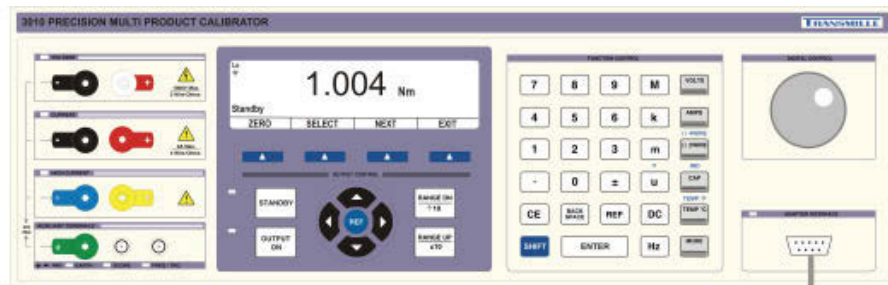
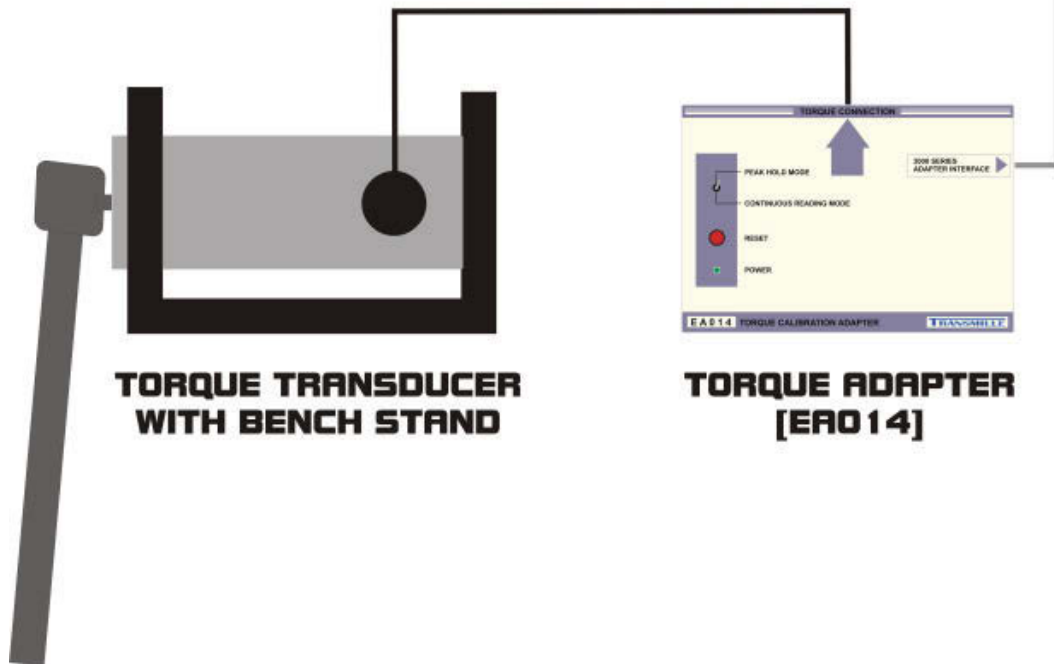


