



PROCAL

PERFORMING A CALIBRATION
ON A MOTECH MIC39
MULTIMETER

ProCal : CALIBRATE AN INSTRUMENT

Step 1

→ Start ProCal

→ Select File → Search For a Procedure (Calibrate Instrument)
→ Standard Calibration → By Model Number

→ Enter MIC39, select the procedure found and click Next >>

The screenshot shows the ProCal software interface. The main window is titled "ProCal [User Name=A.B Smith : User Level=ADMINISTRATOR]". The menu bar includes File, Edit, Control, Help, User Login, and About. The "File" menu is open, showing options like "Calibrate An Instrument", "Instrument Calibration Priority Lists", "Search For a Procedure (Calibrate Instrument)", "Repair An Instrument", "Add After Adjustment Results", "Recall a Certificate", "Resume a Calibration (Calibration Incomplete)", "Recover a Calibration", "Print Test Summary", "Print Job Information", "Save & Exit Calibration", "Check Instrument Traceability", and "Exit". The "Search For a Procedure (Calibrate Instrument)" menu item is selected, and its sub-menu is open, showing "Standard Calibration", "Accredited Calibration", "C of C Certificate", "Electrical Safety Test", and "Test Report". The "Standard Calibration" sub-menu is also open, showing "By Manufacturer", "By Instrument Description", "By Model Number", and "List All Procedures". The "By Model Number" option is selected, and an arrow points to the "Open procedure by model number" dialog box. This dialog box has a text input field containing "MIC39" and "OK" and "Cancel" buttons. An arrow points from the "MIC39" input field to the "Procedure List - 4 Match" dialog box. This dialog box shows a table with the following data:

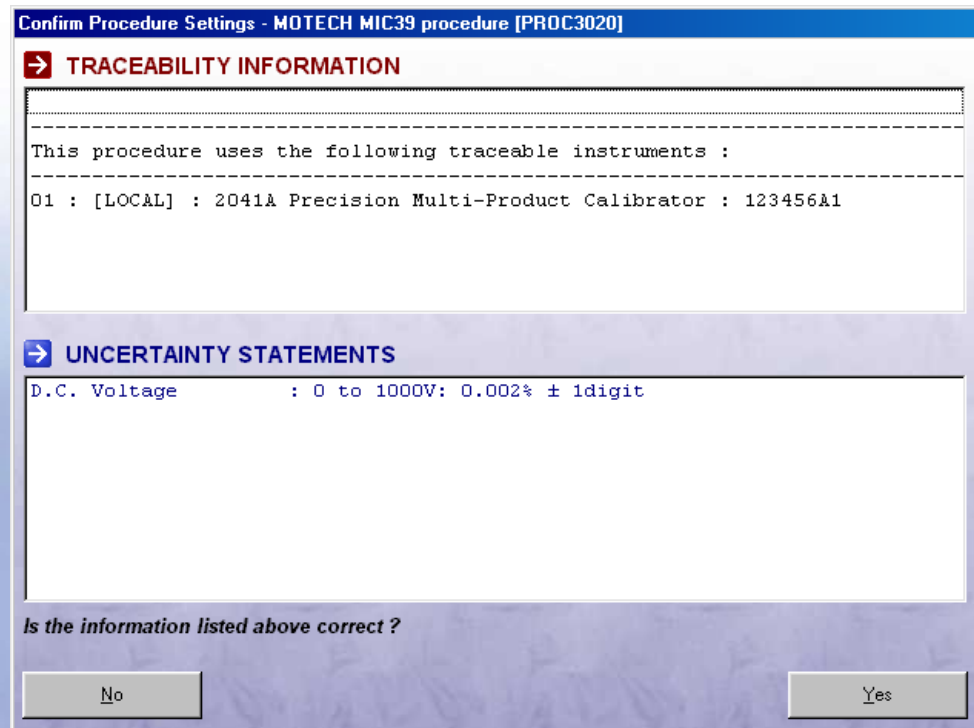
No.	Manufacturer	Model	Description	Version
3020	MOTECH	MIC39	Multimeter	1.00

Below the table, the "Procedure Type" is set to "Standard Certificate". At the bottom of the dialog box, there are "View Technical File", "Search", "Cancel", and "Next >>" buttons. An arrow points from the "Next >>" button to the right.

