SONICLEAN™
SO EASY – SO FAST – SO CLEAN

ULTRASONIC PERFORMANCE METER

Models SONIC-200 / SONIC 250

User manual

Version 1.3.1

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AUSTRALIA

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SAFETY PRECAUTIONS

INSTRUMENT CASE

The instrument case is not waterproof and should not be immersed in water. If water enters the case the battery (and/or any external power source) should be removed immediately. The unit should then be returned to Soniclean for repair. There are no user serviceable parts inside the case. If maintenance or repair is required please send the complete instrument to an authorised Soniclean service centre.

CONNECTORS

The ultrasonic probe should be connected to the RCA socket located on top of the meter above the LED bar display. An external DC supply (if used) should only be plugged into the DC power socket located on the top of the unit. Do not force plugs into sockets.

BEFORE FIRST USE

Please read and familiarise yourself with this manual prior to first use.

ULTRASOUND PRESSURE

Ultrasonic equipment under test generates high amplitude ultrasonic sound which can be harmful to ears. Ensure adequate ear protection is worn while this unit is in use.

Table of Contents

1. Introduction

The Ultrasonic Performance Meter models Sonic-200 and Sonic-250 (UPM) provides an indication of the performance of an ultrasonic cleaner. It measures the signal produced when cavitation bubbles implode on the probe's surface and therefore indicates how effective the ultrasonic cleaning action is. It is designed to replace the widely used foil test with a quick, clean testing procedure.

Soniclean's Ultrasonic Performance Meter is easy to use. The probe is lowered into the machine's tank and the pushbutton is held to take a reading. The performance is indicated on a LED bargraph on a scale of 1 to 10 which is updated continuously for as long as the pushbutton is held.

The simplicity of the meter allows it to be easily adapted to a number of different machine characterisation regimes. For example:

1. The performance level can be measured over a period of time to ensure the ultrasonic cleaning action persists as expected.
2. Measurements of the ultrasonic performance can be made at different locations in the tank and at different depths to confirm an even distribution of ultrasonic activity.
3. Performance of an ultrasonic cleaner can be monitored over its lifetime, allowing degradation to be identified well before it becomes a problem.

2. Description

The UPM comprises a sensing probe and the meter itself.

2.1. Sensing Probe

The probe comprises a 400 mm long tube made from 316 stainless steel with a sensor housing (the probe head) at one end made from 304 stainless steel, making it resistant to most chemicals. A 560 mm cable connects the probe to the meter unit. The ultrasonic sensor at the end of the probe is isolated from the rest of the probe to increase accuracy and operator comfort.

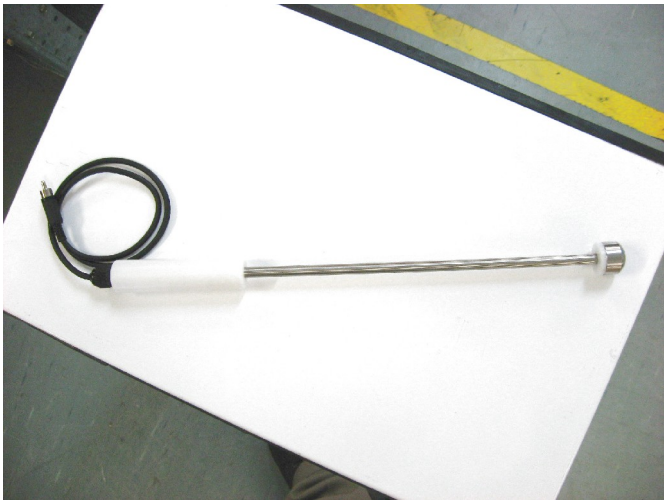

Figure 1: The UPM probe

Cavitation signals are detected by the probe and sent to the meter unit via the cable for processing and display. A single RCA-style connector makes the connection of the probe to the meter quick and easy.

2.2. The meter unit

The UPM meter unit is housed in a small plastic box (68 mm wide, 130 mm tall, 25 mm thick). It contains the processing and display circuitry. Power can be supplied by an internal user-replaceable 9V battery or an user-supplied DC adapter. The UPM consumes between 5 mA and 70 mA while operating.

The UPM is operating normally whenever the Power LED is lit. Normally this will occur whenever the pushbutton is pressed. If the Power LED does not come on when the button is pressed it indicates that the battery is flat and needs to be replaced.

Figure 2: Left - The UPM meter unit's front panel. Right – the upper side panel of the UPM meter showing the probe plug in the centre and the DC power connector to the right.

The front of the UPM also accommodates the 10-segment LED bargraph used to indicate the ultrasonic performance. The figure shows the front and upper side

face of the electronic case. On the upper side panel is a 1.6mm DC power socket for connection to an external 9-12V supply.

2.3. Power sources

The UPM is powered by a standard 9V battery housed within the meter unit. Rechargeable batteries (Ni-MH or similar) can be used in the UPM.