TORQUE CALIBRATION

USING THE PROEDIT PROCEDURE WIZARD AND CALIBRATING USING PROCAL



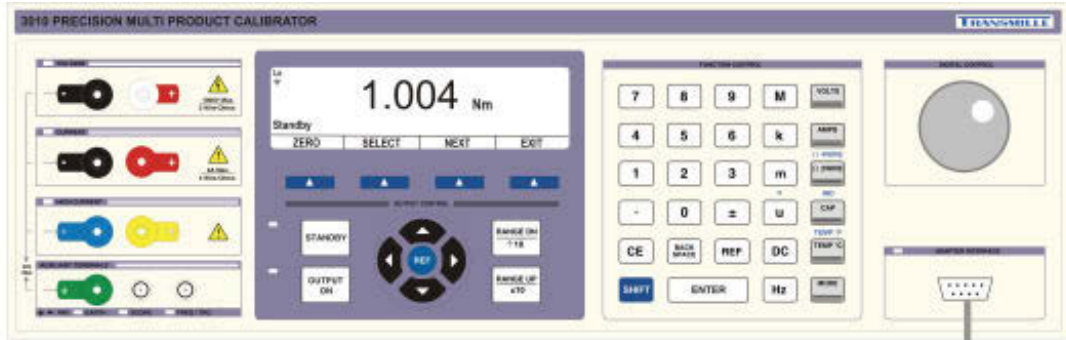
3000A SERIES CALIBRATOR - CONNECTION TO ADAPTER INTERFACE



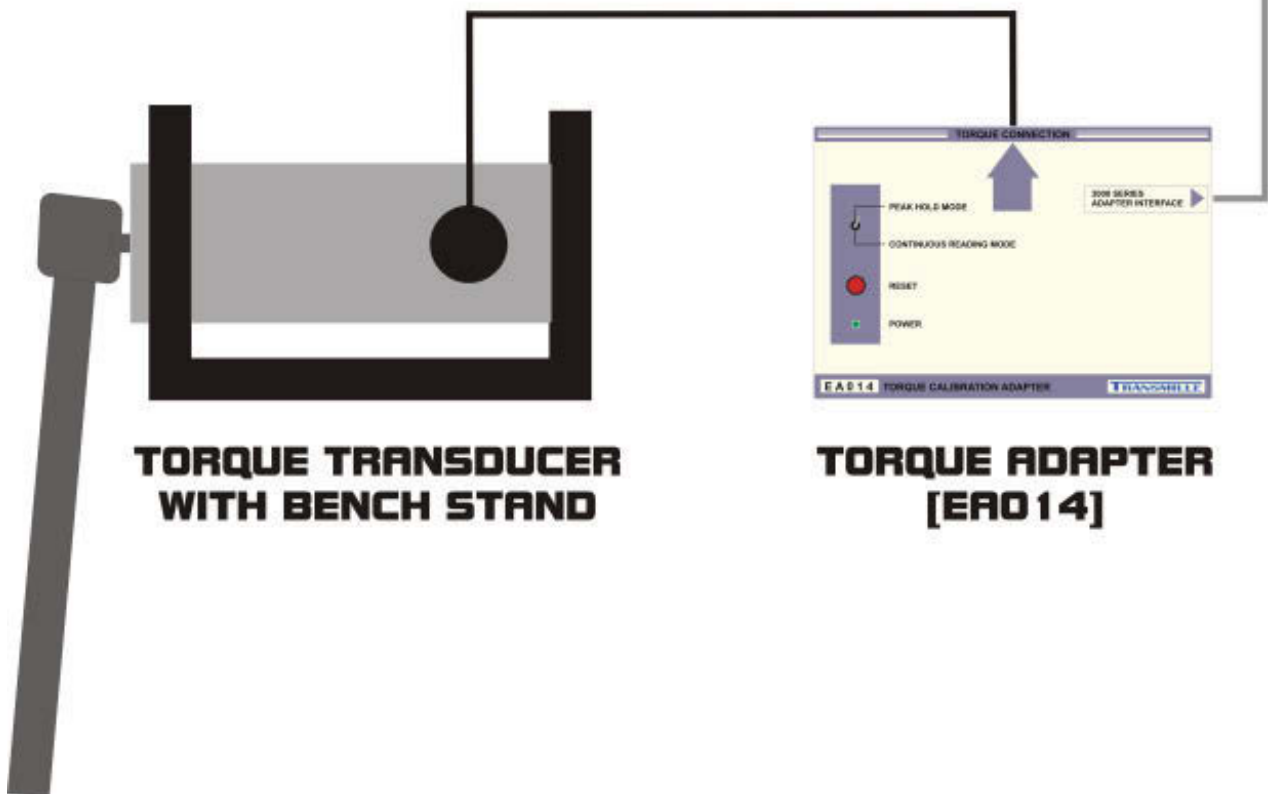
Torque Calibration - Overview

The Transmille 3000A Series torque calibration option uses the EA014 Torque adapter, a transducer with bench stand and ProCal calibration software to provide torque measurement for torque screwdrivers and wrenches.

