

NOTES

**innovAg**

**MiniTest**

**Dairy Vacuum  
&  
Pulsation Meter**

**User Manual**

Part No. DR51-0028-02

## **12. Specifications**

### **Pulsation:**

Rate Range: 40 to 500 CPM.

Rate accuracy:  $\pm 2\%$ .

Ratio accuracy:  $\pm 2\%$  of calculated value.

Time (ms) accuracy:  $\pm 2\%$ .

Sample rate: 300 samples/sec.

### **Pressure:**

Range: +10 to -80 kPa at 1 atm.

Accuracy:  $\pm 0.5$  kPa

Repeatability:  $\pm 0.3$  kPa

Resolution: 0.1 kPa

### **General:**

Operating Temperature: 5 to 40°C

Storage Temperature: 0 to 60°C

Automatic turn-off time: 10 minutes after last key press  
if no vacuum on port.




Batteries: Two 'AA' Alkaline or  
NiCd/NiMH rechargeable cells.

Operating voltage: 1.4V to 5VDC

Specifications are subject to change without notice.

## 11. Problems with your MiniTest

Before returning your MiniTest for repair, check the following:

- The unit does not turn on or won't stay on – replace batteries.
- The VAC or PUL light is flashing – Batteries are getting low.
- The MiniTest reads vacuum with no vacuum connected – Disconnect from the vacuum supply and turn it off and on again to reset the zero. If it still does not display zero the button sequence below will manually force the unit to accept the pressure value on the port as zero:-
  1. Turn the unit on. Select VAC mode.
  2. Press and hold the  key. After about 5 seconds both the VAC or PUL lights will turn on. Do not release the key yet.
  3. Press both the  and  keys. The PUL light should go off indicating the manual zero has been accepted. Release all keys and check the display shows 0.0.
- Damaged MiniTest's should be returned for repair. There are no user serviceable parts inside the case, and opening it may void your warranty.
- If you have a question or problem you cannot solve, contact InnovAg or your local distributor.

## FCC Compliance Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

## Declaration of Conformity

### Standards to which Conformity is Declared:

- EN55011:1998
- EN50082-1:1997
- EN 61000-4-2
- EN 61000-4-3

**Manufacturer's Name:** InnovAg Pty. Ltd.

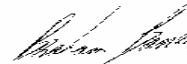
**Manufacturer's Address:** 82 Victoria St.  
Sandringham  
Victoria 3191  
Australia

**Type of Equipment:** Pulsation Tester/ Vacuum Gauge

**Brand Name:** MiniTest

**Model Number:** DR40-0080

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directives and Standards.



Signature  
Braham Bassar  
Director  
InnovAg Pty. Ltd

Date: 30 October 2001

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## 10. Repairs

DO NOT OPEN THE CASE – THERE ARE NO USER SERVICABLE PARTS INSIDE AND YOU MAY VOID YOUR WARRANTY. Defective units should always be sent to InnovAg or your nearest distributor.

Smaller repairs that can be performed by your distributor are:

- Changing parts of the housing.
- Replacing hoses
- Calibration (only if a certified original calibrator is used)

For other defects, please contact the manufacturer for further instructions:

### **InnovAg**

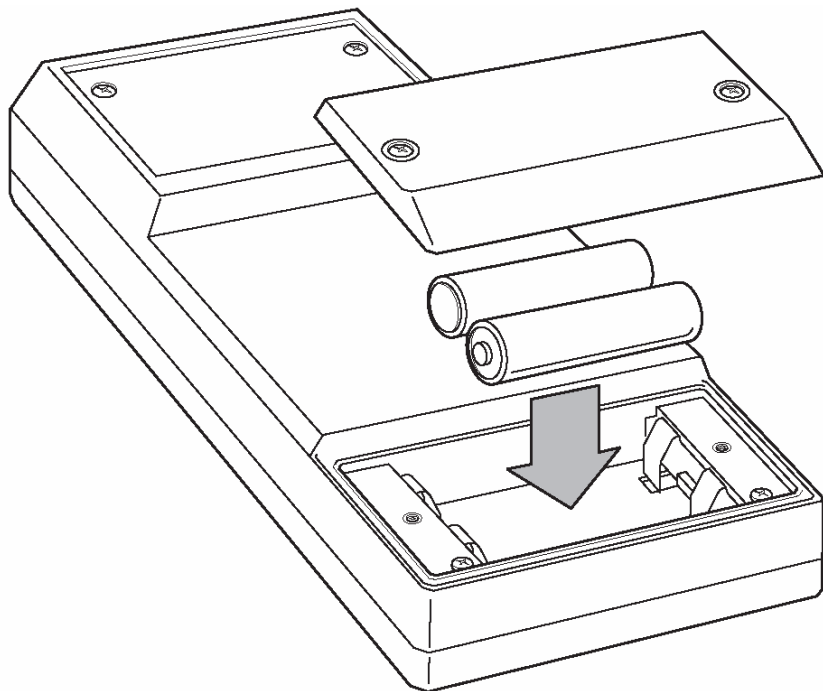
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Fax +613 9521 8009  
email: [innovag@cpdesign.com.au](mailto:innovag@cpdesign.com.au)

