

**MICROSEAM 5.0
Inspection Software
(Std & Prof Version)
User Guide
Issue D**

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PRODUCED FOR
**ARUNDLE OPTICAL
INSTRUMENTS**

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CONTENTS

1	OVERVIEW	7
2	SCOPE	8
3	SYSTEM REQUIREMENTS	8
4	MICROSEAM SOFTWARE INSTALLATION A	8
4.1	Installing Microseam	8
4.2	Installing the DESkey Dongle Drivers	11
4.3	Installing the USB Camera Drivers	13
4.4	Completing the Installation	13
4.5	Entering the License Code	14
4.6	Software License Upgrade	17
4.7	Removing Microseam	18
5	HELP A+S+U	20
5.1	Displaying the Program Version	20
5.2	License Code	20
6	CONFIGURING MICROSEAM A	21
6.1	Start Microseam	21
6.2	Log On as Administrator	21
6.3	Setting the Administrator Password	23
6.4	Program Configuration	25
6.5	Sharing Data in a Network	26
6.6	Setting up a Digital Gauge	27
6.7	Calibrating the Camera	29
6.8	Adjusting the Camera A+S+U	32
7	ADMINISTRATOR ACTIONS A	33
7.1	System Backup	33
7.2	Customer Setup	33
7.3	Operator Setup	39
7.3.1	<i>Security Levels</i>	39
7.3.2	<i>Create a New Operator</i>	39
7.3.3	<i>Delete an Operator</i>	42
7.3.4	<i>Change an Operator Password</i>	43
7.4	Creating and Editing Formats	44
7.4.1	<i>Viewing Format Images in the Library A+S+U</i>	44
7.4.2	<i>Editing Format Images in the Library</i>	45
7.4.3	<i>Add Format Images to the Library – From the Camera</i>	47

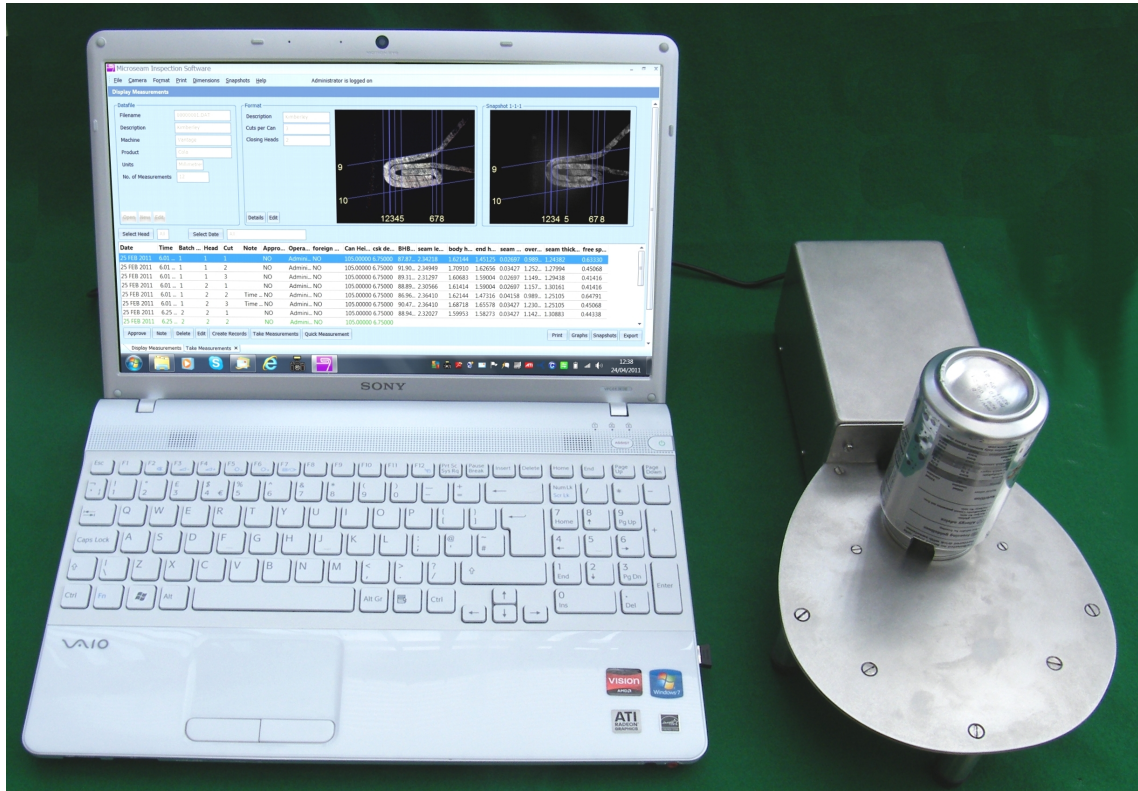
7.4.4	<i>Creating a New Format</i>	48
7.4.5	<i>Editing an Existing Format</i>	59
7.5	Datafiles	60
7.5.1	<i>Datafile Parameters</i>	60
7.5.2	<i>Creating a New Datafile</i>	60
7.5.3	<i>Deleting a Datafile</i>	63
7.5.4	<i>Editing the Format for a Datafile</i>	63
8	GETTING STARTED A+S+U	64
8.1	Starting & Exiting Microseam.....	64
8.2	Logging On and Off	65
8.3	Changing Password	67
8.4	Displaying Measurements	68
8.4.1	<i>Using the Data Table</i>	69
8.4.2	<i>Selecting Measurements</i>	72
8.4.3	<i>Viewing Historical Snapshot Images</i> PROF	72
8.4.4	<i>Opening a Different Datafile</i>	75
8.5	Switching Between Screens Using Tabs	75
8.6	Understanding Formats	76
9	USING MICROSEAM A+S+U	77
9.1	Seam Measurements	77
9.1.1	<i>Selecting a 'Datafile'</i>	77
9.1.2	<i>Creating Records</i>	78
9.1.3	<i>Taking Measurements</i>	79
9.1.4	<i>Auto Seamline Detection</i> PROF	85
9.1.5	<i>Out of Tolerance Dimensions</i>	86
9.1.6	<i>Zooming In</i>	87
9.1.7	<i>Using a Digital Gauge</i>	88
9.1.8	<i>Notes</i>	89
9.2	Printing & Exporting Measurements	91
9.2.1	<i>Printing Measurement Data</i>	91
9.2.2	<i>Producing Graphs of Measurement Data</i>	94
9.2.3	<i>Including Snapshots in Reports</i> PROF	99
9.2.4	<i>Exporting Measurement Data to Other Applications</i> PROF	103
9.3	Quick Measurements.....	107
10	SUPERVISOR/ADMINISTRATOR ACTIONS	109
10.1	Approving Measurements A+S	109

10.2	Deleting Measurements A+S	109
10.3	Editing Measurements A+S	110
11	USB CAMERA PERFORMANCE	111
	APPENDIX 1 - Calculation of BHB	115

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1 OVERVIEW

Microseam is a Windows-based software package, used in conjunction with a USB camera, for inspecting the dimensional accuracy of seam joints in metal cans.



The Microseam software enables seam measurements to be made using a snapshot taken with a Digital Microscope video camera. The camera receives power from the PC via the USB interface.

A mouse-driven interface is used to take measurements on the snapshot. Each snapshot is stored (in JPEG format) along with its corresponding measurements and these historical snapshots may be viewed and included in reports.

Measurements may also be taken using a digital gauge (e.g. the Sylvac S229 dial gauge) or they may be entered using the keyboard.

All measurements are stored in datafiles and can be viewed in tabular form or graphically, with clear indication of whether the measurements are within tolerance.

The Microseam software is available in three versions:

- The 'Professional' fully functional version.
- The 'Standard' version, which is a low cost option, does not allow historical snapshots to be viewed, or printed in reports or allow auto seam detection.
- The 'Budget' version.

The installation instructions and screen shots in this document are from a PC running Microsoft Windows 7 and the Professional version of Microseam.

2 SCOPE

This document covers the Professional and Standard versions of Microseam. Sections that are not applicable to the 'Standard' version are noted in the contents and relevant headings as **PROF**.

In the 'Standard' version, the **Snapshots** and **Export** buttons in the 'Display Measurements' screen are invisible so these functions cannot be accessed.

Main section headings, which are marked with a letter, indicate the authority needed to carry out the procedures, e.g. **A**=Administrator, **S**=Supervisor, **U**=User. If certain subsections can be used by other users, these will be marked to suit e.g. **S+U**.

3 SYSTEM REQUIREMENTS

Microseam requires:

- A PC running a 32-bit or 64-bit Windows operating system, i.e. Windows XP, Windows Vista, Windows 7, or Windows 8.
- A screen with at least 1024x768 resolution.
- A graphics card capable of a minimum of 16 bit (High Color) colour depth.
- A high-speed USB port (USB 2.0) for connecting the video camera.
- A second USB port for connecting a digital gauge, if required.

4 MICROSEAM SOFTWARE INSTALLATION **A**

A competent person, with a working knowledge of the Microsoft Windows operating system, should carry out software installation. This person should have Administrator privileges on the PC.

The software will run on PC's with 32 or 64 bit operating systems.

The installation wizard will install files, by default, in **C:\Program Files \Arundle Optics\Microseam_v5** for 32 bit operating systems and **C:\Program Files (x86)\Arundle Optics\Microseam_v5** for 64 bit operating systems, though other locations can be chosen.

A folder **C:\mis_v5** is also created with a series of sub-folders to contain user files. These folders are:


- customers
- formats
- images
- temp_snapshots.

4.1 Installing Microseam

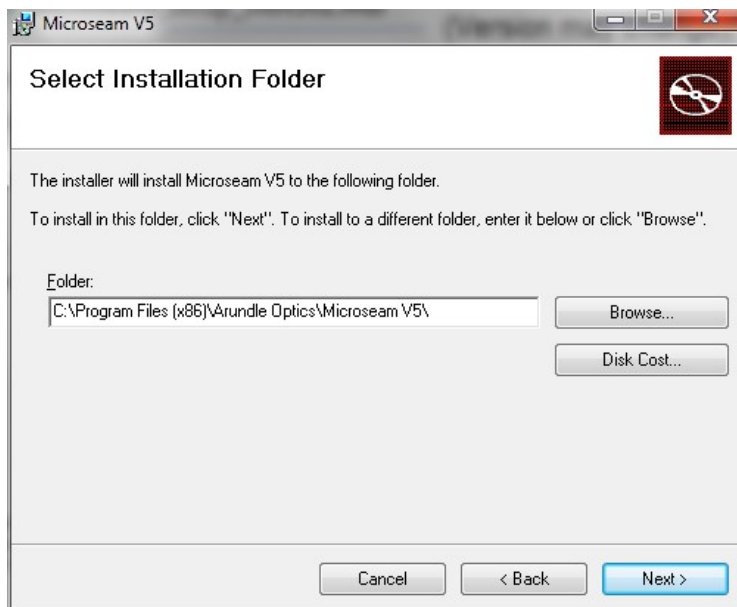
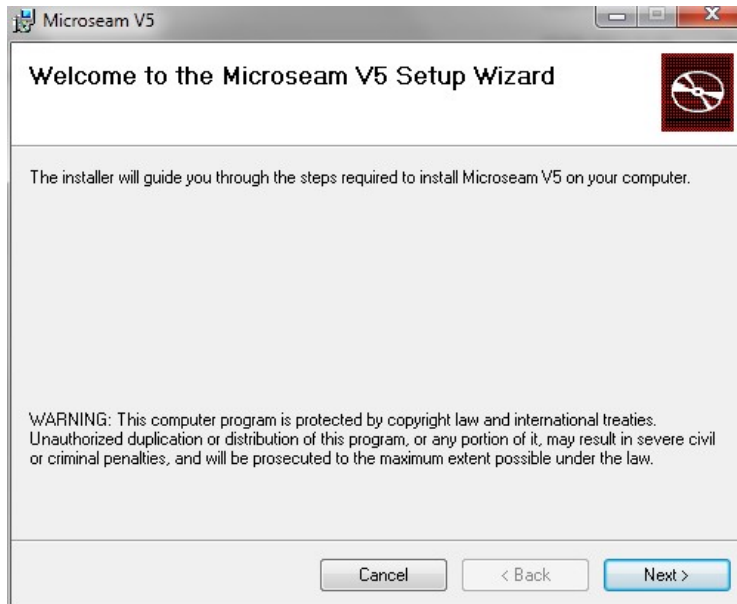
The Microseam program, which is supplied on a single CD-ROM, contains all three versions of Microseam (Budget, Standard and Professional); this allows the user to upgrade in the future by entering a supplied license code (see later).

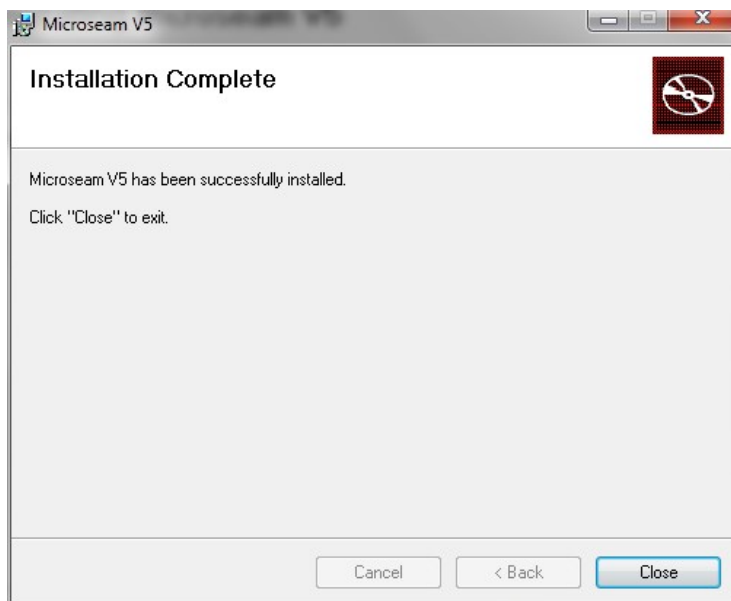
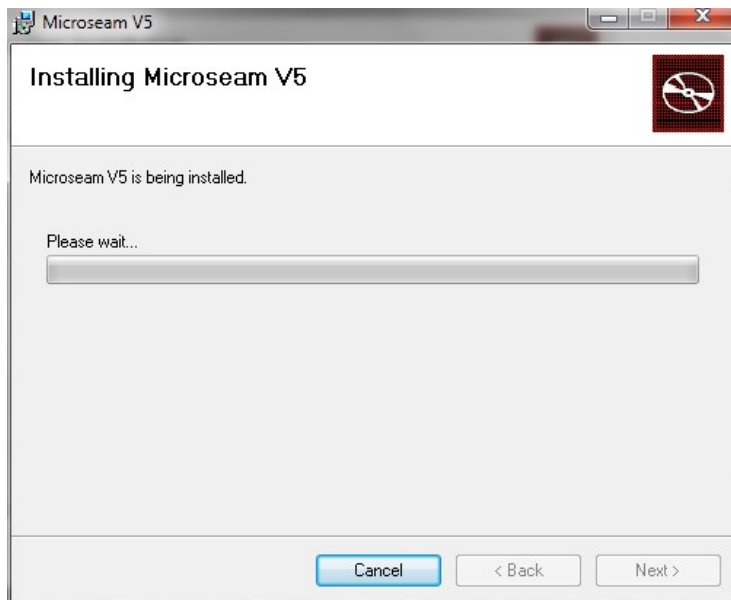
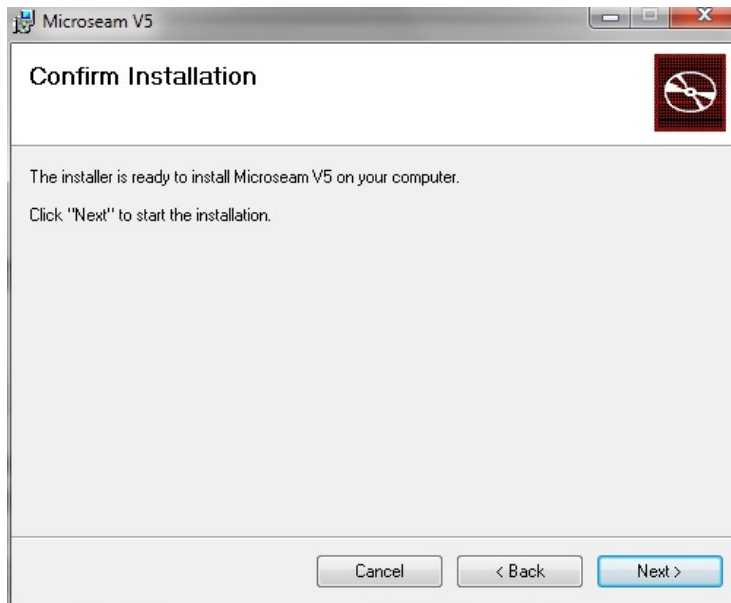
The CD-ROM will contain the license code for the version purchased.