Configuration of the adapter, transducer and



3000A SERIES CALIBRATOR - CONNECTION TO ADAPTER INTERFACE

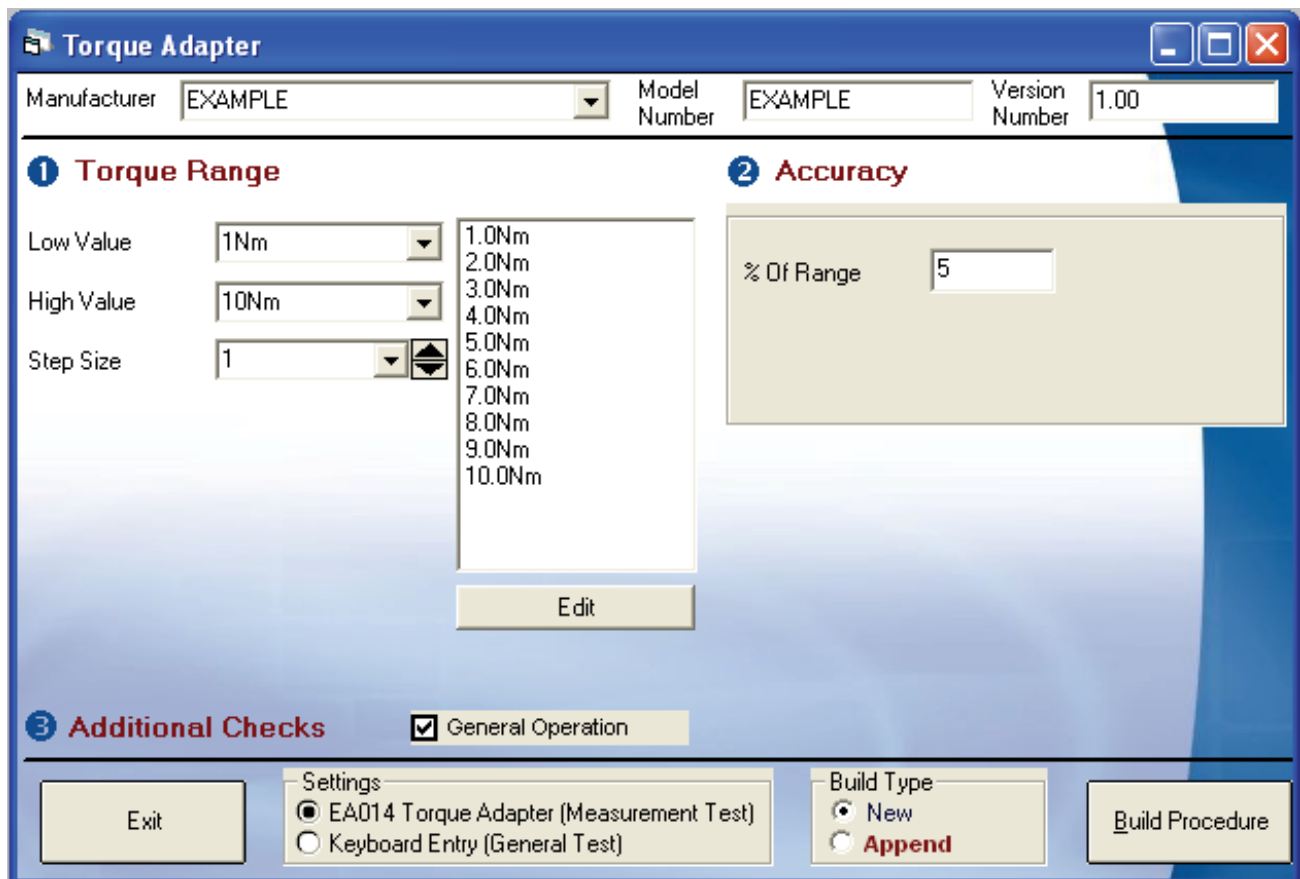


ProEdit – Torque Procedure Wizard

ProEdit incorporates a built-in wizard for creating procedures for torque wrenches and screwdrivers.



