

TRANSMILLE

SOLUTIONS IN CALIBRATION



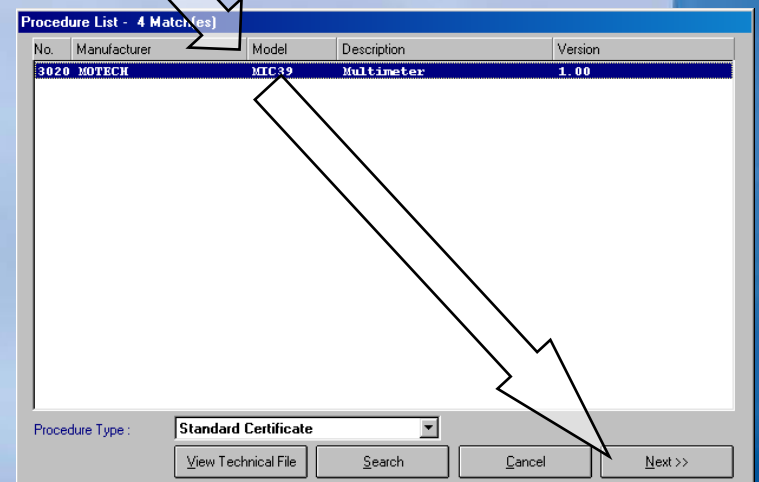
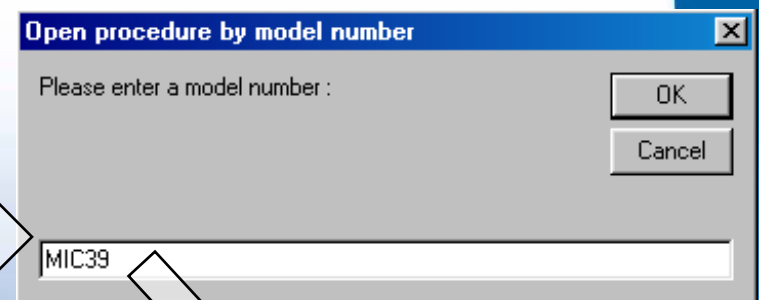
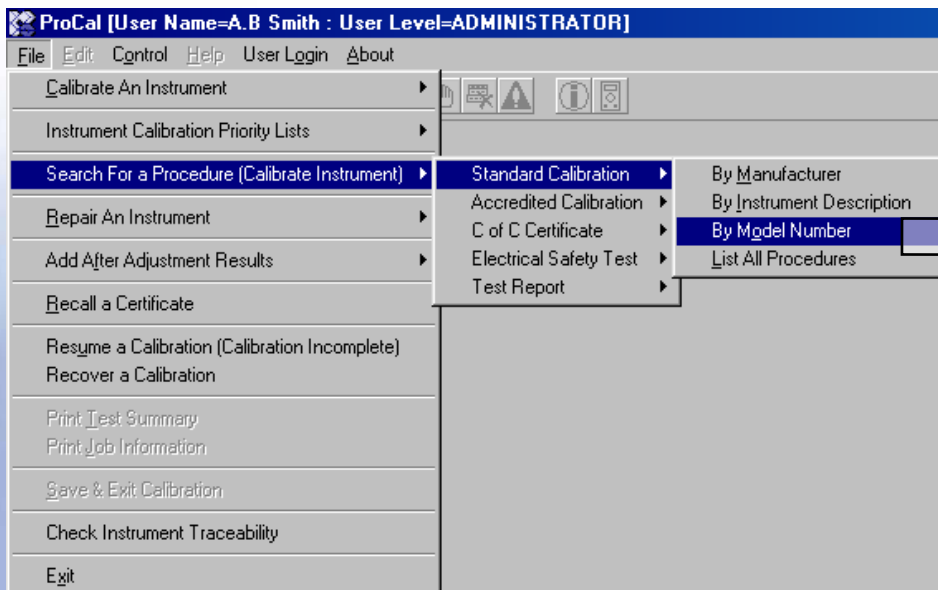
PROCAL