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Step 2

→ The traceability and uncertainty statement information is displayed – click YES to proceed



Confirm Procedure Settings - MOTECH MIC39 procedure [PROC3020]

→ TRACEABILITY INFORMATION

This procedure uses the following traceable instruments :

01 : [LOCAL] : 2041A Precision Multi-Product Calibrator : 123456A1

→ UNCERTAINTY STATEMENTS

D.C. Voltage : 0 to 1000V: 0.002% ± 1digit

Is the information listed above correct ?

No Yes



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Step 3

- Enter serial number 1234
- Set Cal Interval to 52 weeks
- Select/Enter the tested by name
- Select customer name 'Arrow Calibrations' – then click Next >>

Calibration Information - Standard Certificate

Instrument Information

System ID: ID00339
Customer Ref.:
Manufacturer: MOTECH
Serial Number: 1234
Model Number: MIC39
Cal. Interval: 52 Weeks
Certificate Type: Standard Cert

Environmental Information

Room Temperature: 20 °C
Mains Voltage: 240 Volts
Humidity: 50 %RH
Mains Frequency: 50 Hz

Calibration Information

Date of Receipt:
Date of Calibration: 01/09/2005
Job Number:
Tested By: A.B Smith

Customer Information

Customer Name: Arrow Calibrations

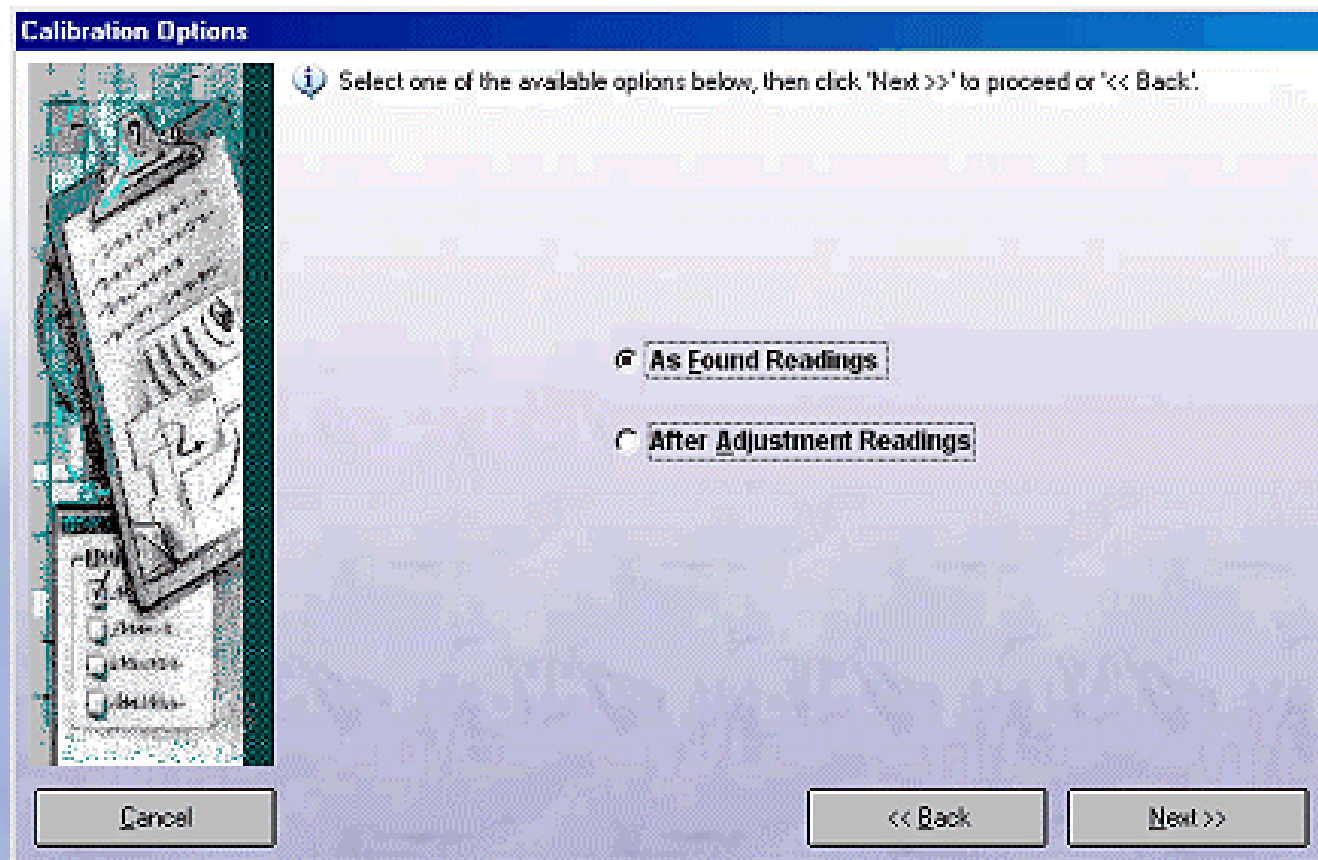
Customer List:
Arrow Calibrations
Beta Calibrations
Challenger Laboratories
Delta Calibration Services
Echo Calibration Services
Fox Calibration Services
Golf Calibration Services
Hotel Calibration Services