The main wizard screen is laid out as follows :



To set up a new procedure enter the following information :

1. Instrument Information

Enter the basic instrument information and a version number (default is 1.00)

Manufacturer Model Number Version Number

2. Torque range and test values

1 Torque Range

Low Value
 High Value
 Step Size

Enter the Low and high torque values and the step size – once selected the values will be automatically displayed in the list. A single point can be edited by double clicking the value and entering a new one.

3. Accuracy

2 Accuracy

% Of Range

Enter the accuracy (specification of torque tool) – this is entered as % of range – the range is determined by the High torque value.

4. Additional Checks

3 Additional Checks General Operation

An additional 'general operation' YES / NO type test can also be added to the procedure – this is created at the beginning of the procedure.

5. Final Settings

Exit Settings EA014 Torque Adapter (Measurement Test) Keyboard Entry (General Test) Build Type New Append

The procedure is set as default to use an EA014 Torque adapter for automatic Readback for torque value.

For users performing torque measurements using external equipment, a Keyboard Entry type test can be selected which allows test readings to manually typed in.

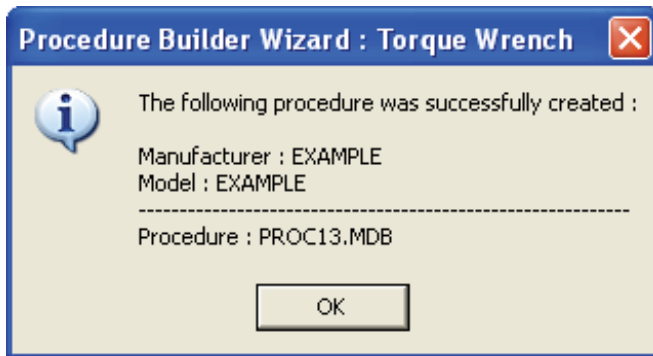
To create an entirely new procedure, select **Build Type – NEW**.

If these tests are to be appended to an existing procedure select **Build Type – APPEND**

Click **BUILD PROCEDURE** to proceed with procedure creation –

Note if any information is detected as being missing, a message will be displayed detailing what information is required before proceeding.

On completion a message will be displayed confirming the procedure details :



