuous direct current is essential.)
2. Electrical neuromuscular stimulation should not be administered to individuals who are or may be pregnant.
3. Do not stimulate a patient who has a cardiac demand pacemaker.
4. Patients with implanted electronic devices should not be subjected to stimulation.
5. Placement of electrodes across the chest laterally or anterior/posterior creates a possible hazard with cardiac patients and is therefore not recommended. Do not use transthoracically in any mode. Great care should be exercised in applying the electrical stimulus current to any region of the thorax because the stimulus current may produce cardiac arrhythmia. In patients with known heart

disease, electrical stimulation should be used only after careful physician evaluation and patient instruction.

6. Place electrodes in such a way to avoid stimulation of the carotid sinus (neck) region.
7. Patients with arterial or venous thrombosis, or thrombophlebitis are at risk of developing embolisms when electrical stimulation is applied over or adjacent to the vessels containing the thrombus. If a patient has a history of deep vein thrombosis, even many years past, the affected area should not be stimulated.
8. Do not use over swollen, infected, or inflamed areas. Do not place electrodes over skin eruptions.
9. Fresh fractures should not be stimulated in order to avoid unwanted motion.
10. Do not apply stimulation transcerebrally (through the head).
11. Do not use on cancer patients.
12. Stimulation should not be applied immediately following trauma or to tissues susceptible to hemorrhage.
13. Positioning electrodes over the neck or mouth may cause severe spasm of the laryngeal or pharyngeal muscles. These contractions may be strong enough to close the airway or cause difficulty in breathing.
14. Do not apply stimulation for undiagnosed pain syndromes, until etiology is established.
15. Do not apply electrodes directly over the eyes or inside body cavities.
16. Do not use electrical stimulation in conjunction with high frequency surgical equipment or microwave therapy systems.
17. Denervated muscle stimulation must only be applied to the individual extremities of the human body and in such a fashion that both electrodes are located on the same extremity.

## 5.3 Warnings

1. Electrical stimulation is ineffective for pain of central origin, this includes headache.
2. Electrical stimulation must be applied by a physician or other qualified practitioner and should be used for only the prescribed purposes.
3. Electrical stimulation is of no curative value.
4. Electrical stimulation is a symptomatic treatment and as such suppresses the sensation of pain, which could serve as a protective mechanism.
5. The safety of electrical stimulators for use on children has not been determined. Keep out of reach of children.

6. The long–term effects of chronic electrical stimulation are unknown.
7. Electronic monitoring equipment (such as ECG monitors and ECG alarms) may not operate properly when electrical stimulation is in use.

## 5.4 Precautions

1. Care should be taken in the treatment of patients receiving another type of electrotherapeutic treatment (such as conventional TENS) or having indwelling electrodes, lead wires, or transmitters (for electrophrenic pacing or cerebellar or urinary bladder stimulation). Stimulation currents should not cross the lead wires or electrodes.
2. It is advisable to insulate patients, preferably by use of a wooden treatment table or one that is completely padded by non–conductive material. Added safety is provided if the patient cannot touch any grounded metal parts.
3. To prevent burns, avoid current densities exceeding 2 mA/cm$^2$ when using this device.
4. Isolated cases of skin irritation may occur at the site of electrode placement following long–term application.
5. Avoid placing electrodes directly over open wounds since current density tends to concentrate in these areas.
6. Use extreme caution when treating desensitized areas or on patients who may not be able to report discomfort or pain.
7. Use caution in applying electrical stimulation over areas where there is a loss of normal skin sensation.
8. Adequate precautions should be taken in the case of persons with suspected or diagnosed epilepsy.
9. Never leave the patient unattended during treatment without placing the patient treatment safety switch within the patient's reach and instructing the patient how to use it.
10. Care should be taken following recent surgical procedures when muscle contraction may disrupt the healing process.
11. Do not apply electrical stimulation over the menstruating uterus.
12. Effectiveness for pain management is highly dependent upon patient selection by a person qualified in the management of pain patients.
13. Electrode placement and stimulation settings should only be based on the guidance of the prescribing practitioner.
14. Electrical stimulators should be used only with the leads and electrodes recommended for use by the manufacturer.