## 9. Replacing the batteries

When it's time to replace MiniTest's batteries, the mode light will start to flash. We recommend the batteries be replaced as soon as possible once the low battery indicator starts to prevent unreliable readings or operation.

Batteries should not be left in the unit for extended periods in case of leakage. Use quality Alkaline or NiMH 'AA' cells.



## 1. What is MiniTest?

MiniTest is a small, light, hand-held instrument for testing vacuum supplies and pulsators in dairies. It uses the same high-accuracy analysis of its 'big brother' DairyTest Professional, but in a smaller, lighter, lower-cost format. It is intended for use by personnel with technical knowledge of dairy operation as an accessory to a professional test kit, i.e. for bench-testing of pulsators and to do a quick check on the dairy's performance. It has only a single vacuum port and cannot be connected to a PC or printer.

Within Australia we have a Freecall help line which is there if you have problems (**1800 061 167**). International users should call their local distributor or contact us via fax +613 9521 8009, or email [innovag@cpdesign.com.au](mailto:innovag@cpdesign.com.au).

## 2. Safety Precautions

MiniTest is intended to be used in the milking stall – always allow for the unpredictable nature of the animals.

During the measurements sharp needles may be used. Take care they do not hurt people or animals. Always ask the dairy farmer about the behaviour of the animals and milking method used.

If using MiniTest in wet tests, always keep the unit above the test point to prevent fluid entering.

## 3. Maintenance and Calibration

### Maintenance

Clean the MiniTest with a moist cloth. Do not use cleaning agents.

The MiniTest performs a self test when turned on, lighting up the LED's and the LCD. If an error message is displayed (E-01 for example), or you suspect the unit is damaged, contact InnovAg or the local distributor for further information.


### Calibration

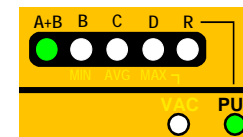
MiniTest automatically performs a zero calibration when turned on. **Do not turn on your MiniTest with vacuum connected.** If the unit reads other than zero on start-up a manual 'force-zero' feature can be used. See the '**Problems with your MiniTest**' section.

A complete calibration should be performed with an approved and certified calibration test instrument every 24 months. This can be organised by InnovAg or the local distributor.

## 8. Checking Pulsation

MiniTest can display Pulsation Ratios **A+B**, **B**, **C** and **D** as well as **Rate** (in CPM).

Press the  key until the required function light is on.



**Note:** Use Vacuum Mode to measure Maximum Vacuum of the pulsation waveform.

### Stability Indication

If the current reading varies from the average by more than 5% then the pulsation being measured is not stable. The **Function** light will flash to warn the user to wait until the readings settle. If the **Function** light does not stop flashing there is a problem with the pulsation being measured.

### Auto-power OFF

If there is no vacuum on the port and you don't push any keys MiniTest will automatically turn OFF after 10 minutes to save battery life.






### What is it measuring?

All Pulsation measurements are taken using 4kPa thresholds, sampled 300 times per second. Readings conform to ISO standards by averaging over 5 cycles. A 'rolling' system is used where measurements from the current cycle and the four previous ones are averaged together, which means ISO requirements are met while the screen is still continuously updated.

## 7. Pulsators – Setting up.

MiniTest can display Pulsation Ratios (A+B, B, C and D) as either percentage (%) of the total cycle, or in milliseconds (ms). Rate measurement is fixed in Cycles-per-minute (CPM).

### Changing/checking the setting.

1. Make sure MiniTest is turned ON and in Pulsation mode. 
2. Press and hold the  key for about 3 seconds to enter setup mode. All the Result lights will go off and the display will show  $r = P$  (Percentage, %) or  $r = t$  (Time in ms).
3. Press either the  or  key to set the required units.
4. Press the  key to save the changes and return to normal operation.