**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 >>



ProCal : CALIBRATE AN INSTRUMENT

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 :

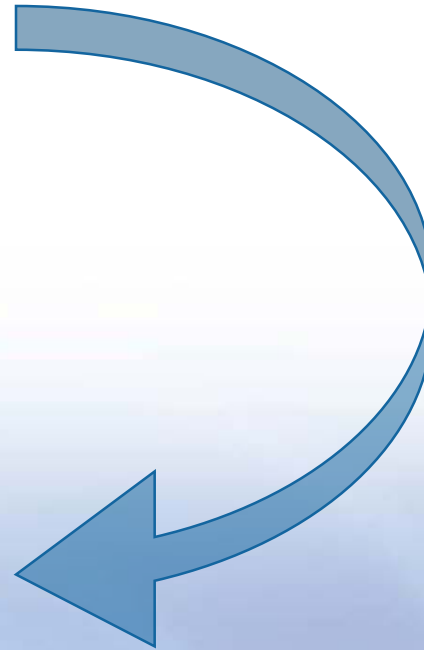
01 : [LOCAL] : 2041A Precision Multi-Product Calibrator : 123456A1

→ UNCERTAINTY STATEMENTS

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

Is the information listed above correct ?

No Yes




ProCal :: CALIBRATE AN INSTRUMENT

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

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

Cancel

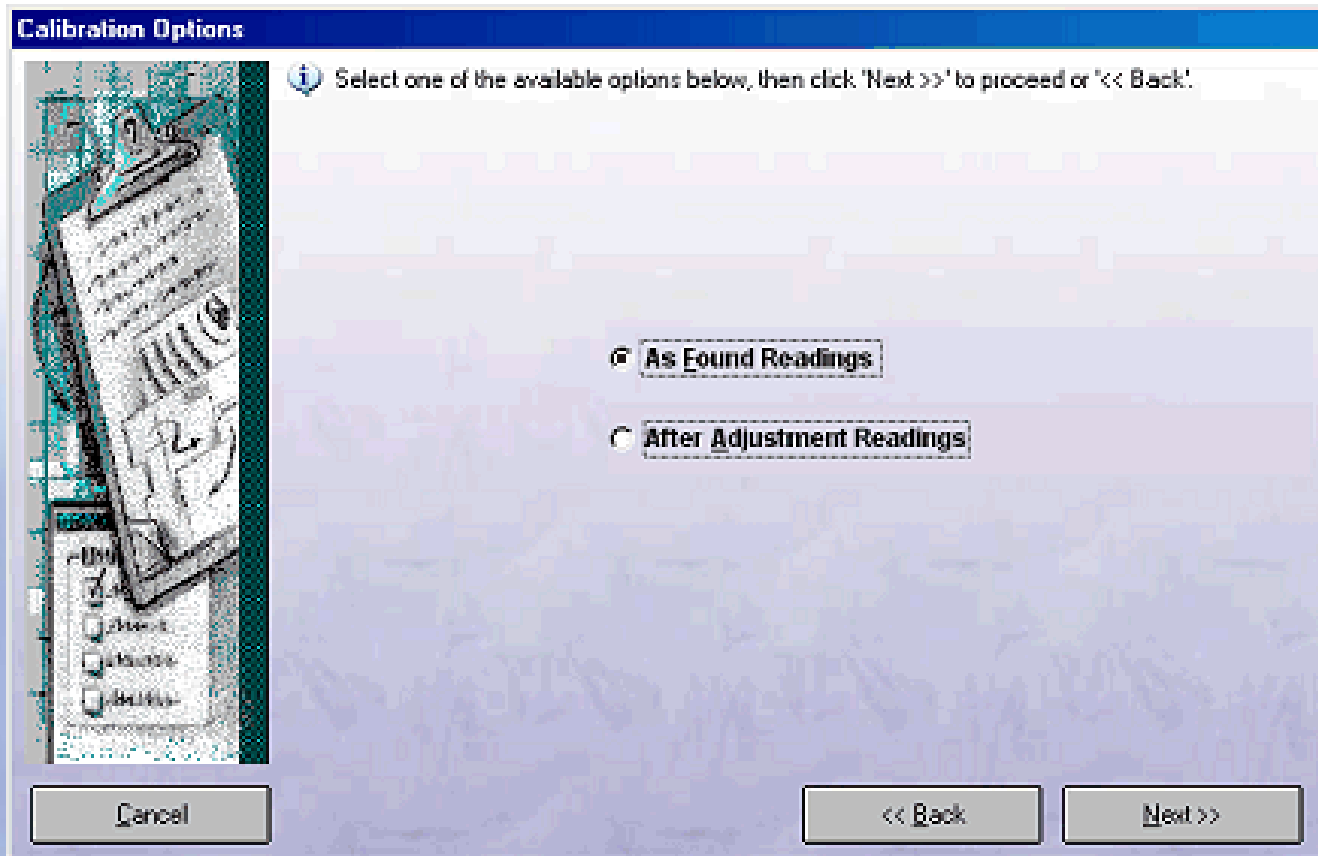
Add Contact

Next >>

ProCal : CALIBRATE AN INSTRUMENT