15. Iontophoresis to be used only if the labeling of the drug intended for use with the Sys*stim 206 bears adequate directions for use of the device with the drug.
16. Turn on the Sys*Stim 206 before applying electrodes to the patient.

## 5.5 Side Effects/Adverse Reactions

1. Skin irritation and burns beneath the electrodes have been reported with the use of electrical muscle stimulators.
2. Possible allergic reactions to tape, gel or electrodes may occur.

# Section 6—Maintenance and Troubleshooting

## 6.1 Cleaning the Sys*Stim 206

1. The Sys*Stim 206 can be wiped off with a damp cloth. The power cord should be disconnected from the wall before this is done. In the case of stubborn dirt a gentle household cleaner can be sprayed on the cloth and then wiped on the unit. If this method is used, remove any cleaner residue with a damp cloth.
2. Replace the electrodes and cables upon any sign of wear, tear or corrosion to insure proper operation of the device. More information about proper preparation of the patient area to be treated and preparation of the electrode pads is provided in Section 4.
3. Follow the self-adhesive electrode package instructions for the use and care of these electrodes.
4. For routine cleaning of the sponge electrodes and electrode cables use soap and water and rinse thoroughly. Dry cables and their connections after cleaning.

## 6.2 Routine Maintenance

1. Standard medical electrical safety checks should be performed annually by qualified biomedical engineers or technicians trained to perform these procedures.
2. Inspect electrode cable and associated connector for damage.

## 6.3 Troubleshooting the Sys*Stim 206

| Symptom | Action |
|---|---|
| 1. Nothing lights when main power switch is turned on. | Check to ensure that the line cord properly connected to the AC outlet with AC power present. |
| 2. Timer shows an odd time like “54.44” or other invalid times. | Recycle power and try entering the time again. Remember, time must be entered using two digit entry. For times between 1 and 9 minutes, a “0” must be entered prior to pressing the other digit. |
| 3. Timer indicates a number between 01 and 29, but the unit will not start. | Check that the Intensity control is set to the Reset Position. (See note #1 below.) |

| | | |
|---|---|---|
| 4. | Timer is running but the meter reads 0 even when the intensity is set at maximum. | Cycle the Main power control by pressing it once and wait 3 seconds then press it again. This Condition may be due to the extended high current protection described in Note # 2 below. |

Note 1. The Sys*stim 206 is equipped with an interlock sensor that makes it mandatory that the intensity be at the minimum output (zero) when treatment begins and at any mode change. The timer and treatment will not begin when Go is depressed unless the Intensity control is at the Reset position (fully counterclockwise).

Note 2. The Sys*stim 206 is equipped with extended high current sensors that will shut down the output immediately upon an error condition for the protection of the patient. The extended high current condition may be reset by turning the Main power control off for at least 3 seconds before turning it back on.

Caution: An extended high current condition that occurs when the patient is attached and undergoing treatment constitutes a potentially hazardous condition. If the condition repeats it self contact the distributor or manufacturer. Do not continue to use the unit.

If problem is not addressed above, or if additional troubleshooting guidance is desired, call (800) 854-9305 or email service directly at *service@mettlerelectronics.com*.

# Section 7—Specifications

## 7.1 General Specifications:

| | |
|---|---|
| Input: | 120 VAC (±10%)/60Hz<br>220 VAC/50Hz—*export models only* |
| Weight: | 5.6 pounds *(2.5 kg.)* |
| Dimensions: | 4.3 in (H) x 6 in (D) x 13.4 in (L)<br>*(11 cm (H) x 15 cm (D) x 34 cm (L))* |
| Maximum Treatment Time: | 29 minutes |