- Insert the CD-ROM containing the Microseam software into the CD drive.
- To start the Setup Wizard, navigate to the CD drive and double-click on:

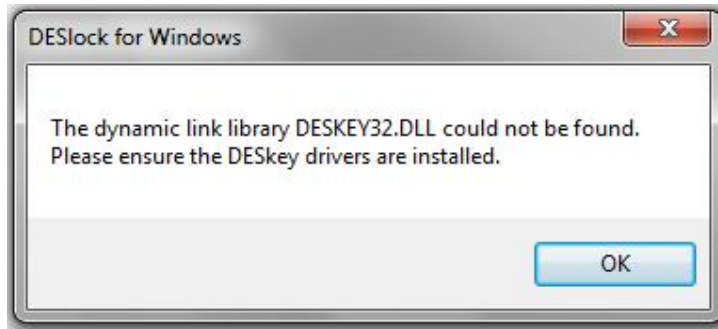
 `microseam_setup_5v0v7v0.msi` (Version may change).

- The setup wizard will guide the user through the installation process as shown below:






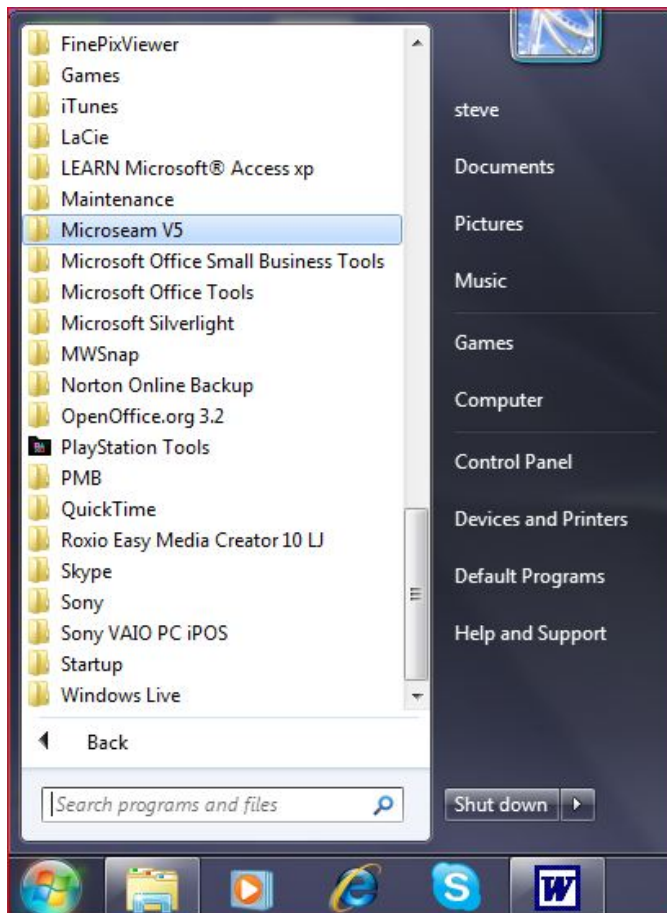
After installation, do not run Microseam or connect the Camera, before installing the drivers for the DESkey dongle and USB camera (see sections below), otherwise the following message will be seen:



4.2 Installing the DESkey Dongle Drivers

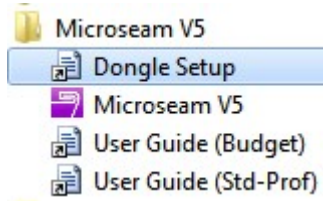
For software copyright protection, a protection device (DESkey DK2 Dongle) is installed inside the camera. Thus the Microseam program will not run without the camera attached. For the 'dongle' to function, drivers **must** be installed as explained below:

- Click on the Windows **Start** icon  at the bottom left of the screen.
- Click **All Programs**, which will display a list of installed programs similar to below:



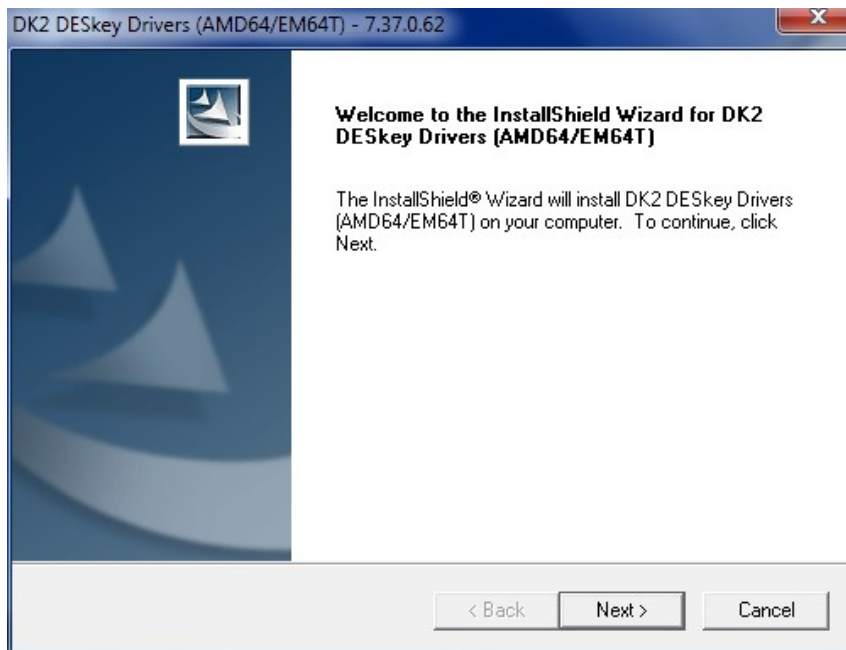
- Click on Microseam V5.

A list of Microseam programs will appear:

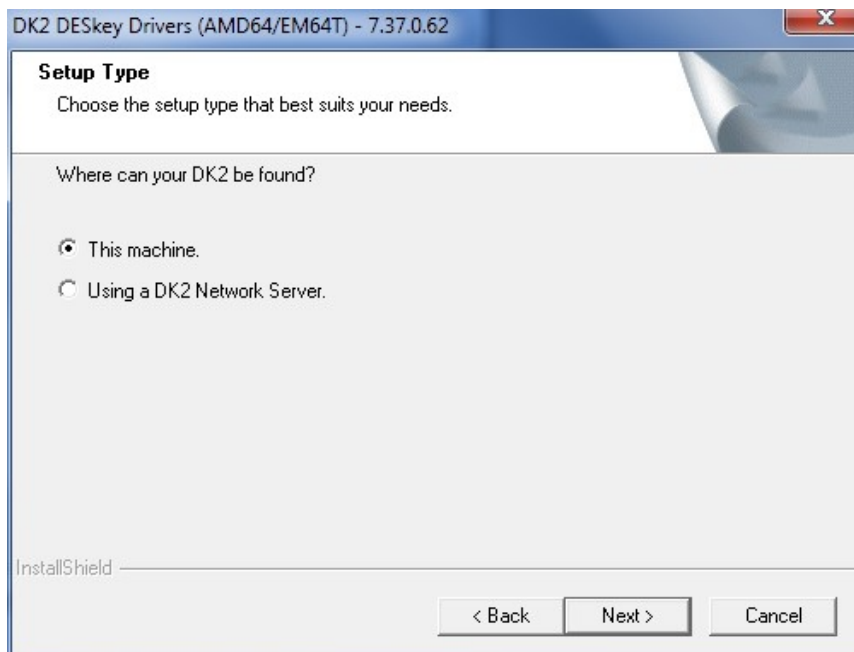


- Click on Dongle Setup.

The installation wizard will provide a guide through the installation process for the DESkey DK2 dongle drivers.



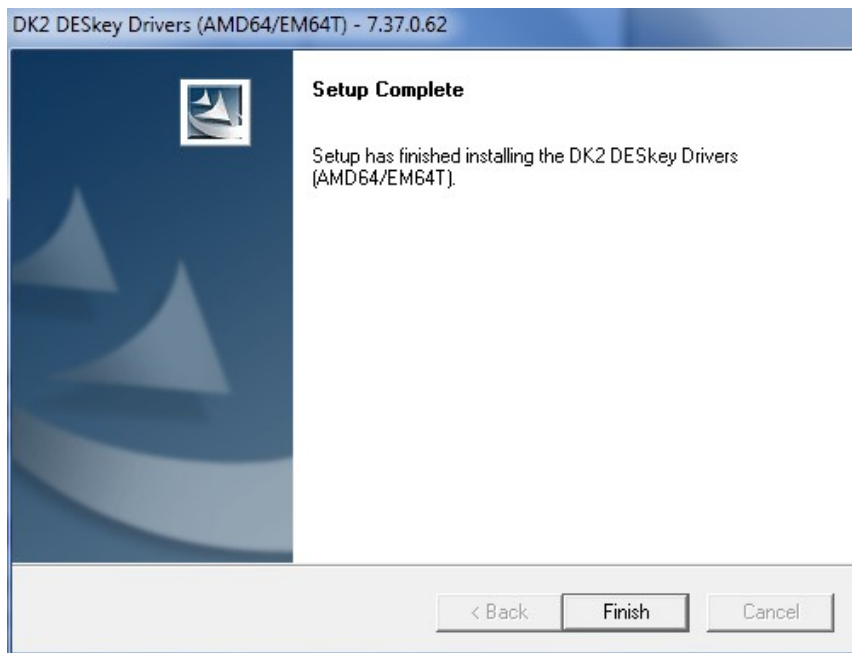
- Click on the **Next** button.



- Select **This machine** and click the **Next** button.



- Click the **Install** button.



- Click the **Finish** button.

If the operating system is ever upgraded after installing the dongle drivers, for example from Window XP to Vista or Windows 7, uninstall the drivers first and reinstall after the operating system upgrade. Further information can be found at <http://www.deskey.co.uk>.

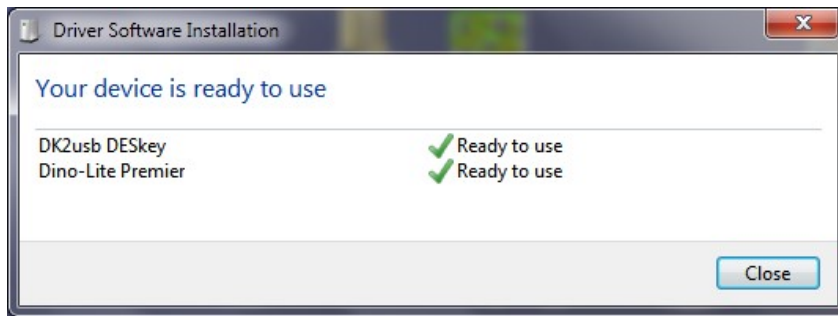
4.3 Installing the USB Camera Drivers

For the USB camera to operate, a driver must be installed. The camera uses the standard Microsoft driver and this process is carried out automatically when the camera is connected for the first time (see below).

4.4 Completing the Installation

To complete the installation, the USB camera must be connected to the PC. The PC will recognise the device and install the necessary software.

- Plug the USB cable from the camera into a free USB socket on the PC.
- Messages regarding the installation progress of the camera and dongle will appear.



4.5 Entering the License Code

To enable the version of Microseam software purchased, a license code must be entered as described below:

- Ensure the camera is connected to the PC.
- Start the Microseam program.

To start Microseam from the icon on the desktop:

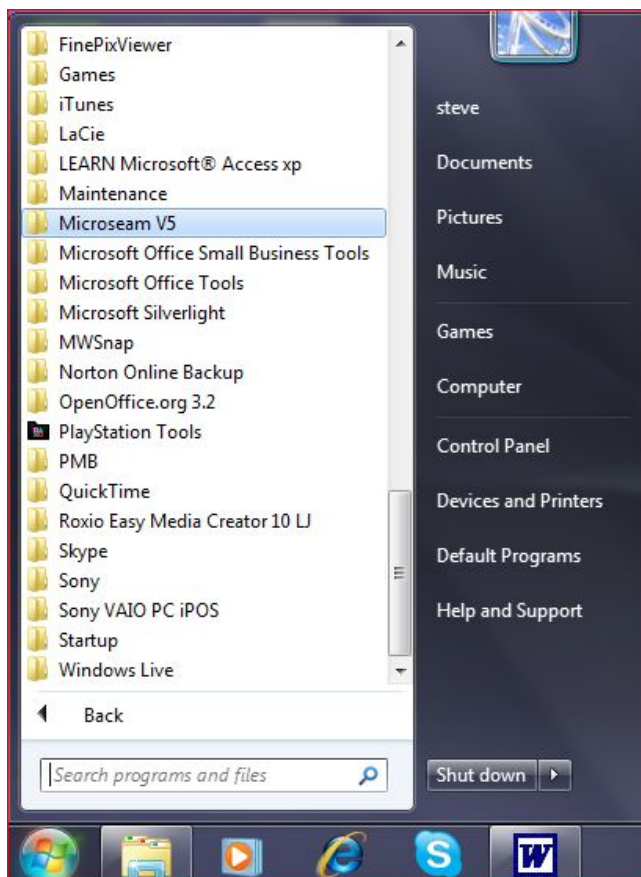


- Double-click the Microseam icon

To start Microseam from the Windows Start Menu:

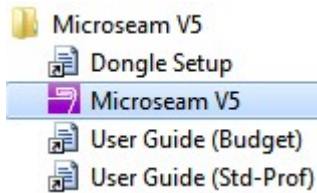


- Click on the Windows **Start** icon at the bottom left of the screen.
- Click **All Programs**, which will display a list of installed programs:



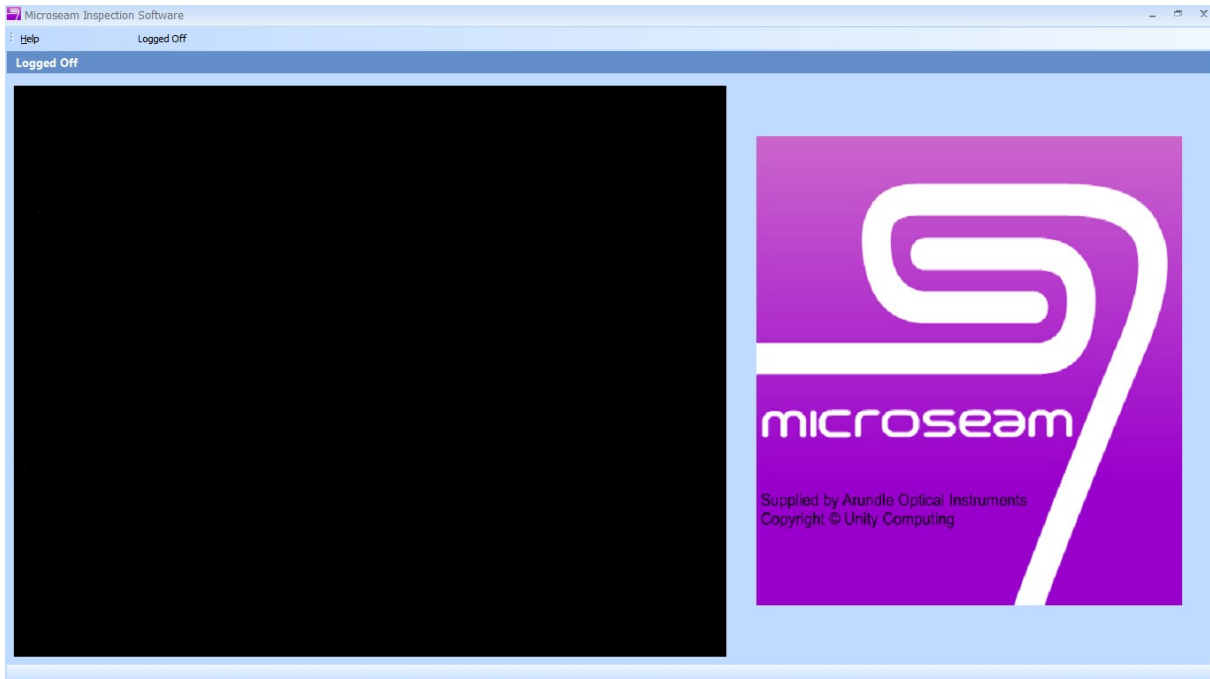
- Click on **Microseam V5**.

A list of Microseam programs will appear:

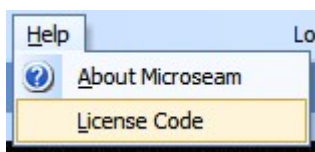


- Click on **Microseam V5**.

The Microseam program starts and the 'Logged Off' screen appears:



- From the main top menu bar select the **Help** option then **License Code**.

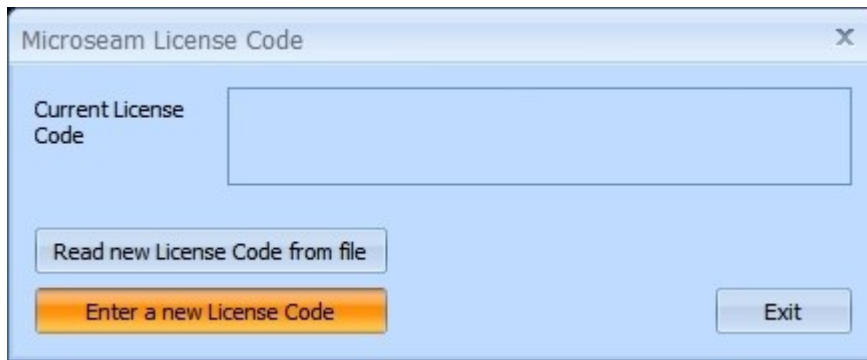


A 'Microseam License Code' box appears.

