

# SEALMASTER™

QA VALIDATION SYSTEM

FOR INDUCTION CAP SEALING

## USER HANDBOOK

**PATROLMAN™**

QA Validation Systems from Bmi Limited

**Bmi**  
BESPOKE MARKETING  
INITIATIVES

## INDUCTION SEALING AND SEALMASTER™

The **SEALMASTER™** is designed to monitor and assist with the accuracy of the Induction Sealing process.

Induction sealing bonds an aluminium foil seal across the container neck, which:

- Prevents product leakage.
- Provides tamper evidence.
- Improves product shelf life due to the excellent barrier properties of the foil and its airtight seal onto the container.
- Improves pack presentation and customer acceptance.
- Prevents pilfering.



Containers are filled and capped with a closure fitted with an aluminium induction foil seal (wad) and then passed under the induction sealer. This transmits an electromagnetic field, somewhat similar to a microwave oven, which heats the induction seal and bonds it to the container neck.

The **SEALMASTER™** collects the transferred induction data, which can be used for troubleshooting and for quality assurance.

# OPERATING INSTRUCTIONS

## WHAT'S INSIDE

The **SEALMASTER™** kit contains:

1. Transmitter module placed inside the bottle
2. Hand held display unit
3. Labels for QA samples on the production line
4. Handbook
5. Data download software CD\*

\* optional



## HOW SEALMASTER™ WORKS

In use, the container with the transmitter module inserted, is passed down the production line underneath the induction sealer.

It detects and measures the electromagnetic field from the induction sealer and transmits this information to the hand held display unit, which incorporates a microprocessor for data processing and a screen giving a digital display.

### HAND HELD DISPLAY UNIT

The display is switched on by pressing the centre of the three buttons. The five programme menu options are displayed on start up:

1. Set Mode
2. Monitoring Mode
3. History Mode
4. Configure Handset Mode
5. Power Off



#### 1. Set Mode.

This mode is used to record the settings that correspond to optimum seal quality. Upper and Lower Set Points are recorded, to give the Sealing Range (operating window) and this data is saved to memory. SEALMASTER™ can save several sets of parameters, if required, corresponding to different containers/closures being used and each can be individually named.

SEALMASTER™ measures the Full Operating Range or Operating Window. This is the difference between the Lower Set Point at which a good seal is first obtained and the Upper Set Point just before overheating is observed as power is increased. It also calculates a narrower Recommended Operating Range within the Full Operating Range.

## OPERATING INSTRUCTIONS

The Safety Margin can be illustrated as follows:



Use of this Recommended Operating Range gives an added safety margin for consistent sealing (*fig. 1*).



*Figure 1*

**SEALMASTER™** can also be used for fault finding. If sealing problems should occur and the **SEALMASTER™** readings are within the correct Sealing Range then the cause of the problems is elsewhere e.g. incorrect closure application torque, bottle neck or cap liner problems etc. However if the readings are no longer within the Sealing Range then either the induction sealer or its setting may be faulty and should be checked.

## 2. Monitoring Mode.

The sealing process is monitored by passing the container with the transmitter module inserted, down the production line at regular time intervals. When the hand held receiver is set to Monitoring Mode it automatically compares the received values to the recommended setting values stored in the memory. The current readings are displayed as a numeric value, with a statement as to whether they are within the set range and an indicative symbol of ✓ (OK), ! (caution) or X (error) is displayed as follows:



Figure 2



Figure 3



Figure 4

## 3. History Mode.

All Process Monitoring readings can be stored to memory, if desired, to give a history log for QA records (*fig. 5*). This is valuable for traceability and fault analysis. There is also an option to download this information for use in spreadsheets.

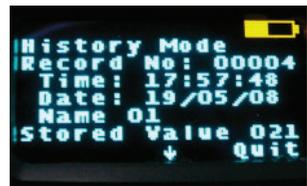


Figure 5

## 4. Configure Handset Mode.

This allows personalised configuration of the handset in various ways including date and time settings, number of passes, percentage settings, etc.

## 5. Power Off

This switches the hand held unit off from the menu. The unit also switches off automatically after a period of inactivity in order to conserve the battery.

# OPERATING INSTRUCTIONS

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### PREPARING THE TRANSMITTER

BMi will tailor fit the transmitter into your container/closure. Please send your sample bottles and caps to the following address:

Bespoke Marketing Initiatives Ltd  
12 The Sadlers  
Badgers Copse  
Tilehurst  
Reading  
RG31 6QZ  
United Kingdom

If you have any queries about this, please call us on

Office +44 (0)1189 422 441  
Mobile +44 (0)7860 346 709  
sales@bespokemi.com



### HAND HELD RECEIVER UNIT

Switch on the hand held receiver by pressing the Up button. The BMi and SEAL Master logos will be shown, followed by a list of menu options:

1. Set Mode
2. Monitoring Mode
3. History Mode
4. Configure Handset Mode
5. Power Off

*switch unit  
on with the  
'UP' button*



## 1. Set Mode.

This is highlighted by default at start up. To select, press the left hand button beneath Select on the screen. The menu then invites you to **Select Product**, which allows you to name your bottle/product (fig. 6). Either use the left Select button to accept 'Name 01' or use the right Edit button followed by the Up or Down buttons to scroll through the alphabet in upper case, lower case and numbers 0-9 to enter your own bottle name e.g. 500ml XYZ.