Step 5

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



ProCal :: CALIBRATE AN INSTRUMENT

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 Beeper
Switch to continuity mode : does beeper work?

| No. | Test Title | Test Value | Reading | % Spec |
|-----|--------------------------------|------------|---------|--------|
| 1 | General Operation Tests | | | |
| 2 | Continuity Beeper | --- | | --- |
| 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

ProCal :: CALIBRATE AN INSTRUMENT

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

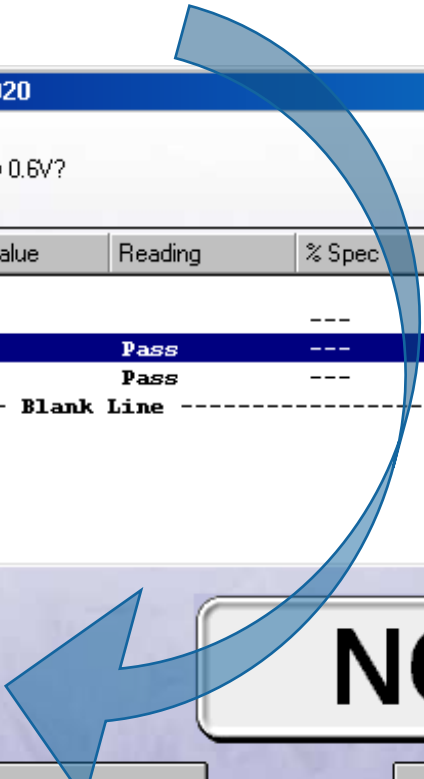
Manual Input - As Found - Procedure PROC3020