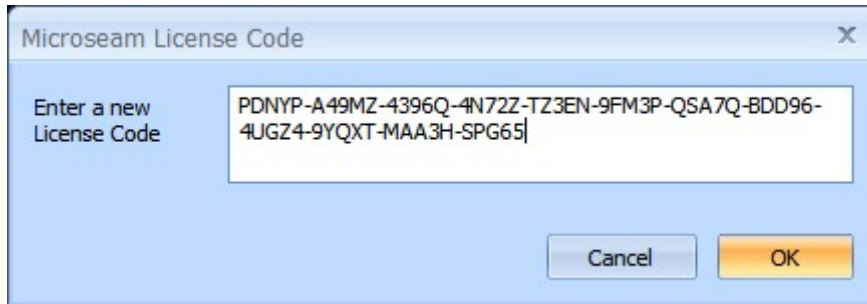
There are two ways of entering the License Code, by reading the license code from a file on a supplied CD-ROM or by entering the license code manually.

Entering the License Code manually:

- Click the **Enter a new License Code** button.

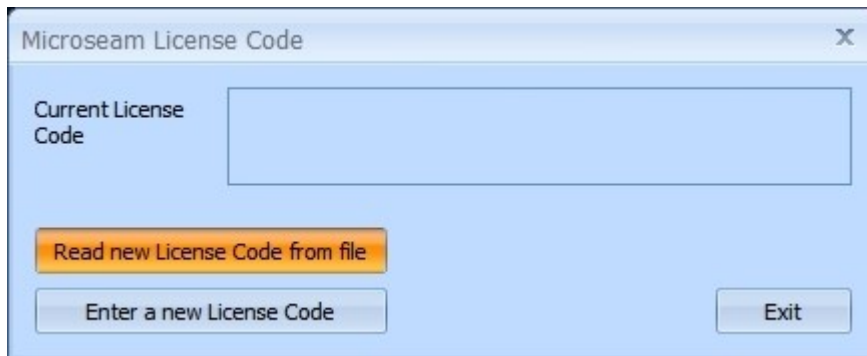


- Enter the License Code in the box provided and click **OK**.

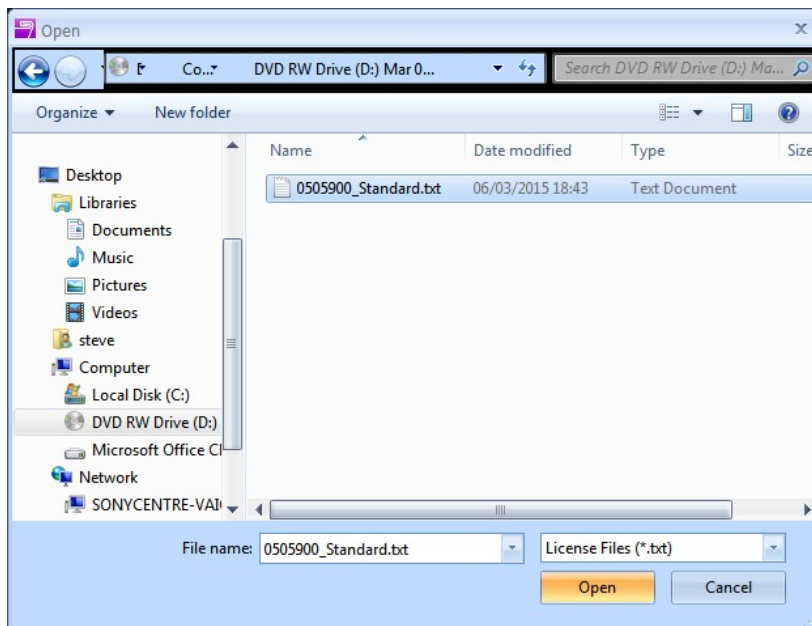


Entering the License Code from a file:

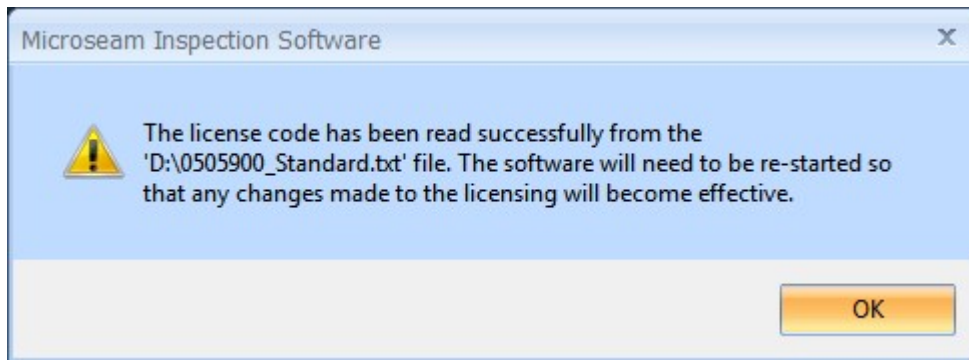
- Click the **Read new License Code from file** button.



A file-browsing window opens:



- Navigate to the drive/folder containing the license code file, click on the license code text file then click the **Open** button.



- Click the **OK** button.
- To exit Microseam from the 'Logged Off' window, click the **Close** button, which is the cross in the top right hand corner.



- Restart the Microseam program.

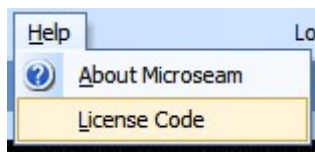
4.6 Software License Upgrade

If the software purchased, and now installed, is the 'Standard' version, an upgrade to the 'Professional' version can be purchased and enabled as described below.

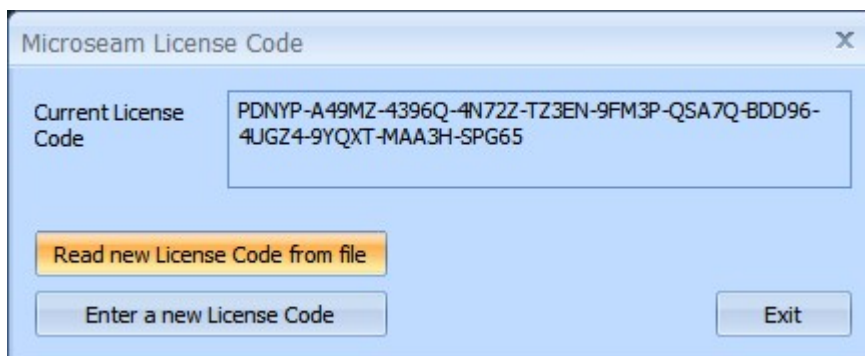
When an upgrade is purchased, a license code file will be supplied, either on CD-ROM or by email, together with instructions to copy the file to the PC running the Microseam software.

Then follow the procedure below:

- From the main top menu bar select the **Help** option then **License Code**.

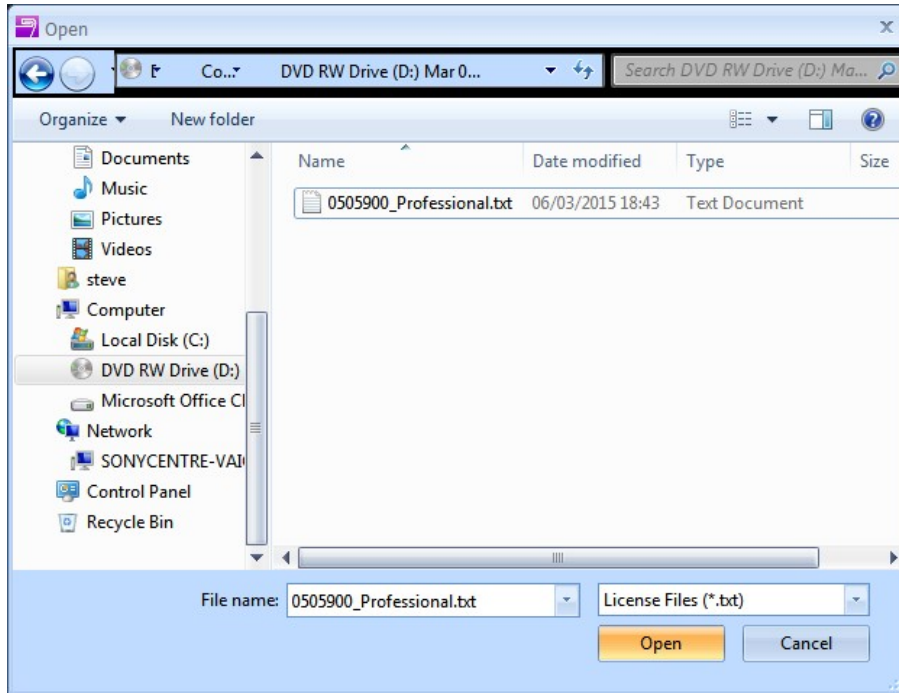


A License Code box, giving the current license code of the Microseam program, appears:

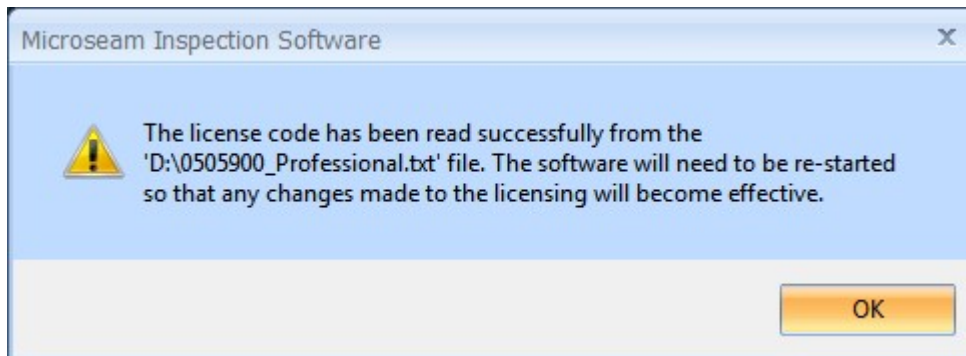


- Click on the **Read new License Code from file** button.

A file-browsing window opens:



- Navigate to the drive/folder containing the license code file, click on the license code text file then click the **Open** button.



- Click the **OK** button.
- Restart the Microseam program.

4.7 Removing Microseam

It may be necessary to remove Microseam from a PC for various reasons, one being to install a new software version.

IMPORTANT

The latest versions of the Microseam setup program (starting at version 5.0.7.0) will not remove any files in the 'c:\mis_v5' folder so it is not necessary to make a backup of the files before removing these versions.

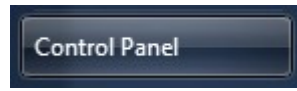
Versions prior to this will remove files from the 'c:\mis_v5' folder so it is advisable to make a backup of this folder (and all sub-folders) before removing Microseam. After upgrading, restoring the 'c:\mis_v5' folder from the backup will ensure that all user data and program configuration is restored to the system.

- Disconnect the camera from the PC.

- Click on the Windows **Start** icon



- Select **Control Panel**



- Select **Programs Uninstall a Program**.



Programs

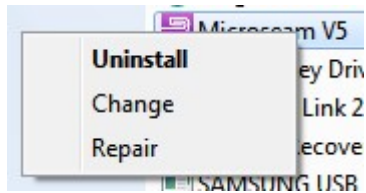
Uninstall a program

A list of installed programs appears.

- Locate the entries for Microseam and DK2 DESKey.

Microseam V5	Arundle Optics	07/03/2015	37.9 MB	5.0.70
DK2 DESKey Drivers v7.37.0.62	Data Encryption Systems Limited	06/03/2015		7.37.0.62

- Right click the 'Microseam' entry and from the list that appears choose **Uninstall**.



- Follow the same procedure for the 'DK2 DESKey Drivers'.
- Reboot the PC.

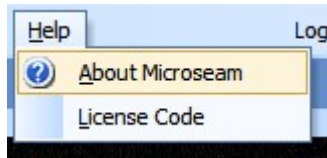
If a new version of Microseam is to be installed follow the procedure in Section 4 above.

If needed, copy to the folder 'C:\mis_v5' any files that were backed up earlier and are required to be available on the new version.

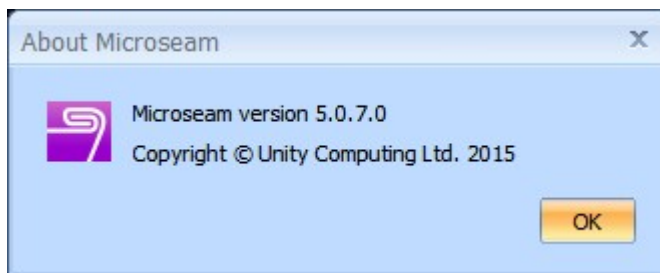
5 HELP A+S+U

5.1 Displaying the Program Version

- From the main top menu bar select the **Help** option.



- Select **About Microseam**.
- A box giving the version of the Microseam program appears:

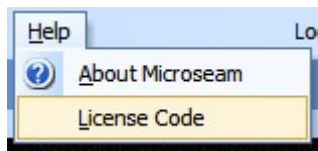


5.2 License Code

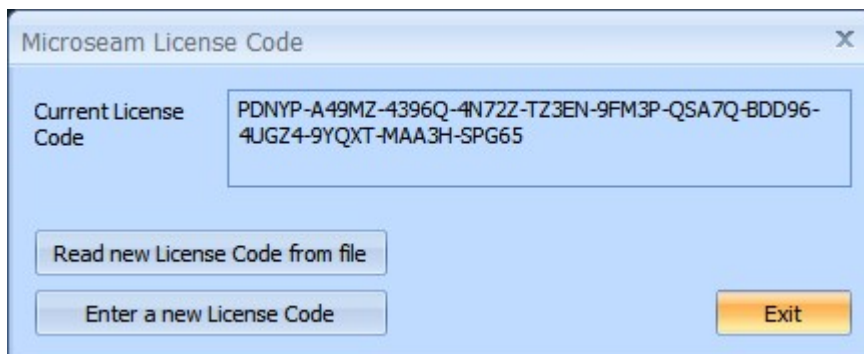
The software already installed contains all three versions of Microseam (Budget, Standard and Professional), which are selected by installing the appropriate license code.

The current installed license code can be viewed as follows:

- From the main top menu bar select the **Help** option then **License Code**.



A License Code box, giving the current license code of the Microseam program, appears:

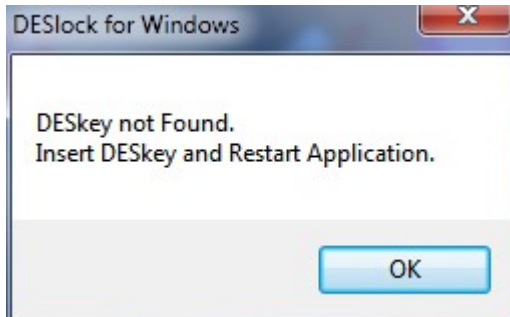


- Click **Exit** to close the box.

6 CONFIGURING MICROSEAM A

To complete the installation, the Administrator should run Microseam and configure it to their requirements as described below.

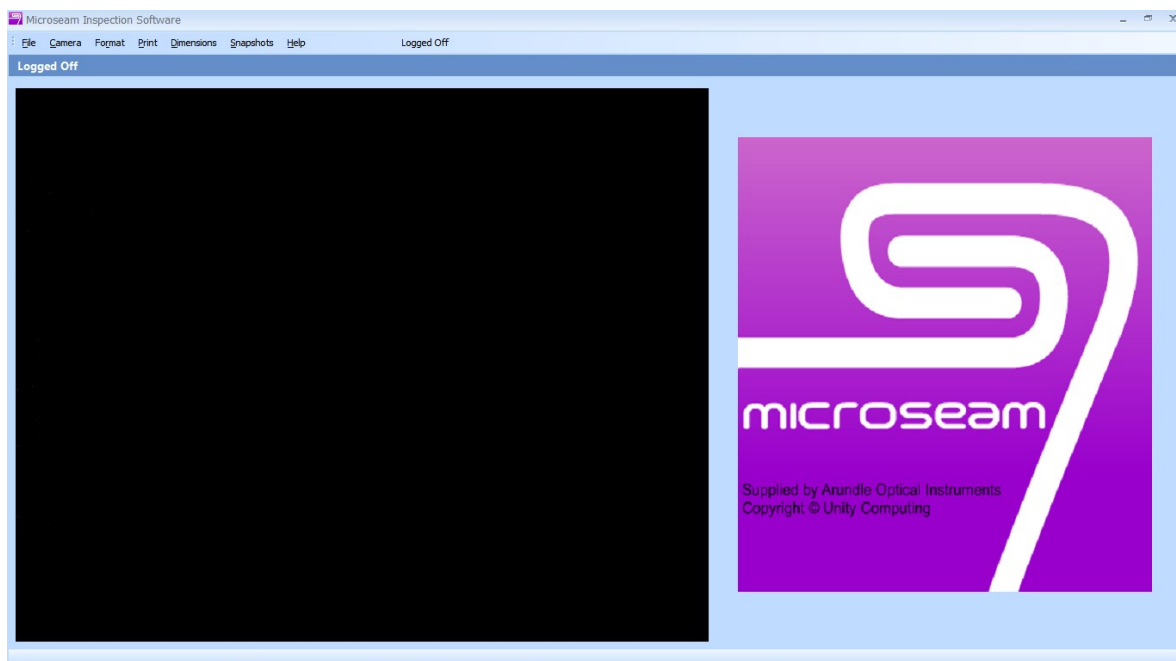
The program will not run without the camera connected and will generate the following message:



6.1 Start Microseam

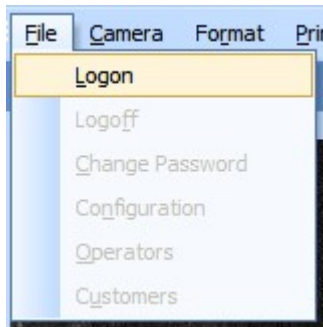
Start Microseam by double-clicking the icon on the desktop, or alternatively run it from the Windows Start Menu.