Buttons: Cancel, Add Contact, Next >>

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Step 5

→ The next window asks if **As Found** or **After Adjustment Readings** - click **As Found Readings** then click **Next >>**.



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Step 6

- The first test is the continuity beeper test
- Select ohms mode then press the blue function button on the multimeter – click YES if meter is beeping

Manual Input - As Found - Procedure PROC3020

Test 2 : Continuity Bleeper
Switch to continuity mode : does beeper work?

No.	Test Title	Test Value	Reading	% Spe
1	General Operation Tests			
2	Continuity Bleeper	---	---	---
3	Diode Test	---	Pass	---
4	Bar Display	---	Pass	---
5	----- Blank Line -----			
6	DC Voltage			
7	400mV D.C. Range			
8	4V D.C. Range			
9	40V D.C. Range			
10	400V D.C. Range			

YES **NO**

Expected Result YES

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Step 7

- The next test is the diode function test
- Select the diode function on the multimeter – click YES if meter is reading 0.6V

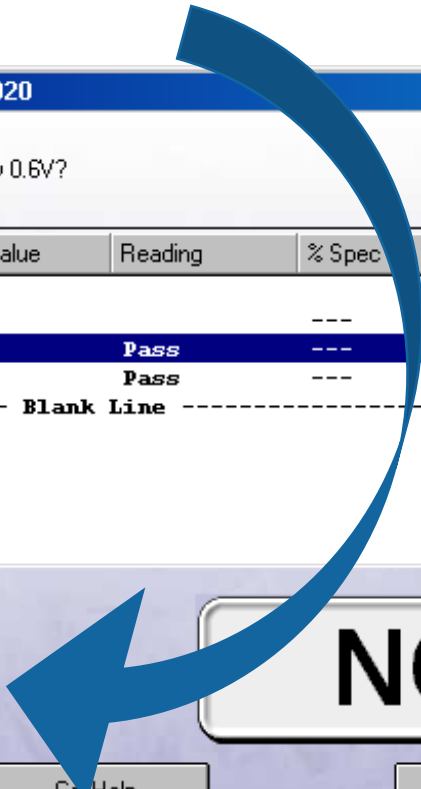
Manual Input - As Found - Procedure PROC3020

Test 3 : Diode Test
Switch to diode test mode : does meter display 0.6V?