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



ProCal : CALIBRATE AN INSTRUMENT

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**

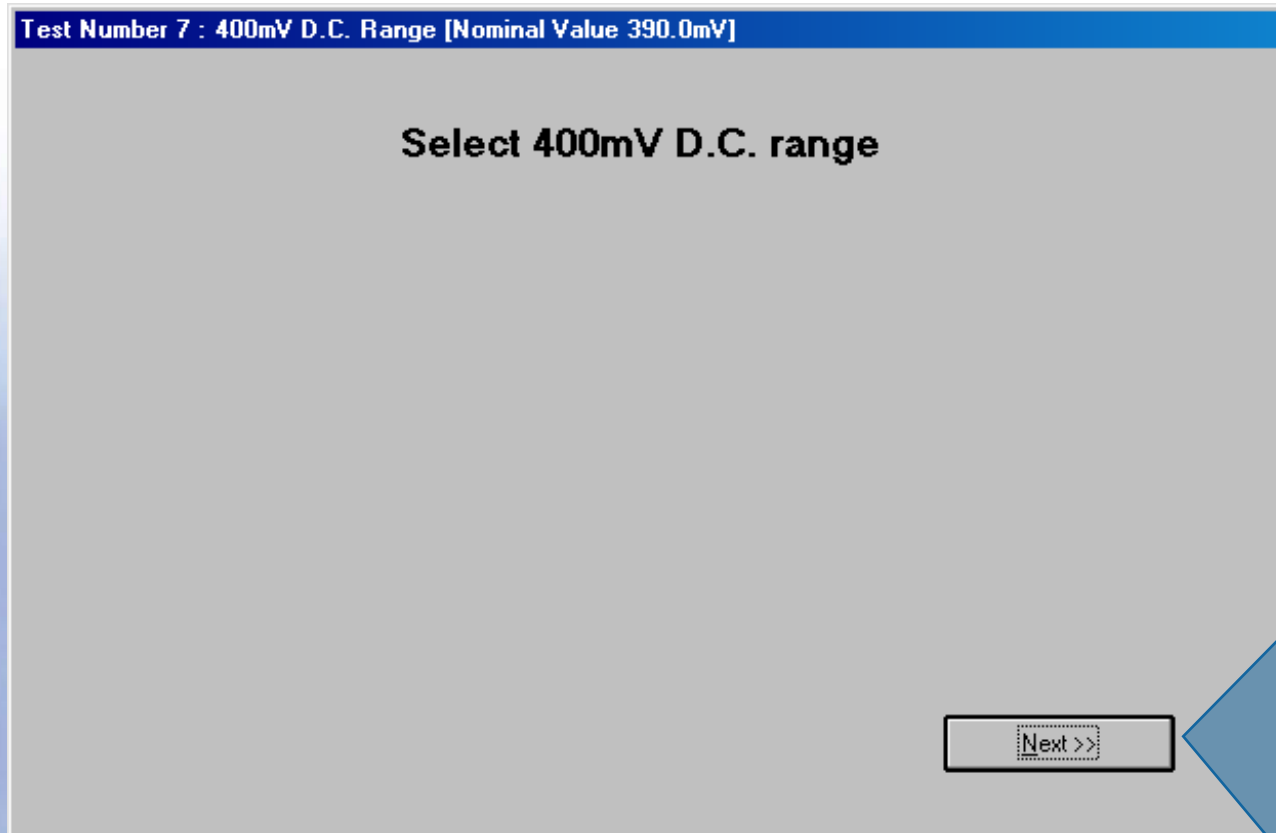
Fault Cal/Help Restart Test

Expected Result YES

ProCal : CALIBRATE AN INSTRUMENT

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)

200 150 100 50 0 50 100 150 200

Fault Cal Help Restart Test Next >>

Test Value 390.0mV 13% of Spec.

- Click **Next >>** to proceed to the next test

ProCal :: CALIBRATE AN INSTRUMENT

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.

- ✓ AUTO STEP [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

ProCal :: CALIBRATE AN INSTRUMENT

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 >>




ProCal :: CALIBRATE AN INSTRUMENT

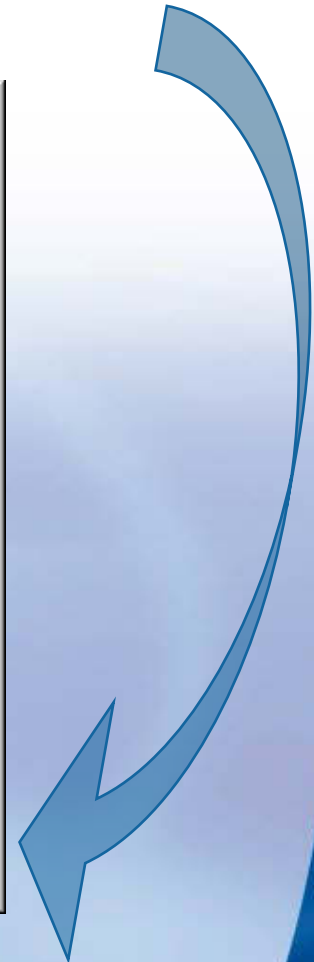
Step 13

- 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

 **i** 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 | ▼ | ... |
| | ▼ | ... |
| | ▼ | ... |
| | ▼ | ... |
| | ▼ | ... |