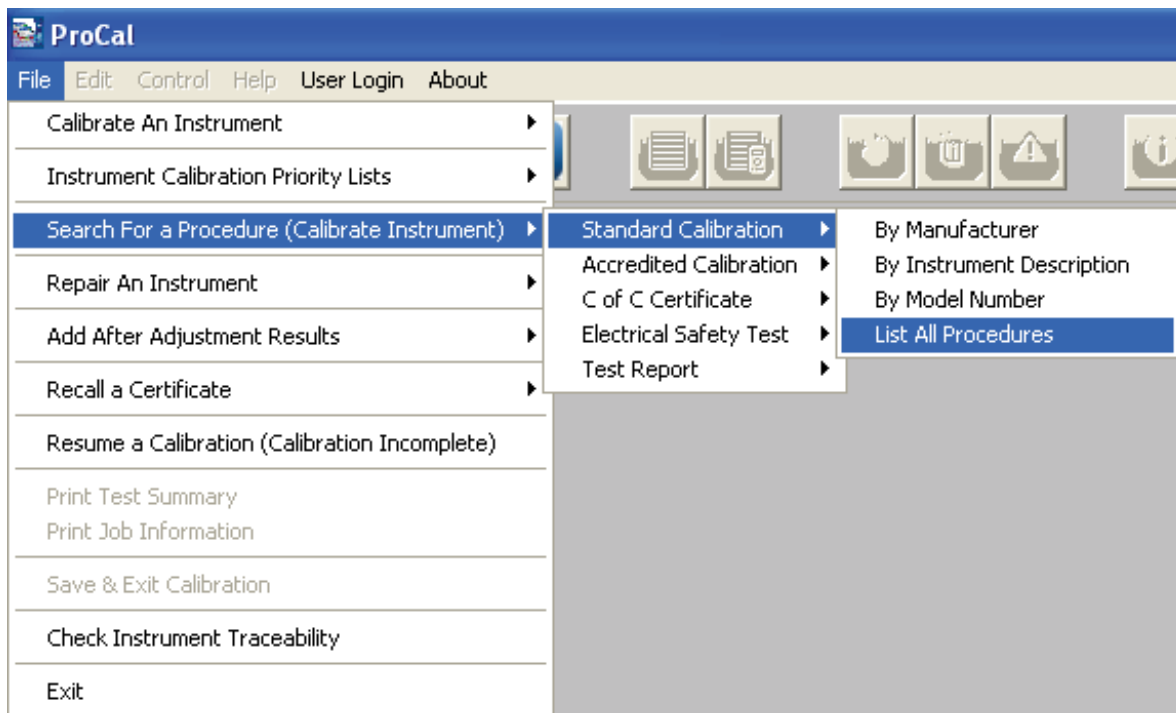
Running a Torque procedure using ProCal

Once a procedure is created using the procedure wizard, it is ready to be run using ProCal. The procedure will be set up to read back values automatically from the calibrator if using the EA014 Torque calibration adapter (with associated transducer).

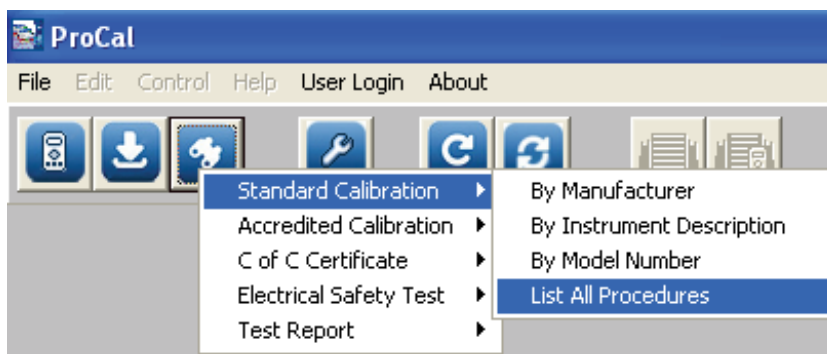
Image prompts will also have been created and linked to the procedure to aid the user in setting the calibrator to the correct mode and zeroing the calibrator between each test point

1. Start calibration

Select 'Search For a Procedure (Calibrate Instrument)' from the File menu :



Or use the toolbar to select the procedure select function



2. Select the required procedure from the list

Procedure List - 13 Match(es) found

No.	Manufacturer	Model	Description	Version
1	TEST	TEST	Power Supply (EA3023)	TEST
2	TEST	TEST	Process Meter (EA015)	TEST
3	TEST	TEST	Thermometer (EA015)	TEST
4	TEST	TEST	Pressure Indicator	TEST
5	TEST	TEST	Tachometer (EA015)	TEST
6	TEST	TEST	TORQUE WRENCH	TEST
7	TEST	TEST	Torque Wrench	1.00
8	Pressure Indicator	TEST	Pressure Indicator	TEST
9	TEST	TEST	Power Supply	TEST
10	TEST	TEST	Thermometer	TEST
11	TEST (WORKSTATION)	TEST	Thermometer	TEST
12	TEST (WORKSTATION)	TEST	Process Meter	TEST
13	EXAMPLE	EXAMPLE	Torque Wrench	1.00

Procedure Type :

Highlight the required procedure then click [Next >>](#)

3. Confirm the traceability and uncertainties data is correct

Confirm Procedure Settings - EXAMPLE EXAMPLE procedure [PROC13]

TRACEABILITY INFORMATION

 This procedure uses the following traceable instruments :

 01 : [LOCAL] : 3010A Precision Multi-Product Calibrator : 101213

UNCERTAINTY STATEMENTS

Torque : 0.5% ± 0.2Nm

Is the information listed above correct ?