The menu will then invite you to **Pass unit** down line 3 times at Lower set point (fig. 7). Place the container with the transmitter module on the conveyor, with the induction sealer set at the Lower Set Point, (the lowest induction sealer settings at which a satisfactory seal is achieved when using normal induction seal caps) and collects it as it comes through the sealer.

After a short pause, a reading will appear on the hand held unit with the message Pass 1 of 3 and Awaiting signal (fig. 8).

Pass the transmitter down the line again, to get a second reading and then a third as instructed. The unit will calculate the average of these three readings and record the Lower Set Point accordingly (fig. 9).

If the message Warning there is more than 10% difference between values is obtained, then you have the option of aborting, continuing or retrying. We recommend that you find the cause of variations wherever possible, e.g. varying bottle position under sealing head due to guide rails being set too wide, slipping or vibrating on the belt etc (fig. 10).

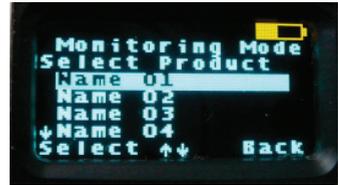


Figure 6



Figure 7



Figure 8

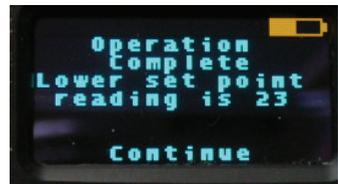


Figure 9

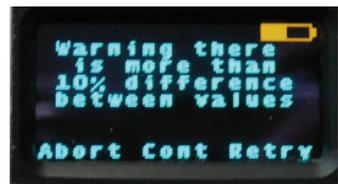


Figure 10

# OPERATING INSTRUCTIONS

Note: **SEALMASTER™** is set by default to calculate the average of three readings and warn when there is more than a 10% variation between individual readings. These default settings can be changed in the Configure Handset Mode on the main menu to for instance, an average of 5 readings and a maximum variation of 5%.

Also note that there is an inbuilt timer, which switches the hand held unit off after a predetermined time to conserve battery life, so do not delay unduly between readings.

The next menu screen will say **Operation Complete** and invite you to determine the Upper Set point in a similar way. Press Continue and take 3 readings to determine the Upper Set Point.

Pressing Continue again will display the Full Operating Range, 21 to 28 in this example and the Recommended Operating Range, 22 to 27 in this example (*fig. 11*). **SEALMASTER™** has recorded the Upper and Lower set points for the Full Operating Range and then calculated a Recommended Operating Range with limits set 15% (adjustable in Configure Handset Mode) inside the full Operating Range for an additional margin of safety

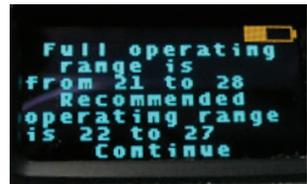


Figure 11

## 2. Monitoring Mode

This involves passing the **SEALMASTER™** down the production line at regular intervals during a production run to ensure that the initial set conditions have been maintained.



Figure 12

**SEALMASTER™** will automatically compare the current production reading to the Full Operating Range and the Recommended Operating Range. It will display the current value and one of the following three symbols:

- ✓ If the reading is fully within both the Recommended and Full Operating Ranges e.g.



Figure 13

- ! If the reading is within the Full Operating Range but outside the Recommended Range e.g.



Figure 14

- X If the reading is outside both the Recommended and Full Operating Range e.g.

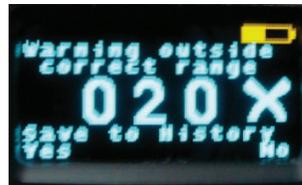


Figure 15

### 3. History Mode

After taking readings in Monitoring Mode there is the options of Save to History. Select the appropriate Yes or No button to save or discard readings as desired.

To view saved data select History Mode from the main menu and all values previously saved can be viewed or downloaded to a computer (if this last option has been selected at the time of purchase).

# OPERATING INSTRUCTIONS

All readings viewed in History Mode are shown with the date and time at which they were taken. This can be used for QA records and product traceability information (*fig. 16*).



Figure 16

## 4. Configure Handset

This option allows users to configure their unit to their own requirements.

## 5. Switch Off

This allows the **SEALMASTER™** to be switched off using the menu

# MAINTENANCE

## RECALIBRATION

The unit should be recalibrated on an annual basis. This service is available through BMI.

Please send your complete kit to the following address:

Bespoke Marketing Initiatives Ltd  
12 The Sadlers  
Badgers Copse  
Tilehurst  
Reading  
RG31 6QZ  
United Kingdom

If you have any queries about this, please call us on

Office +44 (0)1189 422 441  
Mobile +44 (0)7860 346 709  
sales@bespokemi.com

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