ProCal :: CALIBRATE AN INSTRUMENT

Step 14

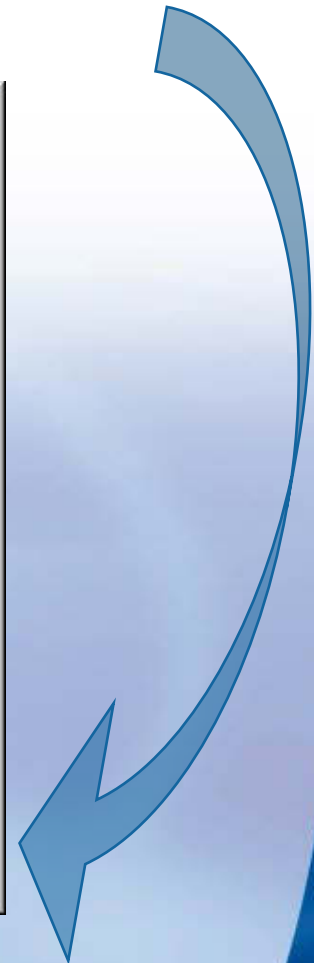
→ Job comments can also be added – these are for use with ProCal-Track to product a service report.

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 >>




ProCal :: CALIBRATE AN INSTRUMENT

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 >>




ProCal :: CALIBRATE AN INSTRUMENT

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



ProCal :: CALIBRATE AN INSTRUMENT

Step 17

→ A dialog will be displayed to allow the certificate to be printed. Select the required options (certificate / label) then Click OK.

Print Certificate(s)

Number of Copies

1
 2
 3
 More

Print Options

Print Calibration Certificate(s)

Print cover sheet

Print results sheet(s)

As Found

After Adjustment

Default Printer for Certificates

Network 1200L

Print Certificate of Conformance(s)

Print Label(s)

Advanced Settings

Cancel

OK

Status

Ready.



CERTIFICATE OF CALIBRATION

Issued by: Transmille Ltd Cert Number: 6204
Date of Issue: 24 September 2000

UKAS

Transmille Ltd
Pressure Ind. Gauge
Last Requested:
Date: 24/09/00
UKAS REFERENCE: 011 00227748 000 00000000

Customer: Aero Calibration
10 Cambridge Road, The Drive
Aughton, Liverpool, Merseyside, L24 0JL

Date Recvd: 21 February 1998

Instrument: Pressure Ind. Gauge Job Number: 0000000011
Description: Max Pressure Calibration Ref Number: 780A
Manufacturer: Transmille Ltd
Serial Number: 2000 UTM: 1
Production Region: 020 Last Calibration Number: 8120000
Last Calibration Date: 14/09/98

Environmental Conditions

| Temperature | Humidity | Mass Volume |
|-------------|----------|--------------|
| 20 ± 1 °C | 50 ± 5 % | 1013 ± 1 hPa |

Comments

Instrument was allowed to stabilize for 1hr. for 8 hours before calibration.

Minor adjustments made
all both passed manufacturers specifications.

Customer acceptance

The instrument was calibrated against primary standards, whose values are traceable to recognized National Standards. The accuracy from a single point in the course of calibration, will be accepted being taken to the certificate as the maximum uncertainty.

The reported capacity uncertainty is based on a standard uncertainty multiplied by a coverage factor of 2, providing a level of confidence of approximately 95%. The necessary calibration has been carried out in accordance with UKAS requirements.

Calibrated by: A.G. Smith Date of Calibration: 24 September 2000

The certificate is valid as long as the instrument is maintained in compliance with the rules specified in the certificate. It is not valid for use if the instrument is used for purposes other than those specified in the certificate. The certificate is not valid if the instrument is used for purposes other than those specified in the certificate. The certificate is not valid if the instrument is used for purposes other than those specified in the certificate.



Click on the **Advanced** button to select Pages to print and printer selection.