This screen shows a summary of the traceable instrument and uncertainties information set for the selected procedure – click [YES](#) if this is correct or [NO](#) if this needs to be changed in the procedure (clicking NO will abort the calibration).

4. Begin calibration

Calibration Information - Standard Certificate

Instrument Information

System ID: 416
Customer Ref.:
Manufacturer: EXAMPLE
Serial Number: 1234
Model Number: EXAMPLE
Cal. Interval: 52 Weeks

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: 18/05/2012
Job Number:
Tested By:

Certificate Type

Standard Certificate

Customer Information

Customer Name: [Dropdown] Add Contact
Customer Address:

Cancel Next >>

Enter serial number, cal. interval, tested by name and customer address as applicable

5. Select Calibration Option

Calibration Options

Select one of the available options below, then click 'Next >>' to proceed or '<< Back'.

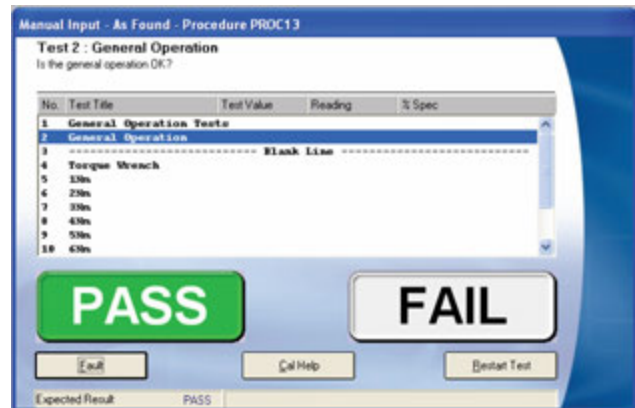
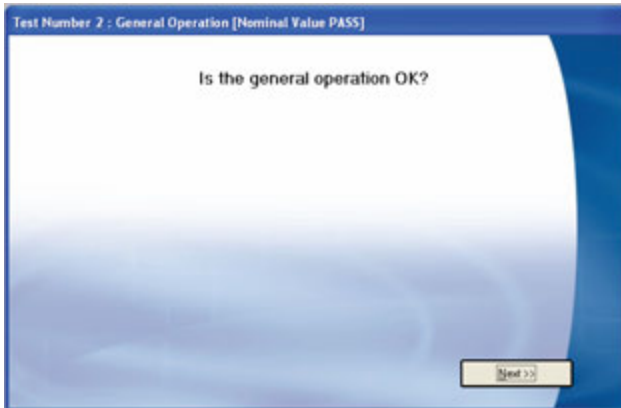
As Found Readings