Alternatively one can use an external 9-12V DC power supply to power the unit. When such a supply is used the front panel pushbutton is disabled and the UPM will run continuously. Note that the external DC supply will not charge any battery fitted at the time even if it is a rechargeable type.

3. Operation

The UPM is simple to use. The probe is lowered into the ultrasonic cleaner's tank and the ultrasonics are activated. The probe's head should be completely submerged. Pressing the central pushbutton on the meter unit will turn the UPM on. Performance measurements will be made on a continous basis until the button is released, at which point the unit will turn off. If the optional DC power adapter is being used the UPM will remain on until the DC power supply is turned off or disconnected.

Satisfactory cavitation is indicated when the bar graph displays any green segments, corresponding to a performance measurement between 7 and 10.

It is important to note that disturbed water inhibits cavitation. For this reason the probe should remain stationary in the tank and the liquid allowed to settle before a reading is taken. Furthermore, to facilitate the comparison of measurements, readings should be taken with the probe submerged to a consistent depth.

4. Maintenance and servicing

The internal 9V battery can be accessed from the rear of the meter unit by sliding the battery cover. The UPM is supplied with a single non-rechargeable battery; replacement of the battery when exhausted is the user's responsibility.

Apart from the battery there are no user serviceable parts inside the probe or the meter. Attempting to open either the meter case or the probe will void the warranty and may cause irrepairable damage. If servicing of either the meter of the probe is required please contact Soniclean, your distributor or a Soniclean service centre.

To clean the meter use only a water-damped cloth; no solvents or abrasives should be used particularly on the meter or damage to the box's surface may result.

The jacket of the cable between the probe and the meter unit jacket is PVC and can be cleaned with a water-damped cloth.

4.1. Calibration

Regular calibration of the UPM is recommended every 12 months. Please contact Soniclean for pricing of this service.

Appendix A. Specifications

Machine Operating Frequency:	30kHz - 50kHz
Display:	Ten segment three colour LED bar graph
Electrical supply:	Internal 9V battery Optional 8-12V DC external supply
Warranty:	1 year warranty against manufacturing defects
Meter Dimensions:	75W x 105D x 25H mm
Weight:	136g
Case material	ABS UL 94 V-0 std (-40°C - 75°C)
Probe type:	Hand-held
Probe calibration temperature:	15°C - 25°C
Probe material and length:	Stainless steel 316/304 probe with plastic handle, 400mm standard length
Probe cable length	560mm

Appendix B. Product Warranty

The cavitation meter is covered by a limited warranty. The unit is waranted to the original purchaser to be free from defects in materials and workmanship under normal installation, use and service for a period of one (1) year from the date of shipment.

The obligation of Soniclean under this warranty shall be limited to the repair or replacement (at our option) during the warranty period of any part which proves defective in materials or workmanship under normal use and service, provided the product is returned to Soniclean or to an authorised Soniclean service centres. Transportation charges should be prepaid. This one (1) year warranty is in lieu of all other expressed warranties, obligations, or liabilities.

Appendix C. Contacting Soniclean

Soniclean Pty Ltd
38 Anderson St
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AUSTRALIA

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Appendix D. Warranty forms

WARRANTY (Keep for Own Records)

Your Soniclean Ultrasonic Performance Meter (UPM) is guaranteed for 12 months from the date of purchase. We undertake to repair FREE OF CHARGE or exchange (at our discretion) any part found to be damaged due to a manufacturing fault. This warranty is not transferable and does not cover damage caused by misuse, neglect, failure to observe operating instructions, failure to keep the UPM clean, accident, use of incorrect power supply or attempts to repair by unauthorised personnel. The UPM Probe is not covered against chemical and/or cavitation/ultrasonic erosion. The purchaser agrees to undertake the cost and responsibility of packing and dispatch for safe and timely transportation of the UPM to the manufacturer via the premises of the distributor or authorised sales agent.

IMPORTANT: To obtain service under warranty this form must be completed at the date of purchase and retained. Please retain purchase invoice or receipt for verification if required by the manufacturer.

Purchased from: .....

Date of Purchase: .....

Model: **SONIC 200 / SONIC 250**

Serial number:.....

WARRANTY (Return to manufacturer)

Your Soniclean Ultrasonic Performance Meter (UPM) is guaranteed for 12 months from the date of purchase. We undertake to repair FREE OF CHARGE or exchange (at our discretion) any part found to be damaged due to a manufacturing fault. This warranty is not transferable and does not cover damage caused by misuse, neglect, failure to observe operating instructions, failure to keep the UPM clean, accident, use of incorrect power supply or attempts to repair by unauthorised personnel. The UPM Probe is not covered against chemical and/or cavitation/ultrasonic erosion. The purchaser agrees to undertake the cost and responsibility of packing and dispatch for safe and timely transportation of the UPM to the manufacturer via the premises of the distributor or authorised sales agent.

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