### Auto Exit

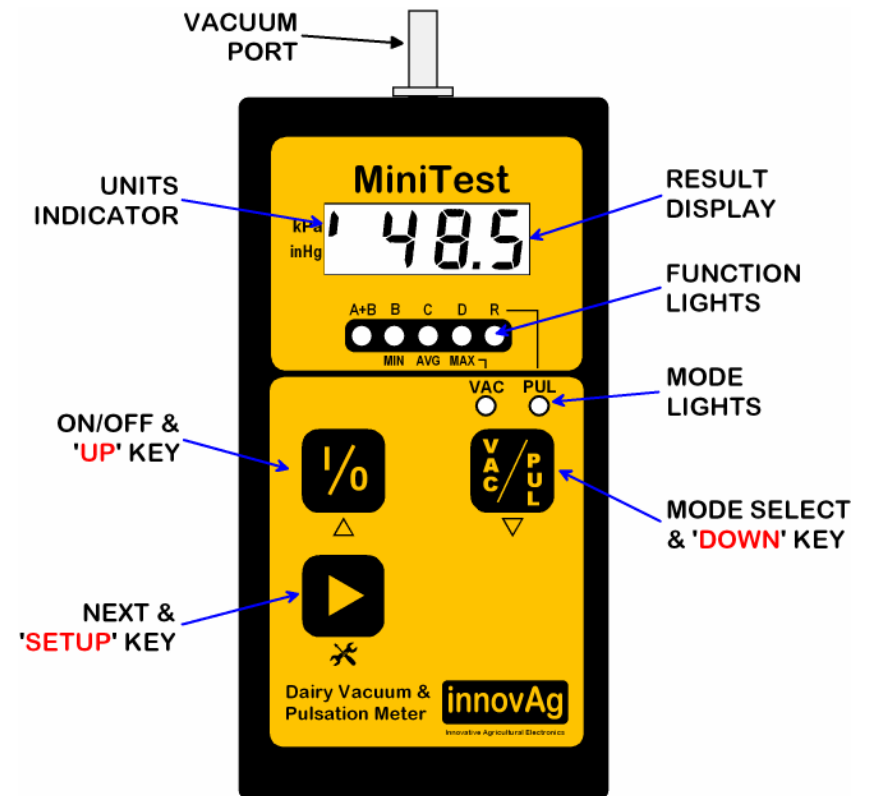
The tester will automatically exit Setup mode after 1 minute if you don't press any keys.

### Saved Settings

Settings are kept until changed by you. They do not reset when the unit is turned off or the batteries run flat.

## 4. The Front Panel.

The MiniTest can measure six pulsation parameters (A+B, B, C, D ratios, rate and Max Vacuum) and three vacuum parameters (Minimum, Average and Maximum). The picture below shows the front panel indicators and controls.








### Low-Battery Indication

If the remaining battery capacity is getting low the current Mode light will flash. Replace/charge the batteries.

## 5. Vacuum – Setting up.

MiniTest can display vacuum in either kiloPascals (kPa) or inches-of-mercury (inHg) units as required. The **Units Indicator** on the left-hand side of the display will appear next to those currently set.

### Changing/checking the setting.

1. Make sure the unit is turned ON and in Vacuum mode. 
2. Press and hold the  key for about 3 seconds to enter setup mode. All the Result lights will go off and the display will show **U = PA** (kPa) or **U = in** (inHg).
5. Press either the  or  key to change between kPa and inHg.
6. Press the  key to save the changes and return to normal operation.

### Auto Exit


MiniTest will automatically exit Setup mode after 1 minute if you don't press any keys.

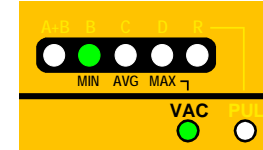
### Startup Mode

Vacuum mode defaults to Average (AVG) on startup. The setting is kept when the mode is changed to Pulsation but is reset when the unit is turned off or the batteries run flat.

## 6. Checking Vacuum

When set to Vacuum mode (VAC) the MiniTest will display the minimum, average or maximum vacuum level on the digital display.

Press the  key until the required function light is on.



### Auto-power OFF

If there is no vacuum on the port and you don't push any keys the unit will automatically turn OFF after 10 minutes to save battery life.

### What is it measuring?

All vacuum measurements are taken over a rolling 1.5 second period, sampled 300 times per second.