After Adjustment Readings

Cancel << Back Next >>

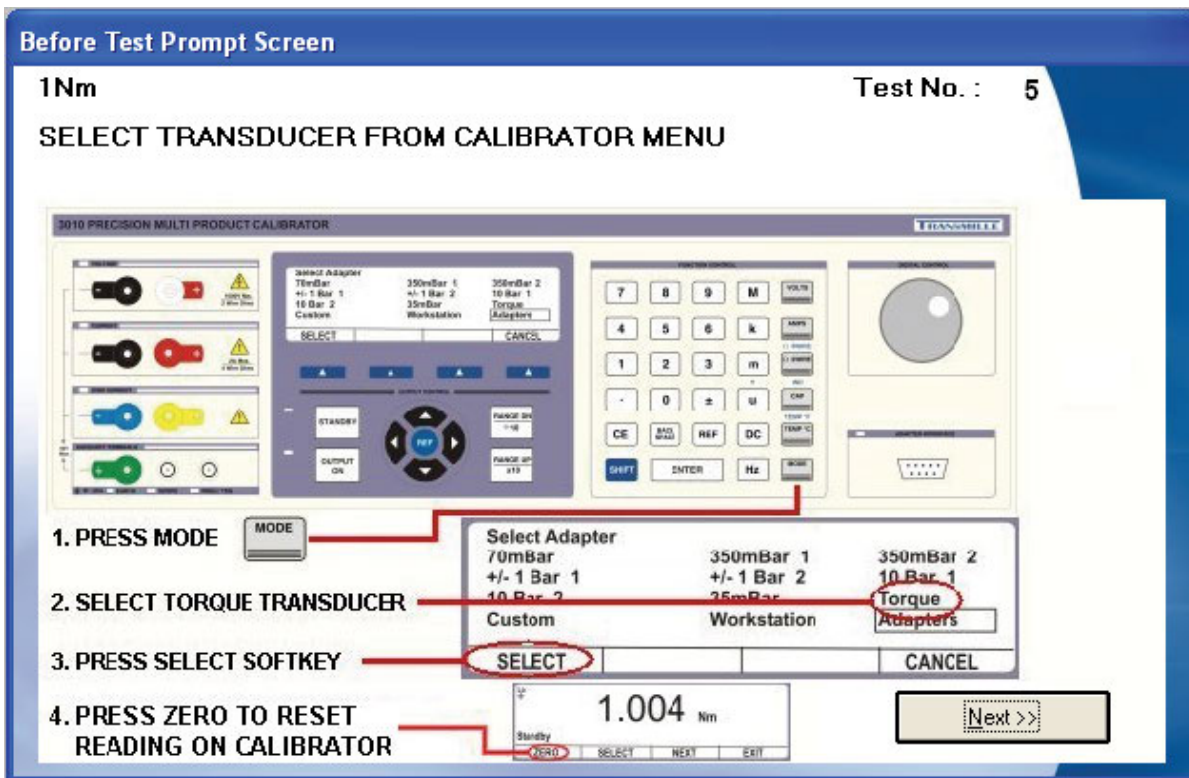
Select **As Found Readings** or **After Adjustment Readings** as required.

6. General operation check



A PASS / FAIL type test allows the general operation to be recorded – simply click on PASS or FAIL to record result.

7. Torque Tests – Pre-Test Prompt



An on-screen prompt shows how to set the calibrator to the require torque mode :

- i. PRESS THE MODE BUTTON ON THE CALIBRATOR
- ii. SELECT THE REQUIRED TORQUE TRANSDUCER FROM THE MENU USING THE CURSOR KEYS
- iii. PRESS SELECT TO CONFIRM CHOICE
- iv. PRESS THE ZERO SOFTKEY TO ZERO THE CALIBRATOR READING (ENSURE TRANSDUCER IS CONNECTED PRIOR TO PRESSING ZERO)

Click **NEXT >>** to continue to measurement screen

8. Torque Tests – Calibration Screen

Signal Source Calibration - As Found - Procedure PROC13

Test 5 : 1Nm
SELECT TRANSDUCER FROM CALBRATOR MENU

TEST PASSED

No.	Test Title	Test Value	Reading	% Spec
1	General Operation Tests			
2	General Operation	---	Pass	---
3	----- Blank Line -----			
4	Torque Wrench			
5	1Nm	1.00Nm	1.05Nm	10
6	2Nm			
7	3Nm			
8	4Nm			
9	5Nm			
10	6Nm			

1: 1.0548Nm

Buttons: Fault, Cal Help, Restart Test, Next >>

1.05Nm | Samples : 51 | AUTO STEP ON

Apply torque load to transducer – the measured value will be displayed by ProCal.

Before Test Prompt Screen

2Nm Test No. : 6

PRESS ZERO ON TORQUE TRANSDUCER - SET TO PEAK HOLD MODE

TORQUE CONNECTION

1. SET PEAK HOLD MODE

2. PRESS RESET TO ZERO ADAPTER

EA 014 TORQUE CALIBRATION ADAPTER

3. PRESS ZERO ON CALBRATOR TO RESET

Standby 1.004 Nm

ZERO SELECT NEXT

Next >>

Between each measurement test the torque adapter should be reset to zero the reading – this is shown in a prompt screen before each measurement (as shown above).