The Microseam program starts and the 'Logged Off' screen appears:

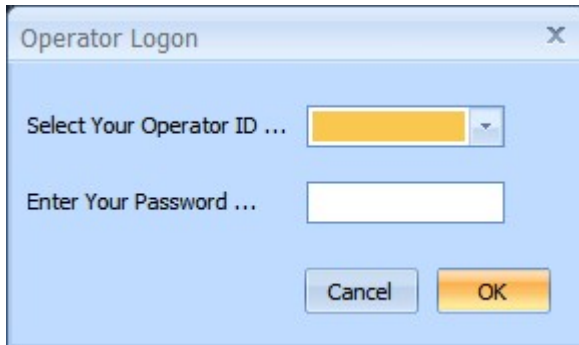


6.2 Log On as Administrator

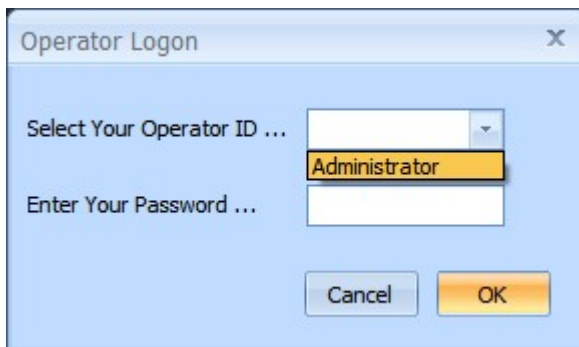
- From the main top menu bar select the **File** option, and from the list select **Logon**.



The 'Operator Logon' box appears:



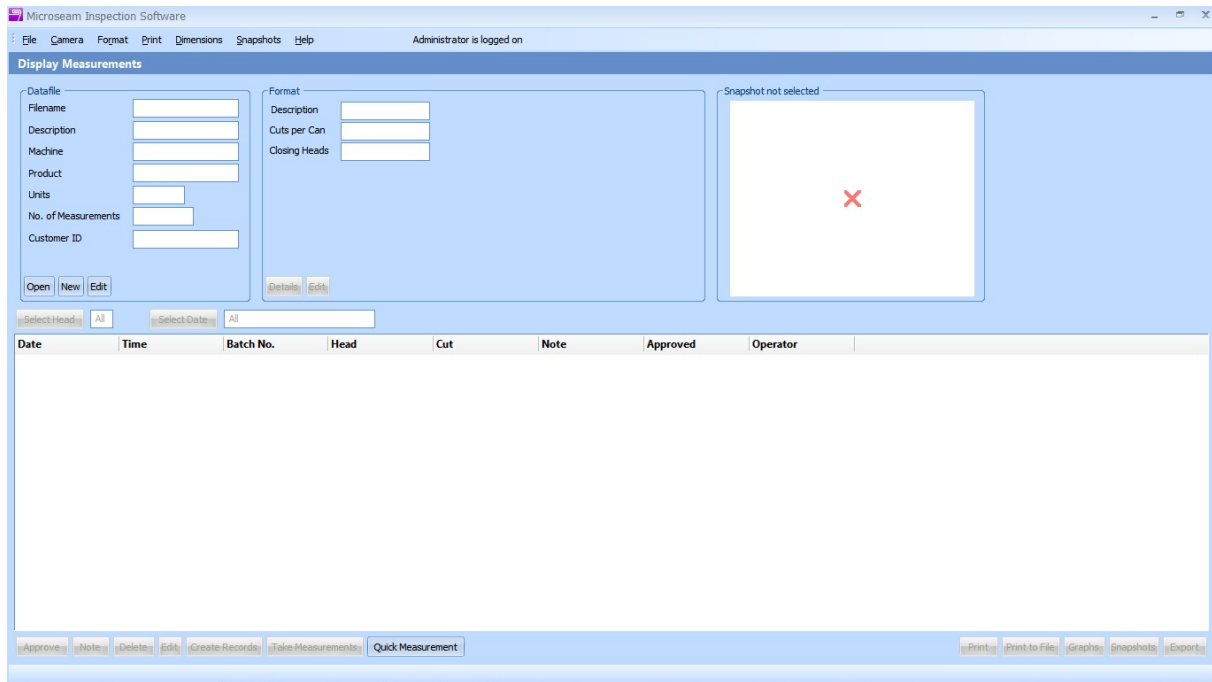
- In the 'Select Your Operator ID' box, click on the down arrow on the right hand side and from the list that appears select **Administrator**.



- There is no password set for the 'Administrator' when the software is first run, so leave the 'Enter Your Password...' box blank and click the **OK** button.

The main 'Display Measurements' screen is displayed, and all Microseam functions are available via the main top menu bar.

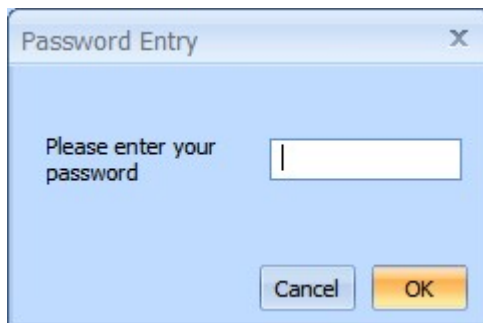
No data is displayed since no measurements have yet been made.



6.3 Setting the Administrator Password

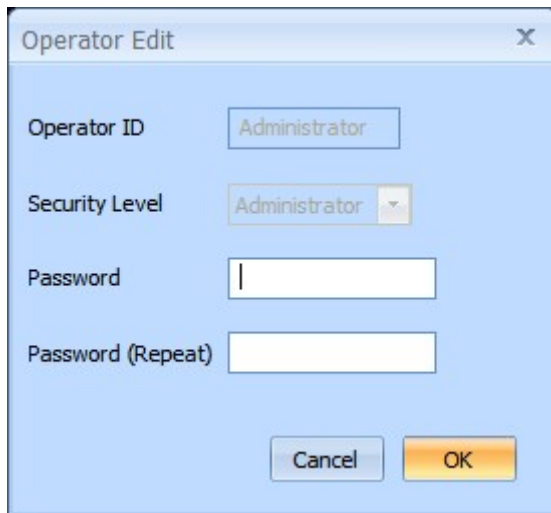
When first installed, Microseam has a fixed Operator ID of 'Administrator' with 'Security Level' of 'Administrator' but with **no password** set so for security reasons, the 'Administrator' password should be set as soon as possible:

- Run Microseam and log on as **Administrator**.
- From the main top menu bar select the **File** option, and from the drop down list select **Change Password**. The 'Password Entry' box appears:



- Do **NOT** enter anything in the 'Please enter your password' box, just click **OK**. This is because the Administrator password does not yet exist.

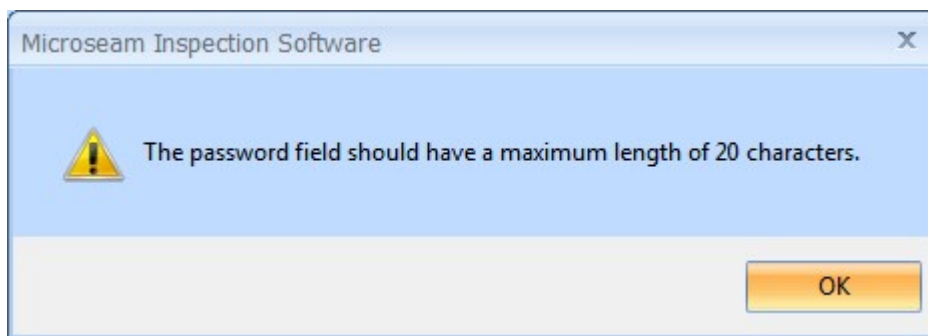
The 'Operator Edit' box appears:



The 'Operator Edit' dialog box is shown with a light blue background. It contains four input fields: 'Operator ID' with the text 'Administrator', 'Security Level' with a dropdown menu showing 'Administrator', 'Password' (empty), and 'Password (Repeat)' (empty). At the bottom, there are two buttons: 'Cancel' and 'OK'.

- Enter a password in the 'Password' box and enter again in the 'Password (Repeat)' box for verification.
- Click the **OK** button.

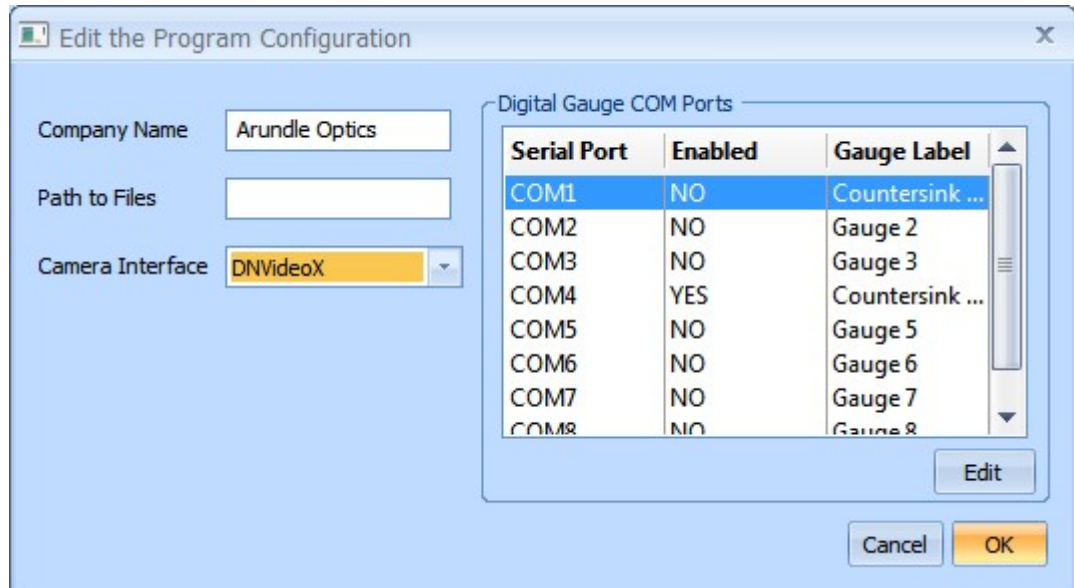
The password can be alpha numeric between 6 and 20 characters and is not case sensitive i.e. "PASSWORD", "password" and "Password" are all the same. If an attempt is made to enter a password, which is too long, the following error message will be received:



If the administrator password is forgotten, contact your Microseam vendor.

6.4 Program Configuration

- Run Microseam and log on as **Administrator**.
- The 'Display Measurements' screen appears.
- From the main menu bar select the **File** option and from the list, select **Configuration**. The 'Edit the Program Configuration' box appears:



Company Name

Enter a name as required to appear on printed output.

Path to Files

By default, Microseam stores its data in a top-level folder, on the same drive as the program files were installed (e.g. C:\mis_v5). This can be used to specify an alternative path, and can be used in network systems where a shared location is required for the data.

Camera Interface

This drop down list contains only 'DNVideoX' which suits the supplied camera. Additional interfaces may be added in future.

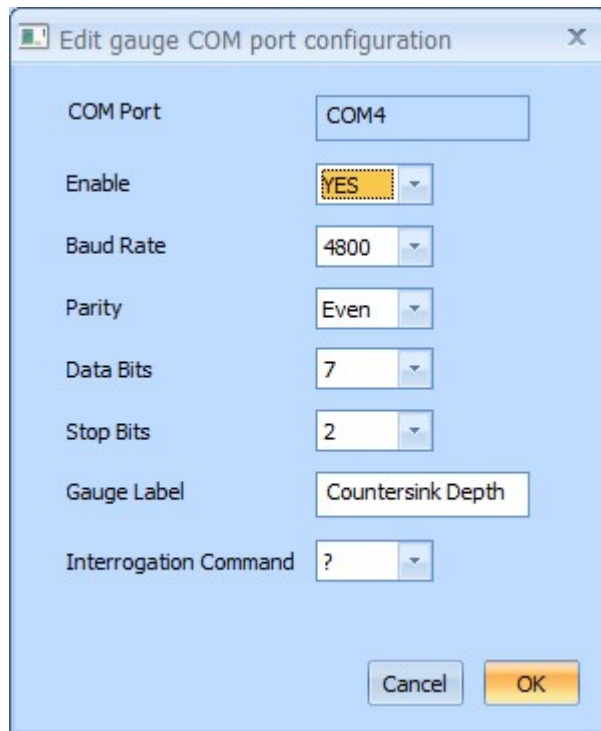
Digital Gauge COM Ports

This area shows the communications ports and other settings being used for the external digital gauge/gauges (if any).

To change these settings:

- Select a **COM** port.
- Click the **Edit** button.

The 'Edit gauge COM port configuration' box appears:



If the COM port is not 'Enabled' other information such as Baud Rate Parity etc will be grayed out.

- Make the required changes.
- Click the **OK** button, the 'Edit the Program Configuration' box reappears.
- When all COM port settings have been made, click the **OK** button.

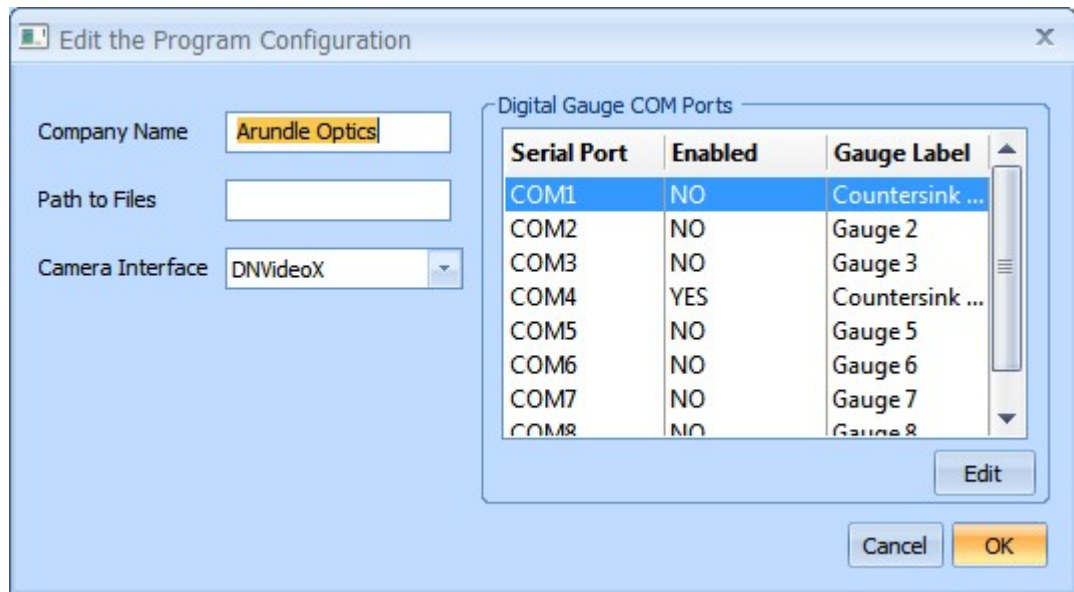
6.5 Sharing Data in a Network

If Microseam is installed on several PCs networked together, then by default each PC will have it's own local set of Microseam data, which cannot be accessed from other PC's on the network.

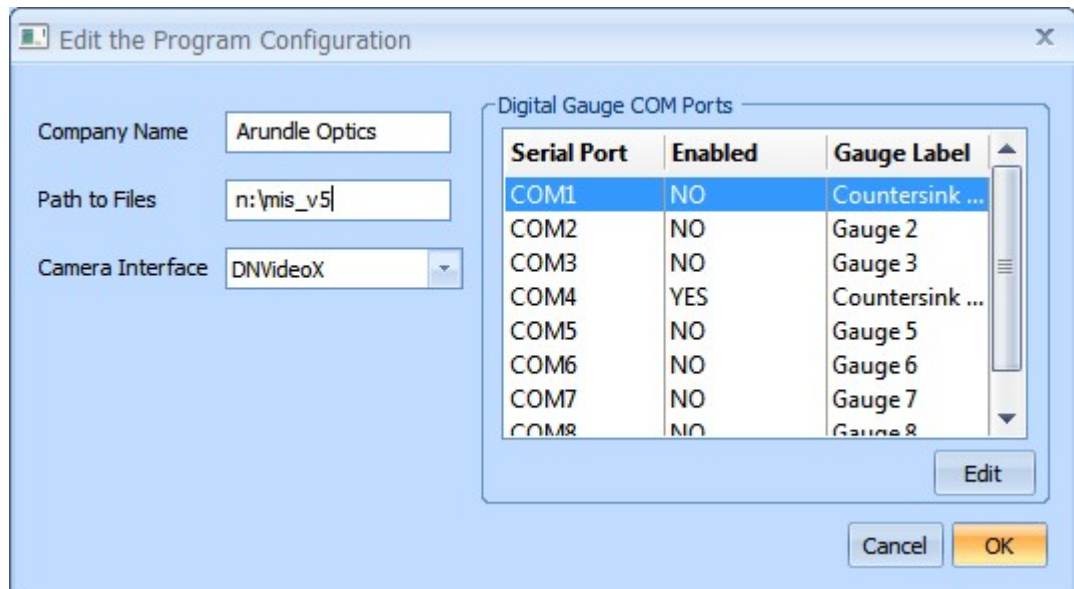
Alternatively, a single set of data (held in a shared folder) can be shared by all PCs on the network. To accomplish this, carry out the following on each PC, which shares the folder:

- Run Microseam and log on as **Administrator**.
- From the main menu bar select the **File** option and from the list select **Configuration**.