No.	Test Title	Test Value	Reading	% Spec
1	General Operation Tests			
2	Continuity Bleeper	---		---
3	Diode Test	---	Pass	---
4	Bar Display	---	Pass	---
5	----- Blank Line -----			
6	DC Voltage			
7	400mV D.C. Range			
8	4V D.C. Range			
9	40V D.C. Range			
10	400V D.C. Range			

YES **NO**

Expected Result YES



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Step 8

- The next test is the bar display test
- Switch the multimeter off, then on –
click YES if the bar display is displayed OK

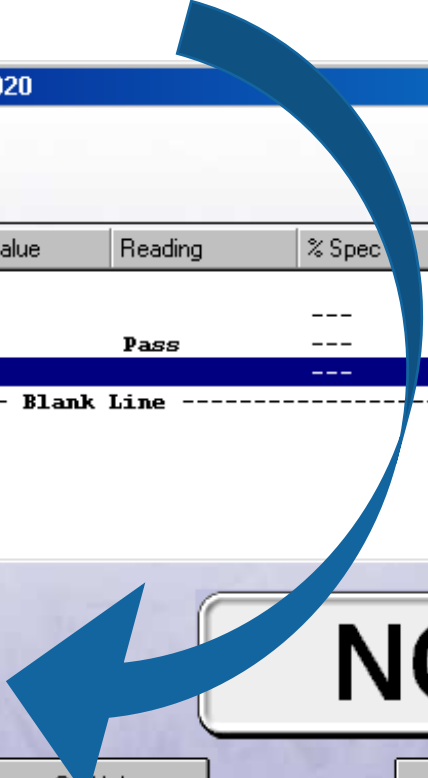
Manual Input - As Found - Procedure PROC3020

Test 4 : Bar Display
Does the bar display function correctly?

No.	Test Title	Test Value	Reading	% Spec
1 General Operation Tests				
2	Continuity Bleeper	---		---
3	Diode Test	---	Pass	---
4	Bar Display	---		---
5	----- Blank Line -----			
6	DC Voltage			
7	400mV D.C. Range			
8	4V D.C. Range			
9	40V D.C. Range			
10	400V D.C. Range			