## 7.2 Output Specifications:

| | |
|---|---|
| Channels: | One |
| Waveforms: | Asymmetrical biphasic with zero net DC *(Narrow and Wide pulses)*<br>Symmetrical biphasic with zero net DC *(AC pulse)*<br>Continuous Direct Current |
| Voltage: | 0 TO 102 VDC |
| Current: | 30 mA max., DC Continuous<br>100 mA peak, Narrow Pulse, Wide and AC pulses |
| Phase Duration: | |
| Narrow Pulse | 100 µs followed by 400 µs at ¼ amplitude |
| Wide Pulse | 300 µs followed by 1200 µs at ¼ amplitude |
| AC | 300 µs in each direction |
| Frequency: | Pulse Mode: 1-83 Hz |
| Surge Cycle: | 6 seconds On and 18 seconds Off with 3 second Up and Down ramps. Pulse frequency set to either 35 or 83 Hz. |

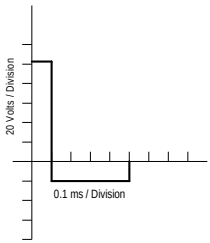



Figure 7.1—Narrow Pulse Illustration

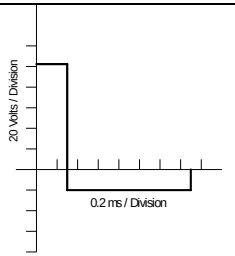



Figure 7.2—Wide Pulse Illustration

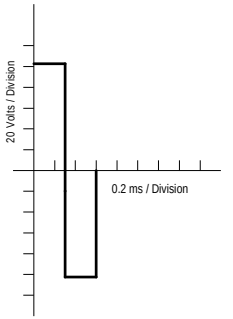



Figure 7.3—AC Pulse Illustration

# Section 8—Accessories

## 8.1 Ordering Information:

Therapy products and accessories are available from Mettler Electronics authorized Distributors. For information regarding either Mettler products or a distributor near you, please call toll free, (800) 854–9305 or phone (714) 533–2221 in areas outside the continental United States. Ask for Customer Service. Mettler Electronics is open from 7 AM until 5 PM Pacific Time for your convenience. The email address for Customer Service is *mail@mettlerelectronics.com*.

## 8.2 Sys*Stim 206 Accessories

| Catalogue # | Item Description |
|---|---|
| 2000 | 4 Sponge electrodes (2" x 2") |
| 2001 | 24 Sponge inserts (2" x 2") |
| 2002 | 4 Sponge electrodes (4" x 4") |
| 2003 | 24 Sponge inserts (4" x 4") |
| 2004 | 1 Sponge electrode (3.5" x 7") |
| 2005 | 12 Sponge inserts (3.5" x 7") |
| 2006 | 1 Sponge electrode (8" x 10") |
| 2007 | 12 Sponge inserts (8" x 10") |
| 2008 | 4 Electrode straps (24") |
| 2009 | 4 Electrode straps (48") |
| 2023 | Pencil electrode set with push button stimulation control, (includes handle, 4 different sizes of stainless steel spot electrode tips, and carrying case) |
| 2027 | Pin to banana adapter plug set to be used with ME 2026, 2260 or 2201 electrode cables. Four each, gray. |
| 2030 | Bifurcated cord set, one red and one black, pin termination |
| 2221 | EZ Trode – 2" diameter round self–adhering, reusable electrodes with lead wires; case of ten packages (four electrodes/pkg.) |
| 2222 | EZ Trode – 2.75" diameter round self–adhering, reusable electrodes with lead wires; case of ten packages (four electrodes/pkg.) |
| 2223 | EZ Trode – 2" x 5" self–adhering, reusable electrodes with lead wires, case of 10 packages (2 electrodes/pkg.) |
| 2224 | EZ Trode – 2" square self–adhering, reusable electrodes with lead wires; case of ten packages (four |

| | |
|---|---|
| | electrodes/pkg.) |
| 2260 | Electrode cable for the Sys∗Stim 206 with pins |
| 2702 | V Trode –2" diameter round electrodes with lead wires, case of ten packages (four electrodes/pkg.) |
| 2703 | V Trode –2.75" diameter round electrodes with lead wires, case of 10 packages (four electrodes/pkg.) |
| 2704 | V Trode –2" x 4" oval electrodes with lead wires, case of 10 packages (four electrodes/pkg.) |
| 2705 | V Trode –2" square electrodes with lead wires, case of 10 packages (four electrodes/pkg.) |