The 'Edit the Program Configuration' box appears:



- In the 'Path to Files' box enter the name of the shared network folder, e.g. **n:\mis_v5** where 'n' is the shared drive letter.



- Click the **OK** button.
- If existing Microseam data is to be shared, copy this to the shared drive by copying the contents of **C:\mis_v5**, including all subfolders.
- Restart Microseam.

6.6 Setting up a Digital Gauge

Microseam allows measurements to be taken using a digital gauge.

An example of a digital gauge is the Sylvac S229 dial gauge, which can be connected to the PC via the Opto-USB cable supplied with the gauge.

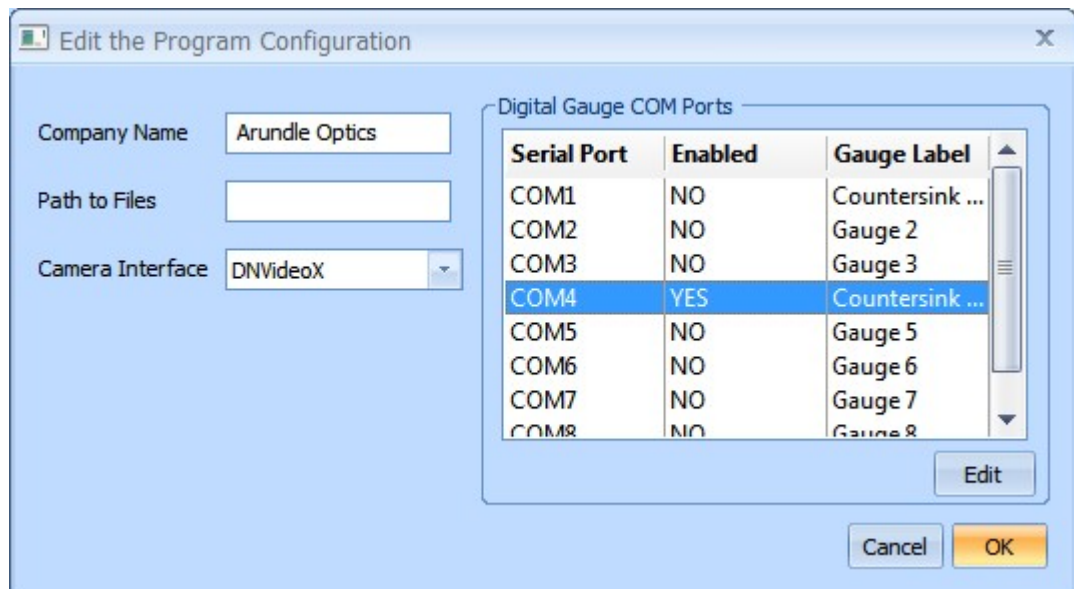


Before connecting a gauge, its driver software must be installed by running the setup program on the disk supplied by the manufacturer. The Microseam configuration dialog should be used to configure the virtual COM port using the same COM port number used by the setup program.

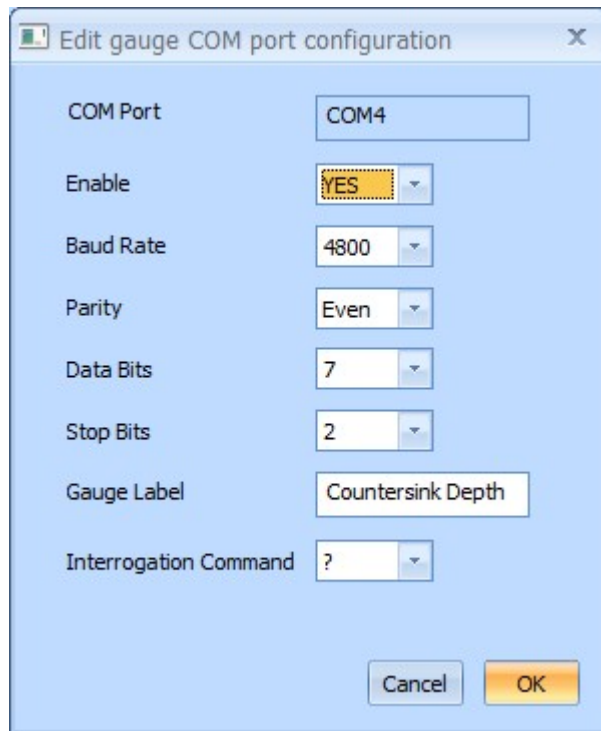
The Sylvac S229 dial gauge for example would use the following transmission parameters: **4800 baud, even parity, 7 data bits, 2 stop bits.**

- Run Microseam and log on as **Administrator**.
- From the main menu bar select the **File** option and from the list select **Configuration**.

The 'Edit the Program Configuration' box appears:



- Select the port number into which the Digital Gauge is connected (COM1, to COM8). COM4 is shown in the example above.
- Click the **Edit** button. The 'Edit gauge COM port configuration' box appears:



- Set 'Enable' to **YES** then set the COM port parameters to match the Digital Gauge (Baud Rate, Parity, Data Bits, and Stop Bits).
- In the 'Gauge Label' box enter a description for the gauge function.
- The Interrogation Command box is used to select the command sent to the gauge so that the gauge will output its current reading. This can be selected from '?' or 'LF'. When '?' is selected then a question mark is sent to the gauge and when LF is selected then a line feed character is sent to the gauge.
- Click the **OK** button.
- When the 'Edit the Program Configuration' box re-appears, click the **OK** button.

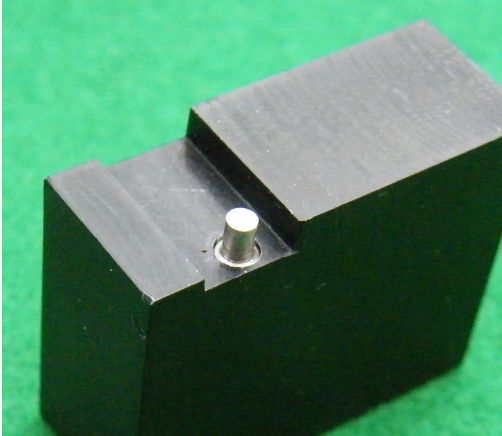
NOTE: To specify that a dimension is to be input using the gauge, define it with type 'Digital Gauge' when creating or editing the format.

6.7 Calibrating the Camera

The Administrator is responsible for calibrating the camera so that accurate measurements can be taken. Calibration need only be performed the first time Microseam is used, unless the camera position or magnification is subsequently adjusted.

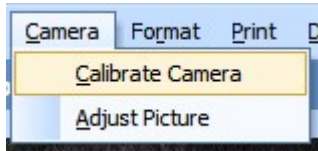
A metal cylinder, 2mm in diameter and embedded in a rectangular block, is supplied to enable calibration of the camera.

The calibration block is specially shaped with a channel so that it locates on the camera without the need to locate the image by moving the block.

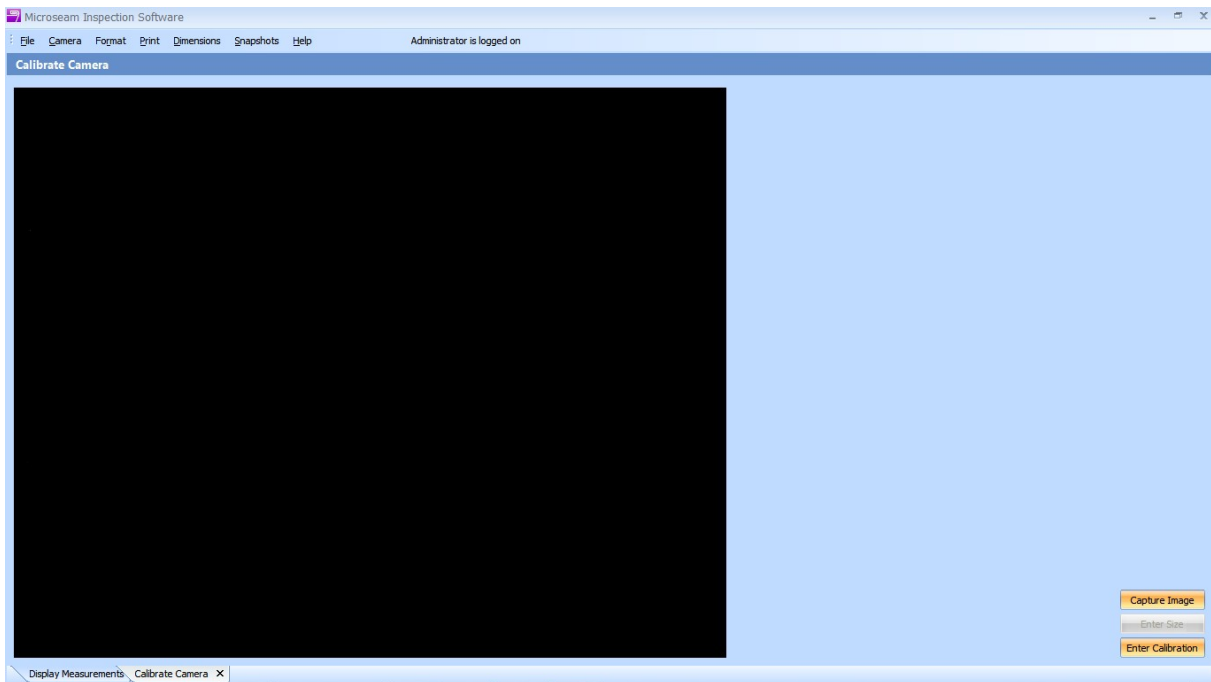


To calibrate the camera:

- Run Microseam and log on as **Administrator**.
- From the main menu bar select **Camera** then **Calibrate Camera**.

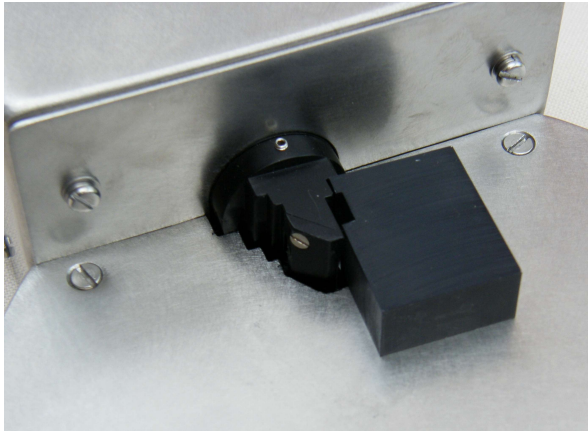


The 'Calibrate Camera' window appears:

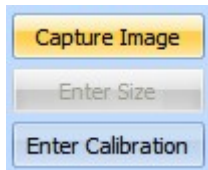


The large dark area is the live output from the camera.

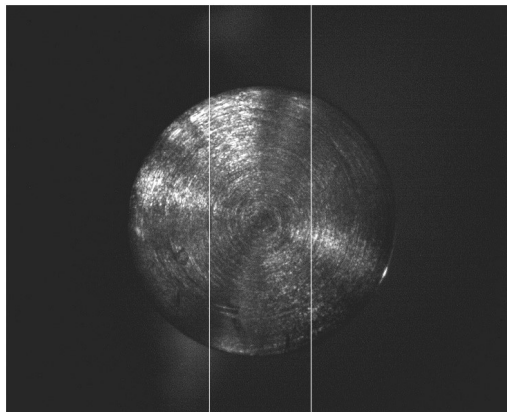
- Position the calibration block on the camera as shown in the following photograph:



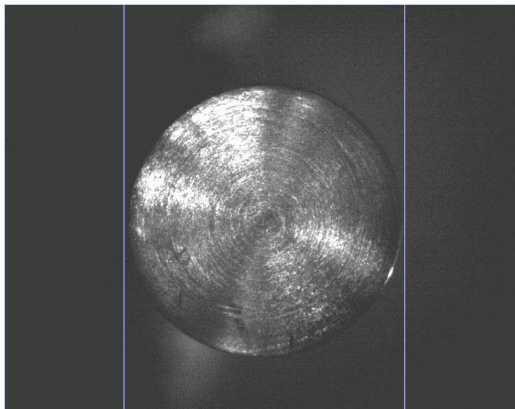
- Click the **Capture Image** button at the bottom right hand of the window:



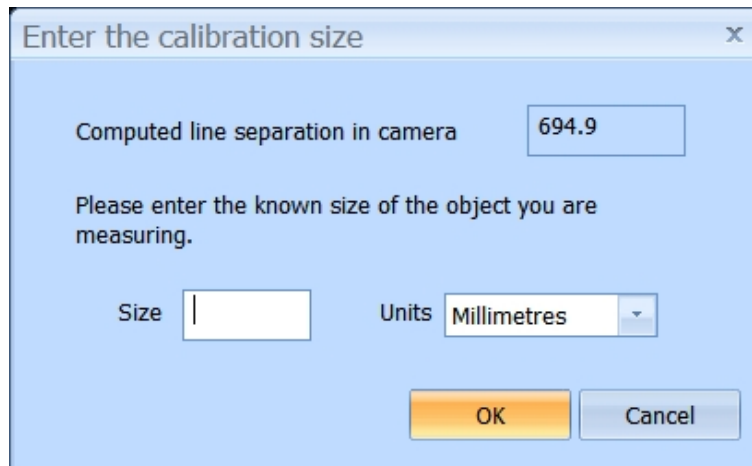
- The image is captured and appears in the window with two yellow vertical lines.



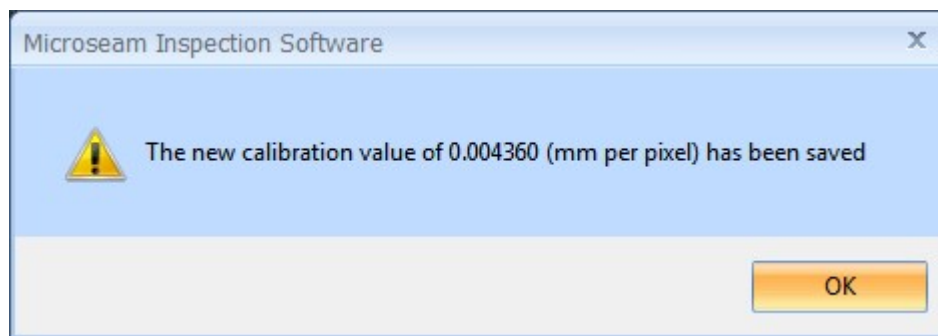
- Drag each of these lines in turn to the left and right sides of the cylinders diameter. As they are dragged into position the colour turns red and once positioned the colour turns blue.
- As an aid to positioning the lines accurately, if the right mouse button is clicked while on a line, an enlarged view appears. This can also be achieved by holding down any key while moving a line with the left button.



- Click on the **Enter Size** button. Note: the 'Enter Size' button is grayed out until both lines have been moved. The 'Enter the calibration size' box appears:



- Enter the known diameter of the cylinder in mm or inches. When satisfied click the **OK** button. A confirmation box appears:



- Click the **OK** button and this calibration is stored for use in all subsequent measurements.
- To exit from camera calibration, click on the cross on the 'Calibrate Camera' tab at the bottom left of the screen.

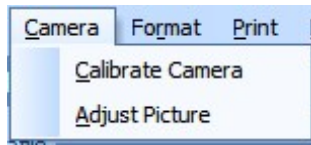


The 'Enter Calibration' button is provided as an alternative means of entering the calibration value manually without having to measure a cylinder.

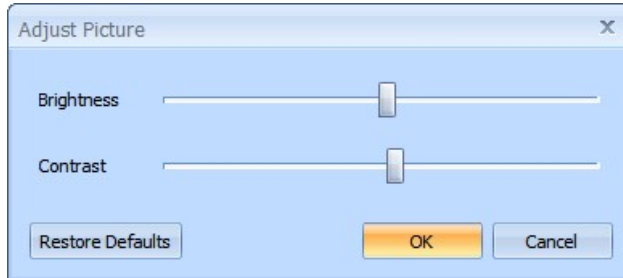
6.8 Adjusting the Camera **A+S+U**

The camera can have its Brightness and Contrast adjusted to provide a satisfactory image of a seam. This must be done with a live camera image on screen and with a can positioned on the camera.

- Run Microseam and log on as any user.
- Click the **Quick Measurement** button at the bottom of the 'Display Measurements' screen. The 'Quick Measurement' screen appears showing the live camera image.
- From the main menu bar select **Camera** then **Adjust Picture**.



The 'Adjust Picture' box appears:



- Click on the **Brightness** or **Contrast** slider and drag to a new position. The image will change and when happy with the image quality, click the **OK** button.
- To return to the default settings click the **Restore Defaults** button then click **OK**.

7 ADMINISTRATOR ACTIONS

7.1 System Backup

IMPORTANT

Microseam does not automatically back up any of its data so Administrators are strongly advised to include the Microseam data files in routine backup procedures.