YES **NO**

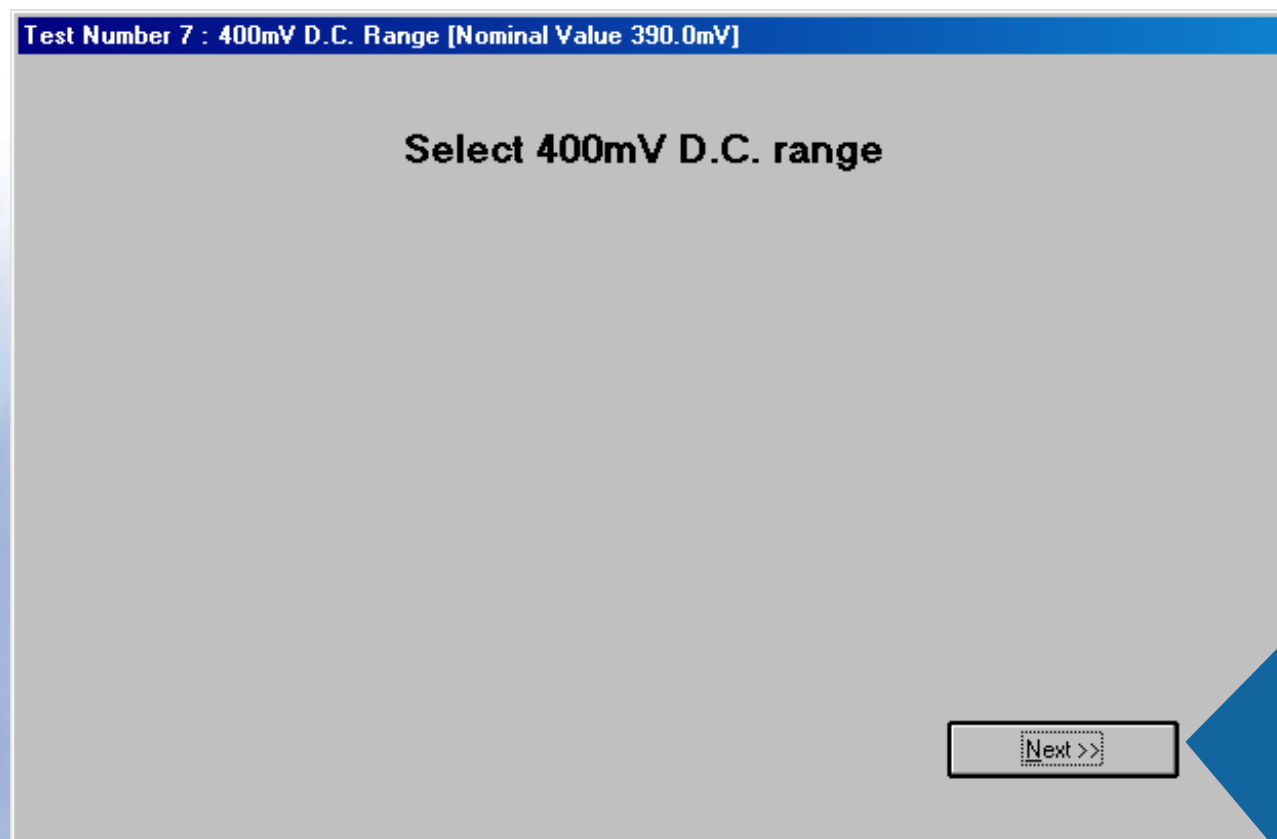
Expected Result YES



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Step 9

- Before test 4 begins, a prompt screen is displayed
- Select the 400mV range on the multimeter, then click Next >>



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Step 10

- Enter the reading displayed by the multimeter in the box marked manual input
- The arrow pointer will move to display the reading in terms of the accuracy of the instrument, and display **PASS** or **FAIL** in the top right hand of the screen

Multimeter Calibration - As Found - Procedure PROC3020

Test 7 : 400mV D.C. Range **TEST PASSED**

Select 400mV D.C. range
Enter value displayed on meter (without units).

No.	Test Title	Test Value	Reading	% Spec
1	General Operation Tests			
2	Continuity Bleeper	---	Pass	---
3	Diode Test	---	Pass	---
4	Bar Display	---	Pass	---
5	----- Blank Line -----			
6	DC Voltage			
7	400mV D.C. Range	390.0mV	390.2mV	13
8	4V D.C. Range			
9	40V D.C. Range			
10	400V D.C. Range			

Manual Input > 390.2 < Manual Input

FAIL (LOW) 1.5mV | 390.0mV | 1.5mV FAIL (HIGH)

Fault Cal Help Restart Test Next >>

Test Value 390.0mV 13% of Spec.

→ Click Next >> to proceed to the next test

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Step 11

- The remaining tests will display a prompt screen displaying the range required to be set.
- Enter the readings as displayed on meter then click Next >> to proceed to the next test.

Multimeter Calibration - As Found - Procedure PROC3020

Test 7 : 400mV D.C. Range TEST PASSED

Select 400mV D.C. range
Enter value displayed on meter (without units).

No.	Test Title	Test Value	Reading	% Spec
1 General Operation Tests				
2	Continuity Bleeper	---	Pass	---
3	Diode Test	---	Pass	---
4	Bar Display	---	Pass	---
5	----- Blank Line -----			
6	DC Voltage			
7	400mV D.C. Range	390.0mV	390.2mV	13
8	4V D.C. Range			
9	40V D.C. Range			
10	400V D.C. Range			

Manual Input > 390.2 < Manual Input

FAIL (LOW) 1.5mV | 390.0mV | 1.5mV FAIL (HIGH)

200 150 100 50 0 50 100 150 200

Fault Cal Help Restart Test Next >>

Test Value 390.0mV 13% of Spec.