9. Finishing & Saving the calibration

Review Calibration Results - One Test Failed - Procedure PROC13

Calibration Results (As Found)

Tests Incomplete : 0 Tests Marginal Pass : 0 Tests Failed : 1

No.	Test Title	Test Value	Reading	As Found	
				% Spec	Uncert.
1	General Operation Tests				
2	General Operation	---	Pass	---	
3	----- Blank Line -----				
4	Torque Wrench				
5	1Nm	1.00Nm	1.05Nm	10	
6	2Nm	2.00Nm	2.24Nm	48	
7	3Nm	3.00Nm	3.15Nm	30	
8	4Nm	4.00Nm	3.97Nm	6	
9	5Nm	5.00Nm	4.82Nm	36	
10	6Nm	6.00Nm	6.10Nm	20	
11	7Nm	7.00Nm	7.15Nm	30	
12	8Nm	8.00Nm	7.84Nm	32	
13	9Nm	9.00Nm	8.86Nm	28	
14	10Nm	10.00Nm	9.97Nm	6	

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

Uncertainty Control Panel

Export Uncertainties to PROC13

Import Uncertainties from PROC13

Set Procedure as Verified PROC13

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 Status Information

i Select an instrument status from the available options below.

Instrument Status Selection

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

<< Back

Next >>

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.

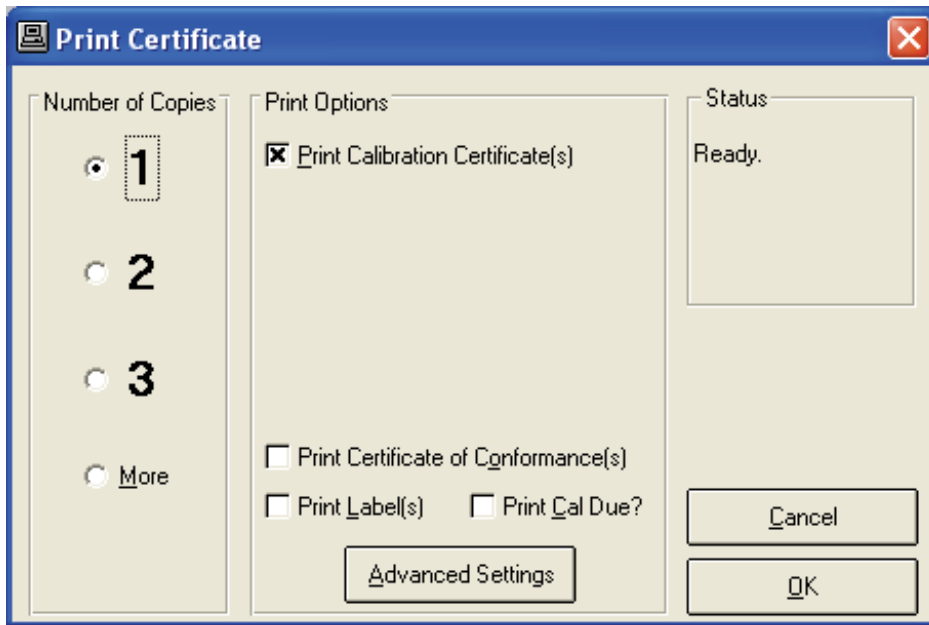
Note : If the certificate number already exists a warning will be shown and another number may be chosen.

Certificate Number

STD00057

<< Back

Finish



The image shows a Windows-style dialog box titled "Print Certificate". It is divided into three main sections: "Number of Copies", "Print Options", and "Status".

- Number of Copies:** Contains four radio button options: "1" (selected), "2", "3", and "More".
- Print Options:** Contains four checkboxes:
 - Print Calibration Certificate(s)
 - Print Certificate of Conformance(s)
 - Print Label(s)
 - Print Cal Due?Below these checkboxes is an "Advanced Settings" button.
- Status:** A text box containing the word "Ready." Below it are "Cancel" and "OK" buttons.