These files all reside in a single folder, which is normally **C:\mis_v5** unless Microseam was installed on a different drive or configured to use a different folder using the 'Configuration' option in the 'File' menu.

This folder contains several subfolders, all of which should be backed up at regular intervals.

7.2 Customer Setup

Setting a customer allows information to be stored against a particular customer for later retrieval. Files created for a particular customer will be stored on the PC in a folder for that 'Customer ID'.

Customer ID's, by default, are held in a folder 'C:\mis_v5\customers' as shown below:

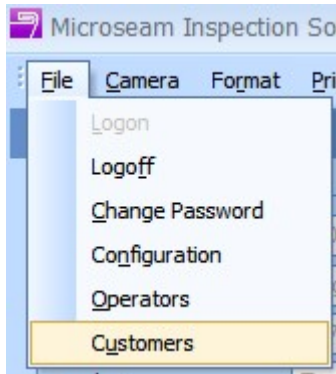
Name	Date modified	Type
 Dairy Fresh	21/03/2015 14:53	File folder
 Default	06/03/2015 21:14	File folder
 Metal Closures	21/03/2015 08:05	File folder
 United Foods	21/03/2015 08:05	File folder

Inside each Customer folder are folders storing 'datafiles' and 'snapshots'.

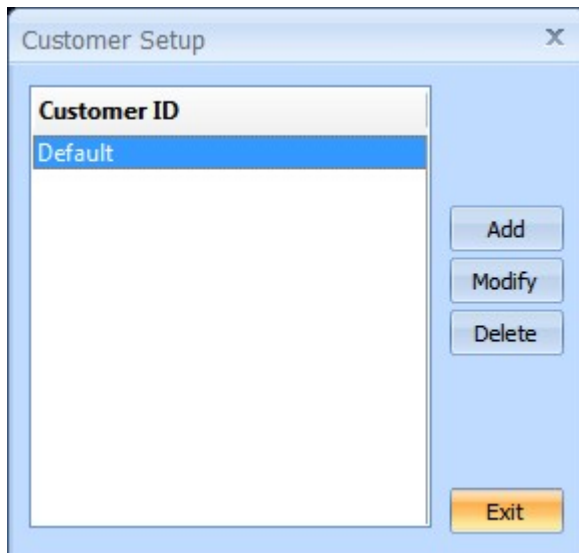
Name	Date modified	Type
datafile	21/03/2015 14:56	File folder
snapshots	21/03/2015 14:56	File folder

Add a Customer

- From the top menu bar select **File** then **Customers**.

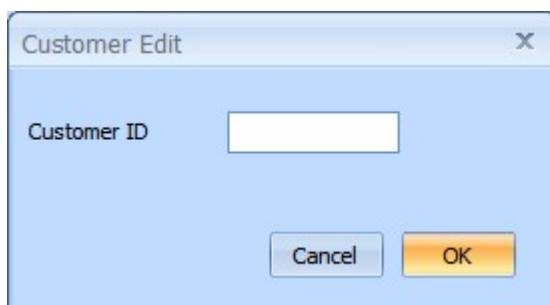


The 'Customer Setup' box appears:

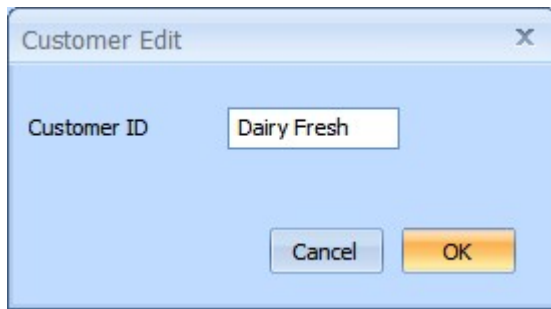


- Click the **ADD** button.

The 'Customer Edit' box appears:

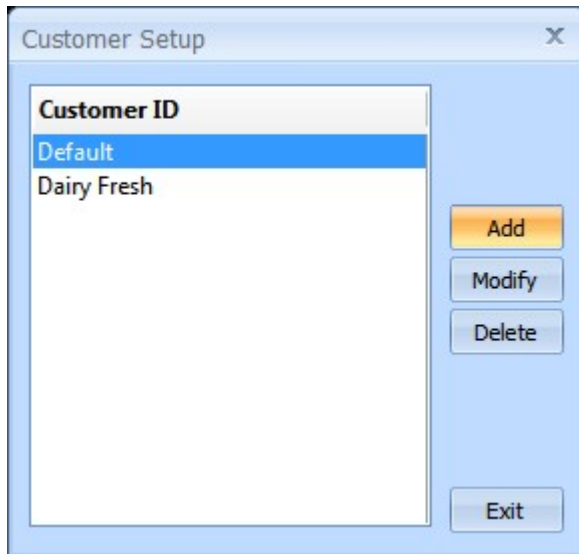


- In the 'Customer ID' box insert the customer name (Alpha-numeric 9 - 14 characters long).



- Click the **OK** button.

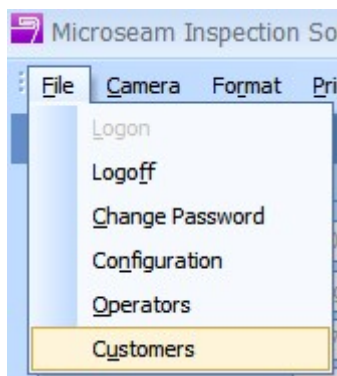
The 'Customer Setup' box re-appears showing the new 'Customer ID':



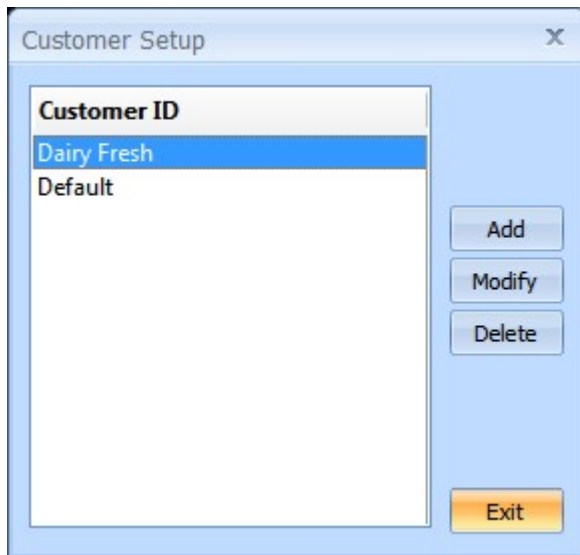
- If happy with the new 'Customer ID' click the **Exit** button or if not, click the **Modify** button (see below).

Modify a Customer

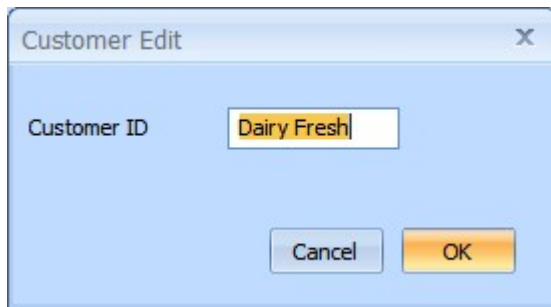
- From the top menu bar select **File** then **Customers**.



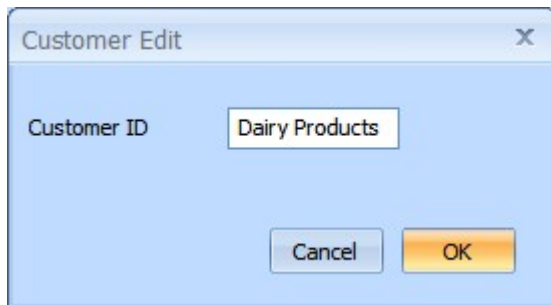
The 'Customer Setup' box appears:



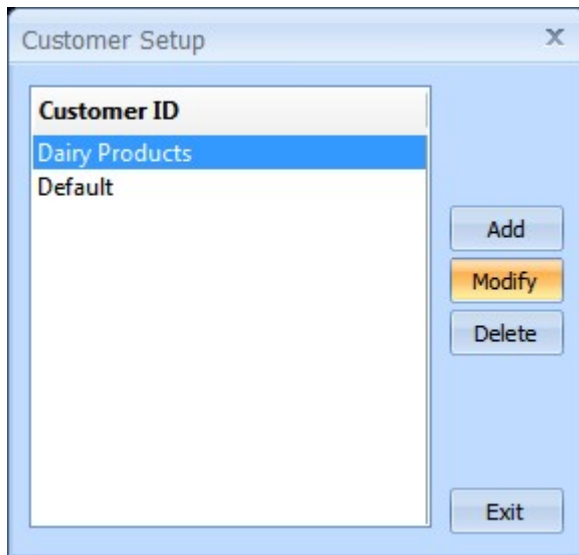
- Select the 'Customer ID' to be modified and click the **Modify** button. The 'Customer Edit' box appears:



- Modify the 'Customer ID' (Alpha-numeric 9 - 14 characters long):



- Click the **OK** button. The 'Customer Setup' box re-appears showing the modified 'Customer ID':



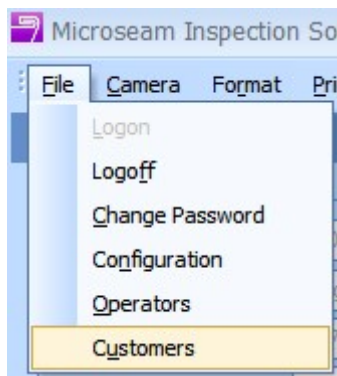
- When happy with the change click the **Exit** button.

Delete a Customer

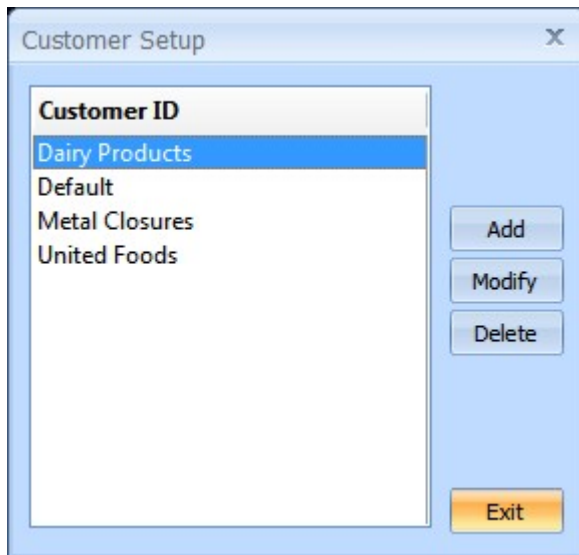
CAUTION:

Deleting a customer will delete the customer folder and datafiles/snapshots contained within. If it is needed to keep these files for archive purposes then copy the customer folder to another location before deleting the customer.

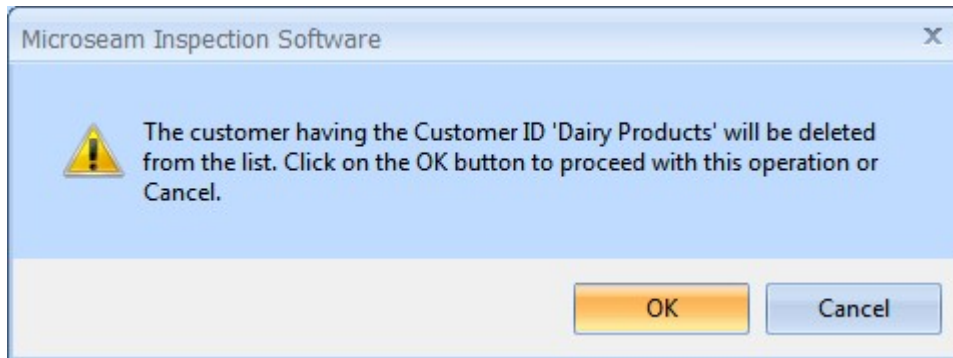
- From the top menu bar select **File** then **Customers**.



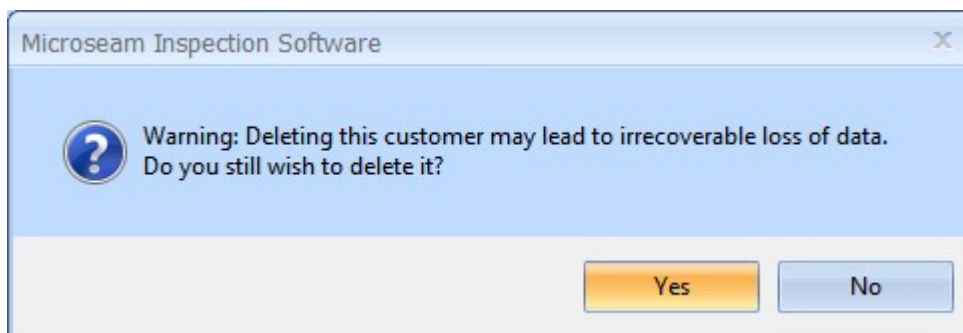
The 'Customer Setup' box appears:



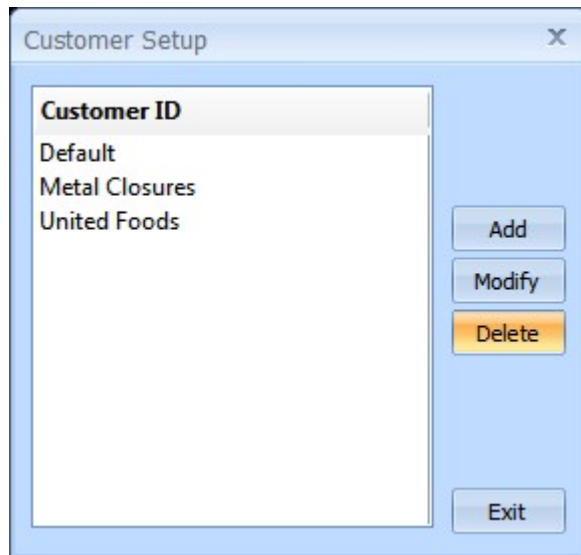
- Select the 'Customer ID' to be deleted and click the **Delete** button:
- A warning message appears:



- Click the **OK** button. A further warning message appears:



- If absolutely sure then click the **Yes** button.
The 'Customer Setup' box appears with the 'Customer ID' removed:



- Click the **Exit** button.

7.3 Operator Setup

7.3.1 Security Levels

Microseam has 3 levels of password-controlled security, which enables different operators to be allowed access to different software features:

- **User**
A User can take measurements, add notes to measurements, print data, produce graphs and export data.
- **Supervisor**
A Supervisor can perform all 'User' functions and in addition can delete or approve measurements.
- **Administrator**
An administrator has access to all functions within Microseam and can create new users, delete existing users and allocate the security level at which they can operate.

If an operator who is defined as a 'User' for security purposes attempts to use a feature restricted to Supervisor or Administrator, Microseam displays an error message.

In this document, certain main section headings are marked with a letter to indicate the authority needed to carry out the procedures, e.g.

A=Administrator, **S**=Supervisor, **U**=User. If certain subsections can be used by other users, these will be marked to suit e.g. **S+U**.

7.3.2 Create a New Operator

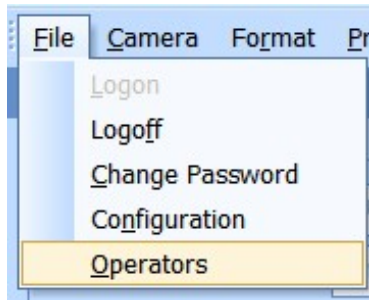
When first installed, Microseam has a fixed operator ID of 'Administrator' with 'Security Level' of 'Administrator'.

Each operator of the system should be allocated an ID and Password as follows:

- Run Microseam and log on as **Administrator**.

The main screen appears showing the Microseam logo and the output from the camera.

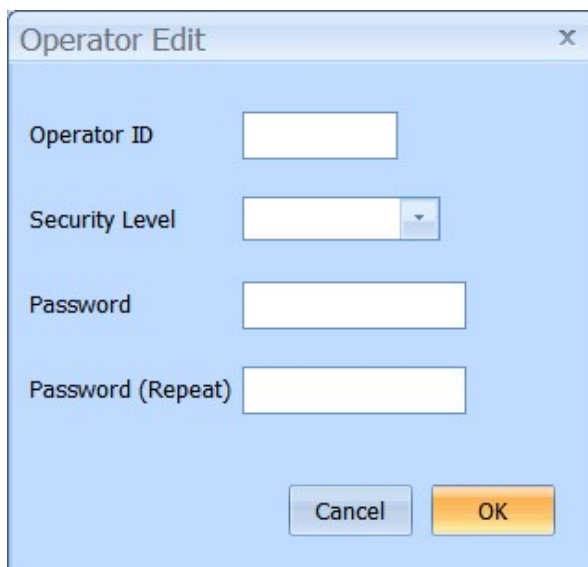
- From the main menu bar select **File**, and from the drop down list select **Operators**.



The 'Operator Setup' box appears:



- Click the **Add** button. A blank 'Operator Edit' box appears:



- Enter an **Operator ID**, which can be alpha numeric with a length of between 1 and until the Operator ID box is full, which depends on the characters used and if upper or lower case.

If an attempt is made to leave the 'Operator ID' blank, an error message will appear after selecting 'OK' as follows:



- Enter a 'Security Level' from the drop down list. Choices are **Administrator**, **Supervisor** and **User**.

Note:

Microseam does not limit the number of Administrators, Supervisors, or Users that can be created in the software so it would perfectly possible to have (for example) three Administrators, four Supervisors, and eight Users.