- Select Control → Finish Calibration (Review Results) at any time to suspend the calibration.

- ✓ AUTOSTEP [N]
- Ignore Fail
- ✓ Show Auto Safety Prompts Ctrl+S
- Set to Non-Printing Ctrl+P
- ✓ Run Calibration Tests
- Finish Calibration (Review Results)**
- Abort Current Test
- Abort Calibration Run

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Step 12

- On completion of the last test, the test review screen will be displayed. A summary is shown at the top of the screen. From here any test can be run again.
- Click Next >> to proceed with saving the calibration

Review Calibration Results - All Tests Passed - Procedure PROC3020

Calibration Results (As Found)

Tests Incomplete : 0 Tests Marginal Pass : 0 Tests Failed : 0

No.	Test Title	Test Value	Reading	% Spec
4	Bar Display	---	Pass	---
5	----- Blank Line -----			
6	DC Voltage			
7	400mV D.C. Range	390.0mV	390.2mV	13
8	4V D.C. Range	3.900V	3.900V	0
9	40V D.C. Range	39.00V	39.00V	0
10	400V D.C. Range	390.0V	390.0V	0
11	600V D.C. Range	600V	600V	0
12	----- Blank Line -----			
13	Linearity			
14	40V Linearity	-30.00V	-30.00V	0
15	40V Linearity	-20.00V	-20.00V	0
16	40V Linearity	-10.00V	-10.00V	0
17	40V Linearity	0.00V	0.00V	0
18	40V Linearity	10.00V	10.00V	0
19	40V Linearity	20.00V	20.00V	0
20	40V Linearity	30.00V	30.00V	0

Click on any test to repeat. Current View: All Tests

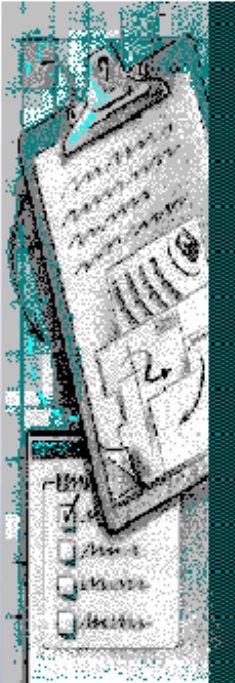
<< Back Next >>

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Step 13

- The default comments as stored by the procedure are displayed. Additional comments can be added – up to 5 lines can be included on the certificate.
- Click Next >> to proceed

Certificate Comments

 Enter any required certificate comments below - to import an external text file click on 'Import Comments' and select the required file. To edit the contents of the 'drop down' lists click on the button marked '...'

INSTRUMENT WAS ALLOWED TO STABILISE BEFORE CALIBRATION	▼	...
	▼	...
	▼	...
	▼	...
	▼	...



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Step 14

→ Job comments can also be added – these are for use with ProCal-Track to product a service report.

Job Information

Enter any required job information below. To edit the contents of the 'drop down' lists click on the button marked '...'