- Enter a **Password** in the 'Password' box. The password can be alpha numeric between 6 and 20 characters and is not case sensitive i.e. "PASSWORD", "password" and "Password" are all the same.
- Enter the password again in the 'Password (Repeat)' box.

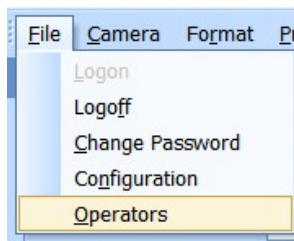


- Click the **OK** button.
- The 'Operator Setup' box re-appears with the new entry, 'A New OP', shown.



7.3.3 Delete an Operator

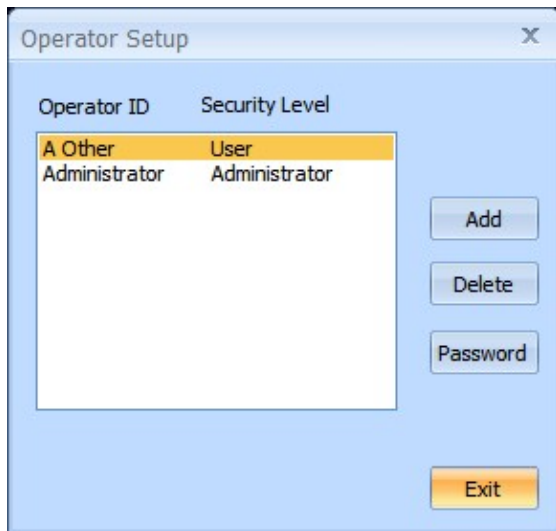
- Run Microseam and log on as **Administrator**.
- From the main menu bar select **File** and from the drop down list select **Operators**.



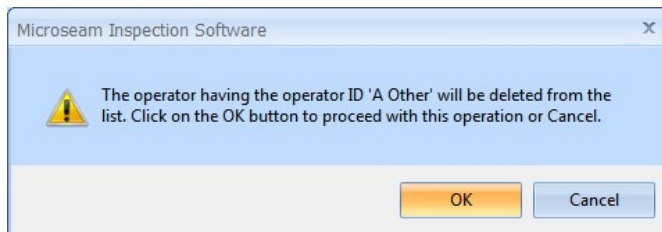
The 'Operator Setup' box appears:



- Click on the **Operator ID** to be deleted.



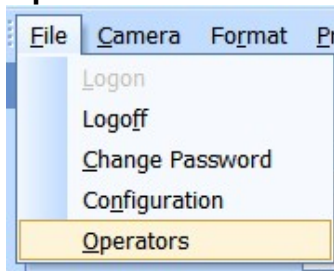
- Click the **Delete** button. The following confirmation box appears:



- Click the **OK** button.

7.3.4 Change an Operator Password

- Run Microseam and log on as **Administrator**.
- From the main menu bar select **File**, and from the drop down list select **Operators**.



- The 'Operator Setup' box appears:



- Click on the **Operator ID** that requires the password changed. The 'Operator Edit' box appears.



- Enter a new **Password** and 'Password (Repeat)'.
• Click the **OK** button.

7.4 Creating and Editing Formats

A 'format' describes all the dimensions, which must be measured for a particular type of can seam, including the allowable tolerances. Refer to **Understanding Formats** in the **Getting Started** section for more information.

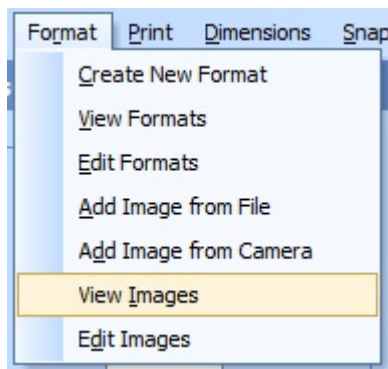
An Administrator can create new formats, or edit any existing format to change the names of the dimensions, add new ones, or change the tolerances.

Each format is linked to an image of the seam (a Windows bitmap file) to provide a visual aid to measurement. To create a format using a different seam configuration a new image must be added to the library.

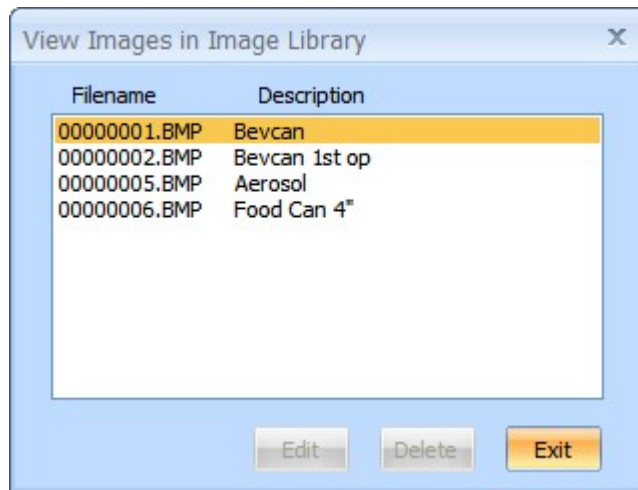
7.4.1 Viewing Format Images in the Library **A+S+U**

Any user can view images of seams already in the library:

- From the main menu bar select **Format**, and then **View Images** from the drop down menu.



The 'View Images in Image Library' box appears:



- Click on an image file.
- The chosen seam image appears at the top left of the screen.

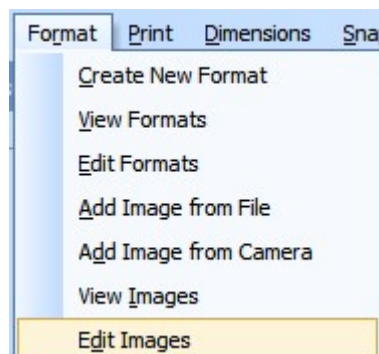


- Select other images to view or click **Exit** to return to the main screen. Note: To 'Delete' or 'Edit' an image file, use the 'Edit Images' option described later.

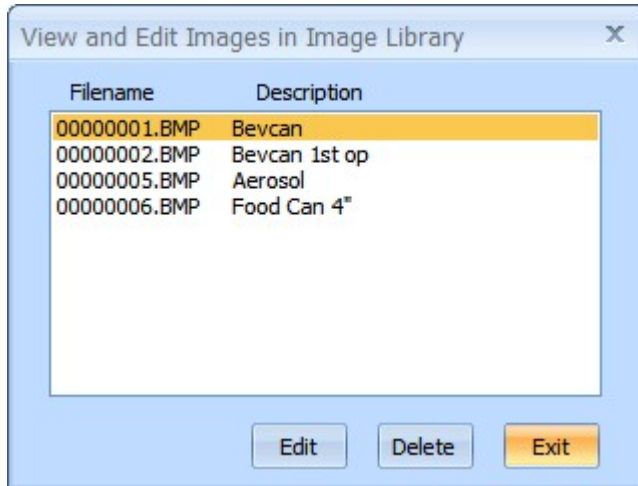
7.4.2 Editing Format Images in the Library

The Administrator can edit images of seams already in the library:

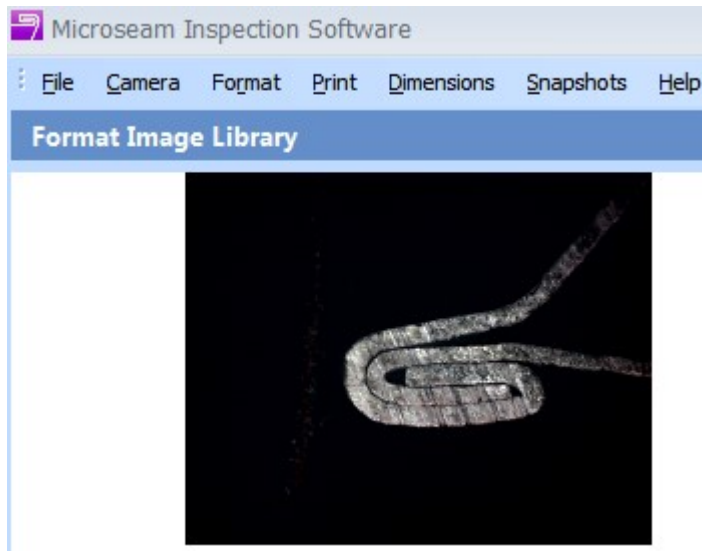
- From the main menu bar select **Format** and then **Edit Images** from the drop down menu.



The 'View and Edit Images in Image Library' box appears:

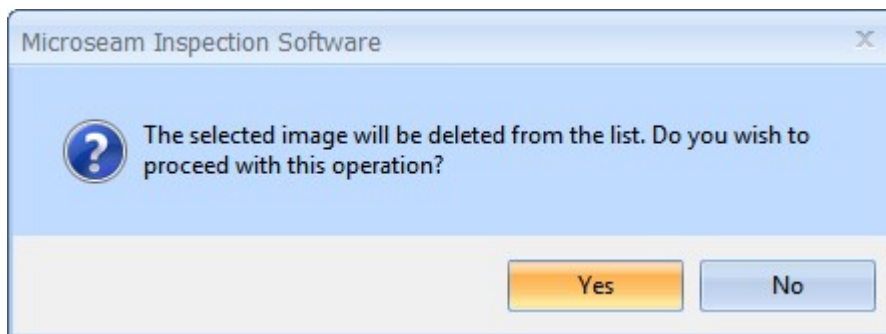


- Click on an image file. The seam image appears top left of the screen.



To delete the selected image:

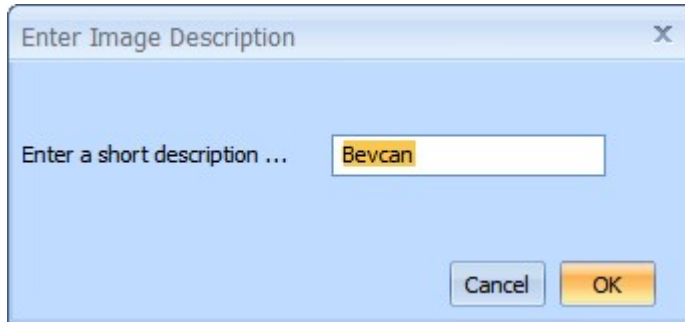
- Click the **Delete** button. A confirmation box appears.



- Click **Yes** to confirm the deletion or **No** to abort the operation. The 'View and Edit Images in Image Library' box re-appears.
- Choose **Exit** to return to the main screen.

To edit the selected image:

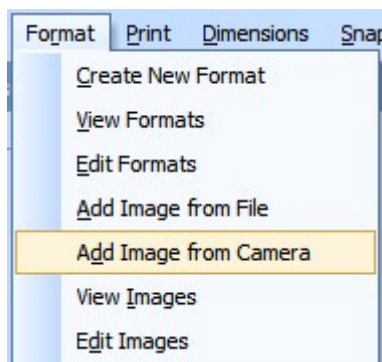
- Click the **Edit** button. The 'Enter Image Description' box appears containing the current description.



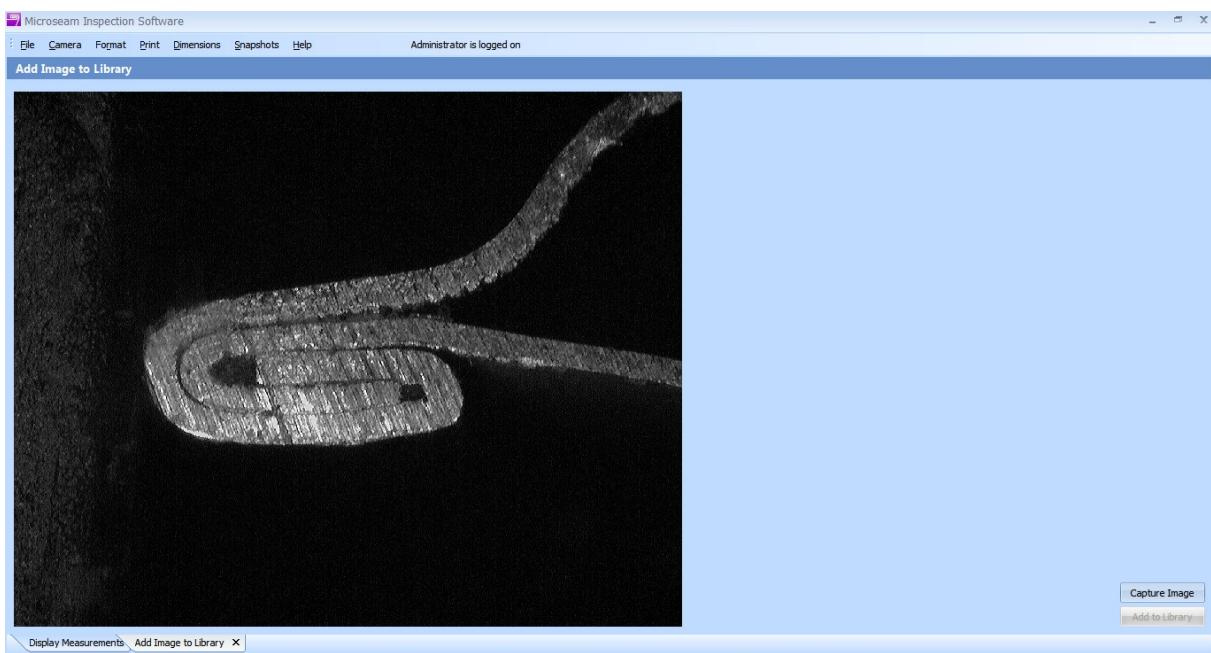
- Change the description as required.
- Click **OK** to confirm the change or **Cancel** to abort the change.

7.4.3 Add Format Images to the Library – From the Camera

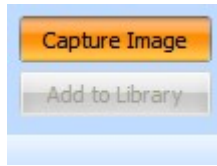
- From the main menu bar, select **Format**, and then **Add Image from Camera** from the drop down menu:



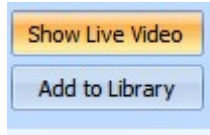
The 'Add Image to Library' screen appears with a view of the can seem currently on the camera.



- Click the **Capture Image** button, at the bottom right of the screen.



The image is captured, and the 'Capture Image' button changes to 'Show Live Video' and the 'Add to Library' button is not grayed out.



- If the captured image is not satisfactory then click the **Show Live Video** button and repeat the above steps until the image is satisfactory.
- If the image is satisfactory click the **Add to Library** button. The captured image is then added to the library.

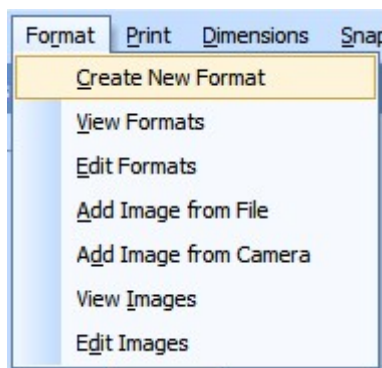
7.4.4 Creating a New Format

The Administrator can create a new format if, for example, a different style of can was introduced for which different dimensions need to be taken or different tolerances applied.

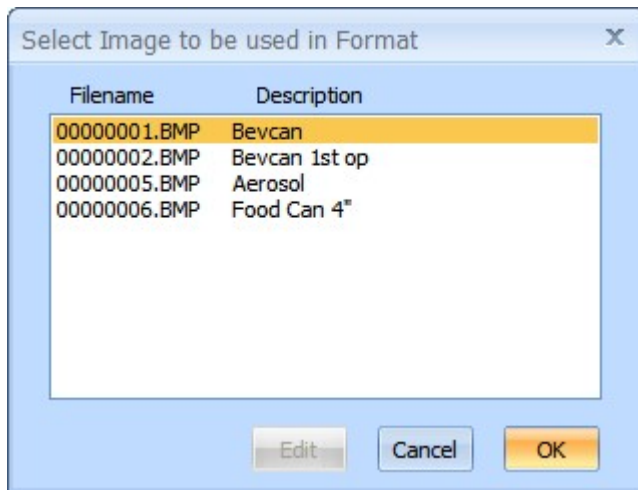
To create a new format, first, an image must be supplied to use as a visual aid. Each dimension to be input by the user must then be defined, for example, by dragging guidelines on a snapshot, entering it from a digital gauge or via the keyboard.

Finally, an allowable tolerance for each dimension must be specified.

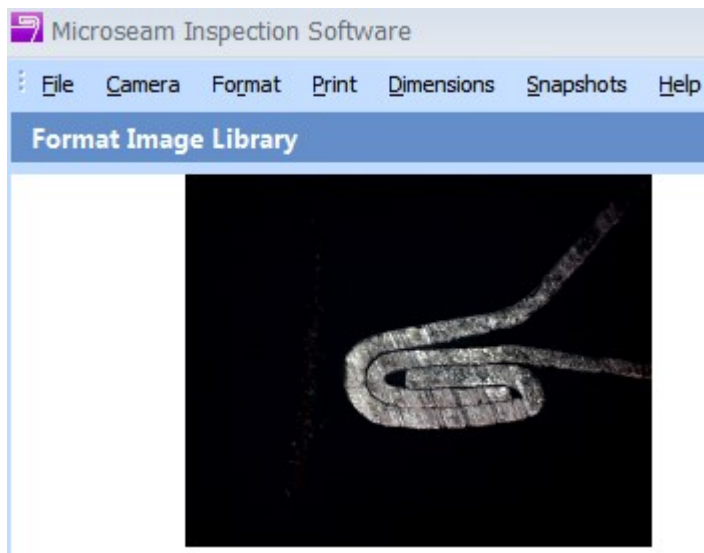
- From the main menu bar select **Format** and then **Create New Format** from the drop down menu.