Job Comments

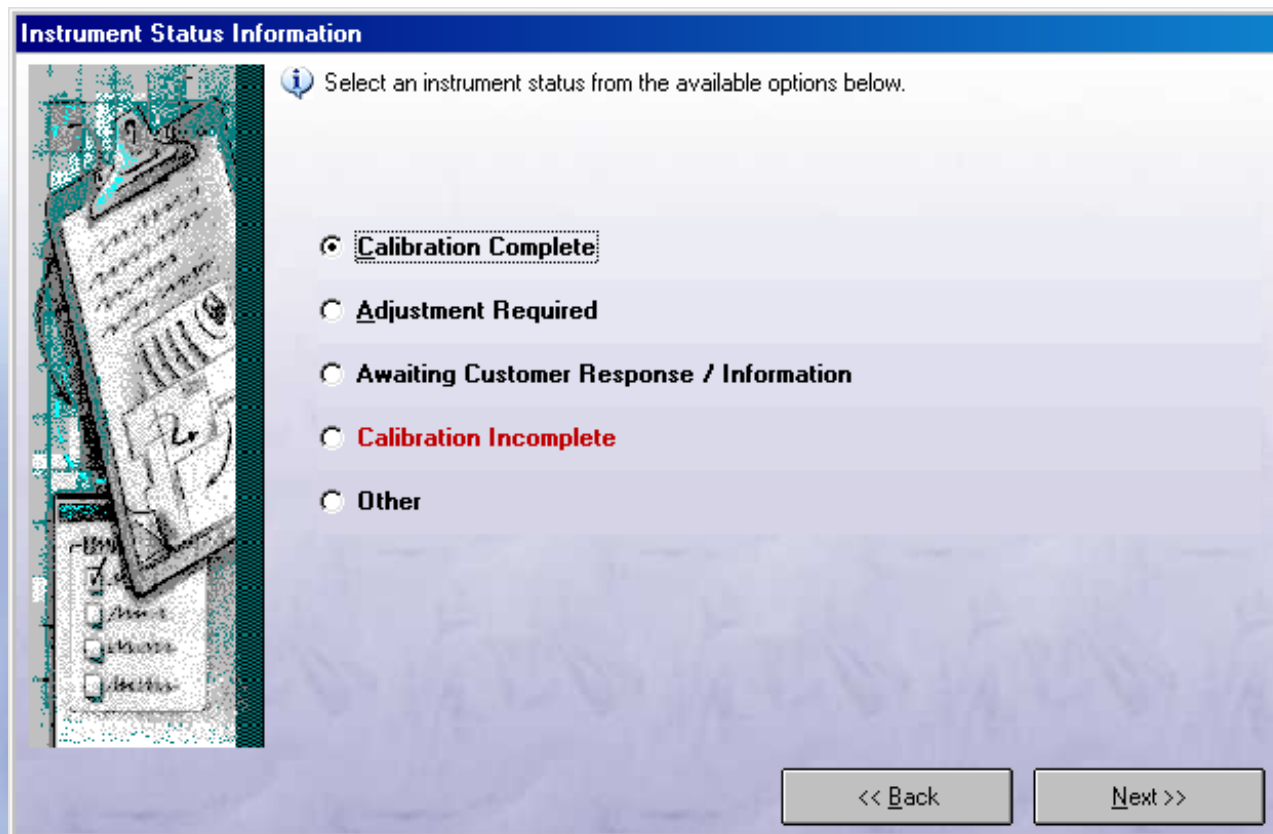
<< Back Next >>



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Step 15

→ Select the instrument status – note if some tests are incomplete or failed, Calibration Complete will not be available (the Other option can be used to set this if required). Click Next >> to proceed.



Instrument Status Information

Select an instrument status from the available options below.

- Calibration Complete**
- Adjustment Required**
- Awaiting Customer Response / Information**
- Calibration Incomplete**
- Other**

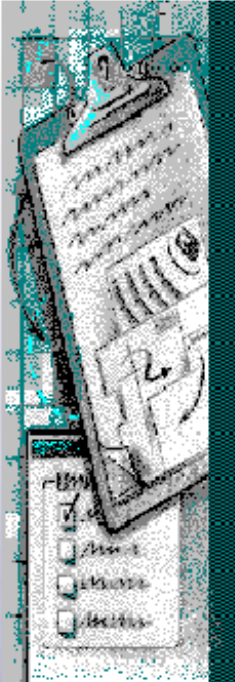
<< Back Next >>

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Step 16

→ The final step is to set a certificate number. The next available number is displayed (a different number can be entered if required). Click Finish to save the calibration.

Set Certificate Number & Save Calibration



i Check the certificate number below. If not acceptable, change to the required number and then click 'Finish' to save the calibration.

Note : If the certificate number already exists a warning will be shown and another number may be chosen.

Certificate Number

CM1001

<< Back Finish