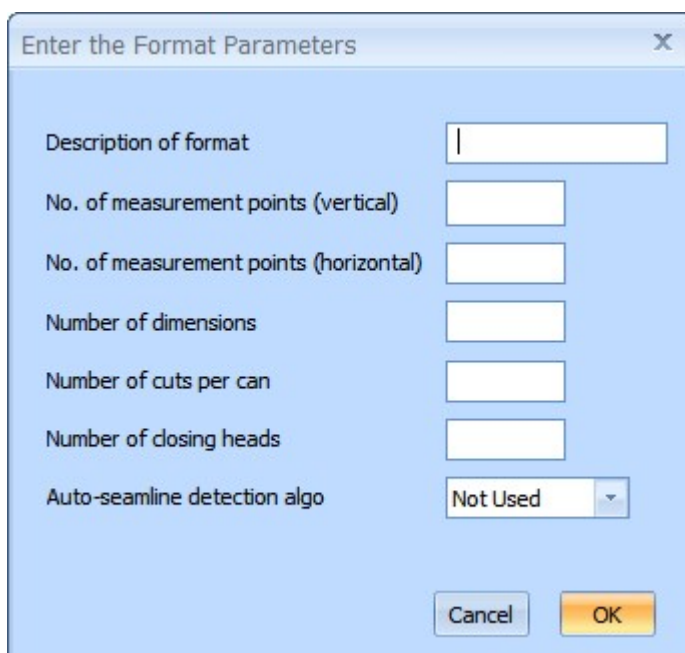
The 'Select Image to be used in Format' box appears:



- Click on the image file to be used for this format; the seam image appears at the top left of the screen.



- Click the **OK** button. The 'Enter the Format Parameters' box appears:



Description of format

Enter a name for the format. The characters can be alpha/numeric limited to 16 characters.

No. of measurement points (vertical)

A number from 0 to 20.

No. of measurement points (horizontal)

A number from 0 to 20.

Number of dimensions

A number from 1 to 100.

Number of cuts per can

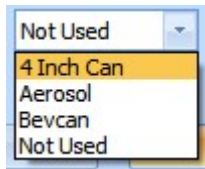
A number from 1 to 100.

Number of closing heads

A number from 1 to 100.

Auto-seamline detection algo **PROF**

Select from the drop down list the software algorithm to be used to auto detect seamlines (Professional version only, described later).

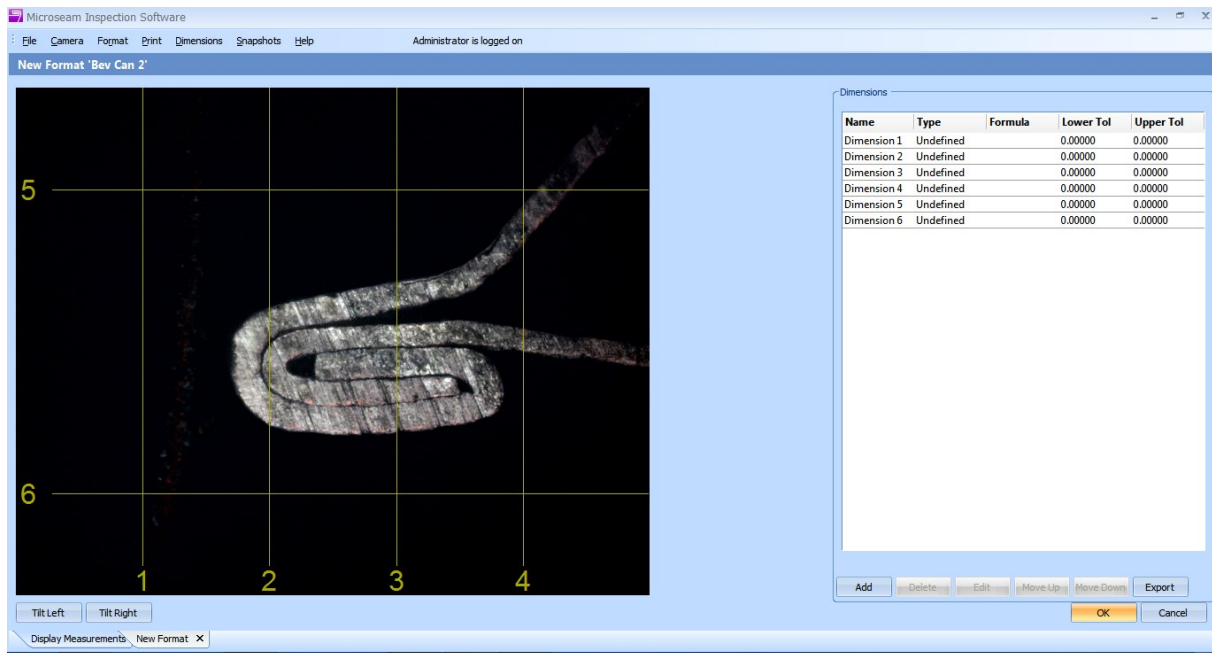


- Enter all values and click the **OK** button to continue.

Description of format	Bev Can 2
No. of measurement points (vertical)	4
No. of measurement points (horizontal)	2
Number of dimensions	6
Number of cuts per can	1
Number of closing heads	1
Auto-seamline detection algo	Not Used

Cancel OK

- The 'New Format' screen appears:



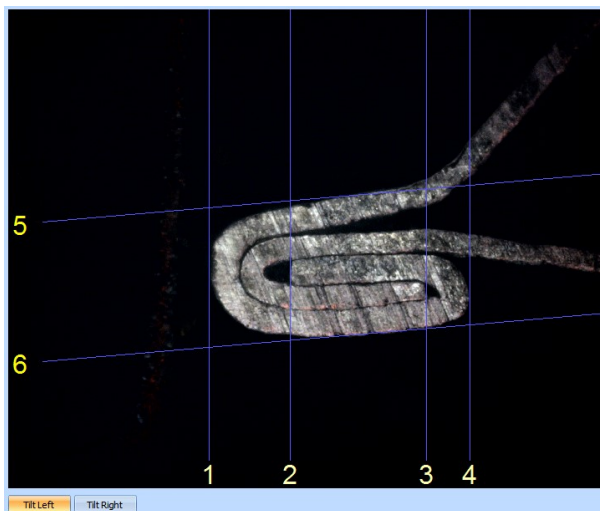
This shows the library image with numbered guidelines indicating the measurement points. In this example there are four 'vertical' and two 'horizontal' measurement points.

The 'Dimensions' table to the right shows all dimensions for the format (six in this case), initially 'Undefined'.

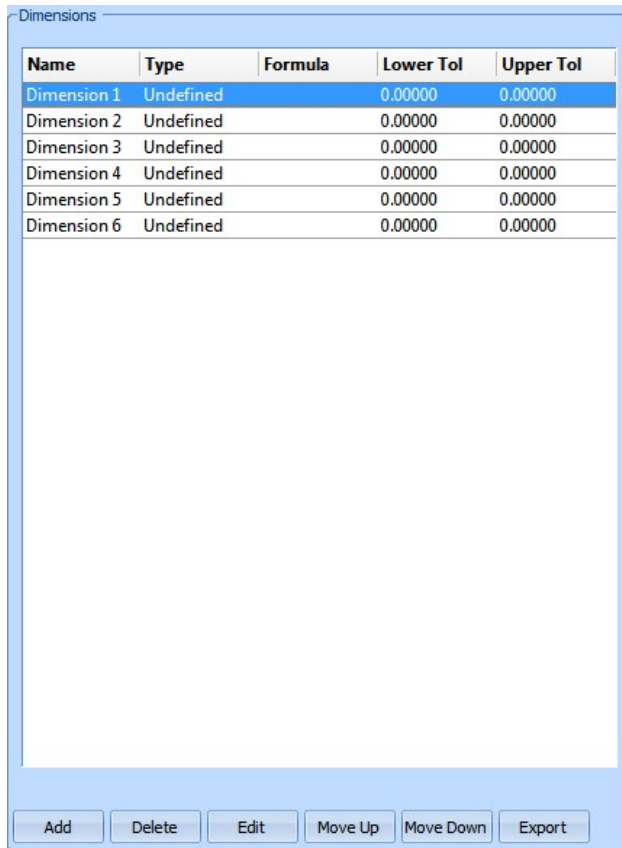
- Drag each guideline to the correct measurement point, as shown below.

The 'Zoom' feature, described in '**Zooming In**' later, is available to aid accurate positioning of the lines.

Also, the horizontal measurement point lines can be tilted by clicking on the '**Tilt Right**' and '**Tilt Left**' buttons at the bottom left of the screen.



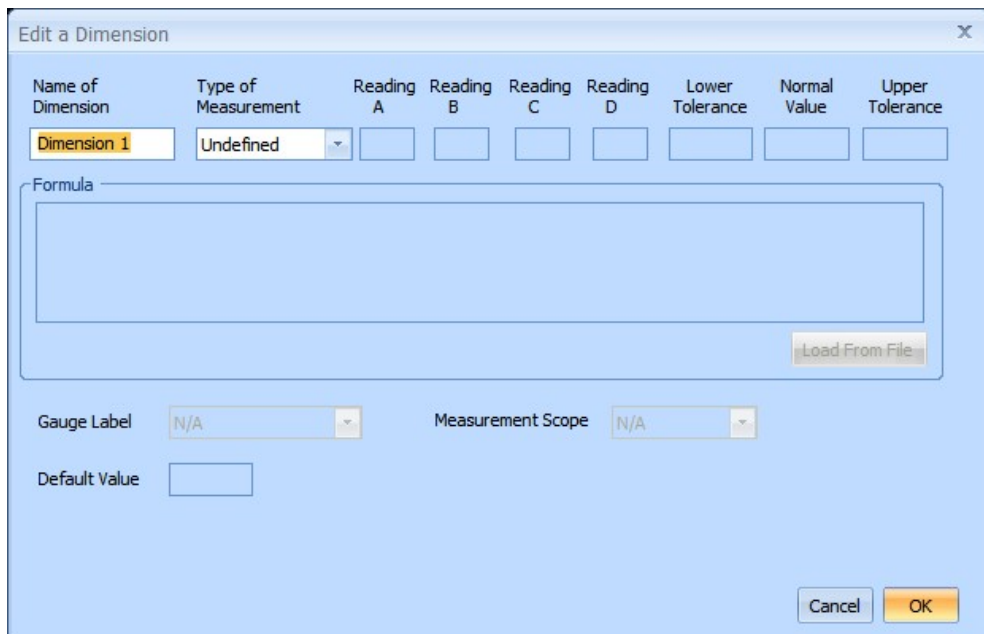
- In the **Dimensions** table, top right, double-click on the first dimension.



Name	Type	Formula	Lower Tol	Upper Tol
Dimension 1	Undefined		0.00000	0.00000
Dimension 2	Undefined		0.00000	0.00000
Dimension 3	Undefined		0.00000	0.00000
Dimension 4	Undefined		0.00000	0.00000
Dimension 5	Undefined		0.00000	0.00000
Dimension 6	Undefined		0.00000	0.00000

Buttons: Add, Delete, Edit, Move Up, Move Down, Export

The 'Edit a Dimension' box appears:



Dialog Title: Edit a Dimension

Name of Dimension	Type of Measurement	Reading A	Reading B	Reading C	Reading D	Lower Tolerance	Normal Value	Upper Tolerance
Dimension 1	Undefined							

Formula:

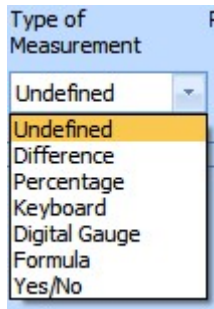
Load From File:

Gauge Label: Measurement Scope:

Default Value:

Buttons: Cancel, OK

- Enter a meaningful name for the dimension being measured in the 'Name of Dimension' box.
- In the 'Type of Measurement' box use the drop down list to select the appropriate measurement type:



Undefined

Initial state if no other choice is made.

Difference

The difference between readings A and B, i.e. (A - B)

Percentage

The ratio of two differences expressed as a percentage.

For example the calculation of the Percentage Body Hook Butting (BHB) i.e., $BHB = A / B \times 100$. Refer to **Appendix 1** for BHB seem image.

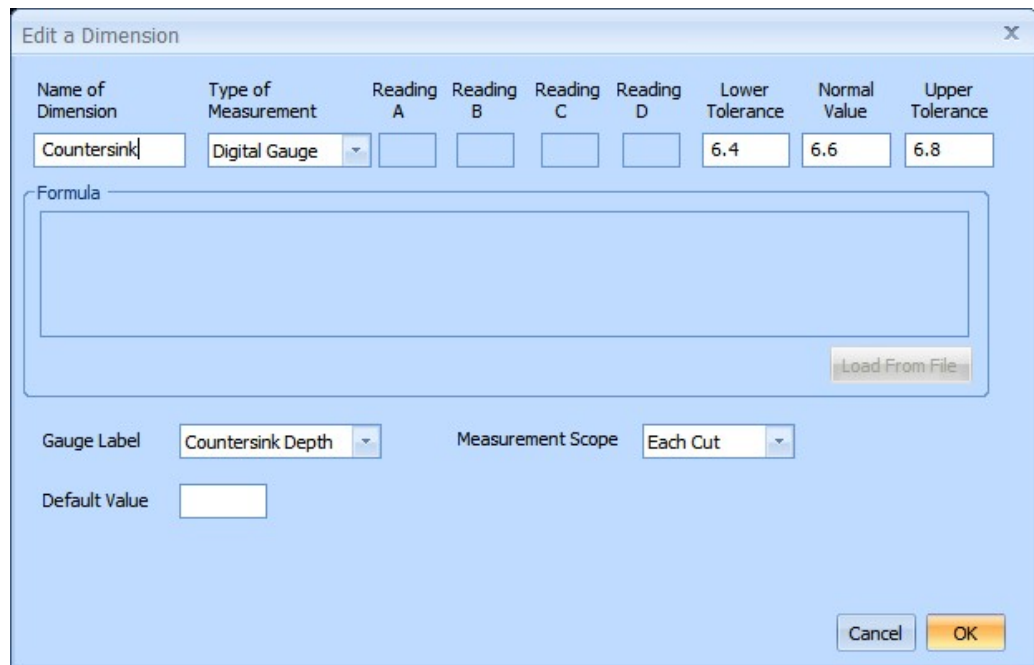
Digital Gauge

Value read from a digital gauge connected to a USB port.

When measurement type 'Digital Gauge' is selected, boxes that were grayed out now become active as described below:

Gauge Label - Select from drop down list.

Measurement Scope - Select from drop down list.



Formula

A user defined item, which allows the creation of a specific calculation by entering a formula in the 'Formula' box.

If the 'Type of measurement' is set to 'Formula' then the 'Formula' area becomes active and the 'Load From File' button is not grayed out.

The formula may use the following operators:

Addition	+
subtraction	-
multiplication	*
division	/

Constants may also be entered as well as brackets () to force the order of calculation.

The names of dimensions may also be used in a formula and should be entered in quotes as shown in the following examples.

Note the blank spaces used to help make the expression more readable and the use of brackets to force the order of calculation.

Using named dimensions:

The formula for percentage overlap becomes:

$$((\text{"body hook length"} + \text{"end hook length"} + (1.1 * \text{"end component thickness"}) - \text{"seam length"}) / (\text{"seam length"} - (2.2 * \text{"end component thickness"}) - (1.1 * \text{"body wall thickness"})) * 100$$

Where "body hook length", "end hook length", "end component thickness", "seam length", and "body wall thickness" are named dimensions.

Using a combination of named dimensions and measurement points the formula for overlap becomes:

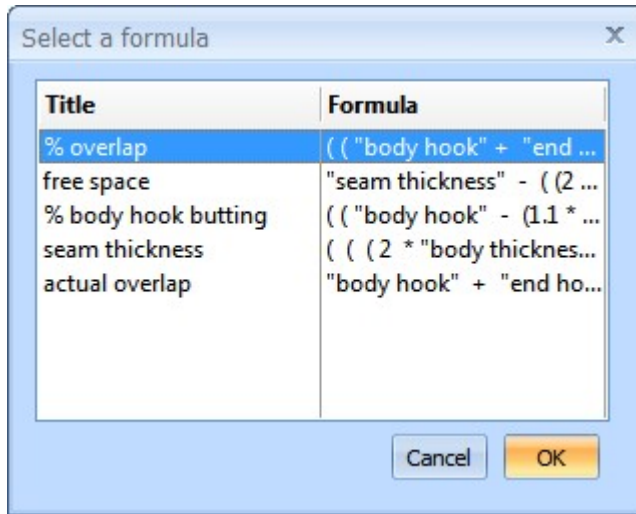
$$(M4-M2) + (M3-M1) + (1.1 * \text{"end component thickness"}) - (M5-M1)$$

Where M1 is the reading at measurement point 1, M2 is the reading at measurement point 2, etc. and "end component thickness" is a named dimension.

A formula may also be loaded from a file. The formulae are stored in a file called 'formulas.txt' which is located in the 'C:\mis_v5' folder.

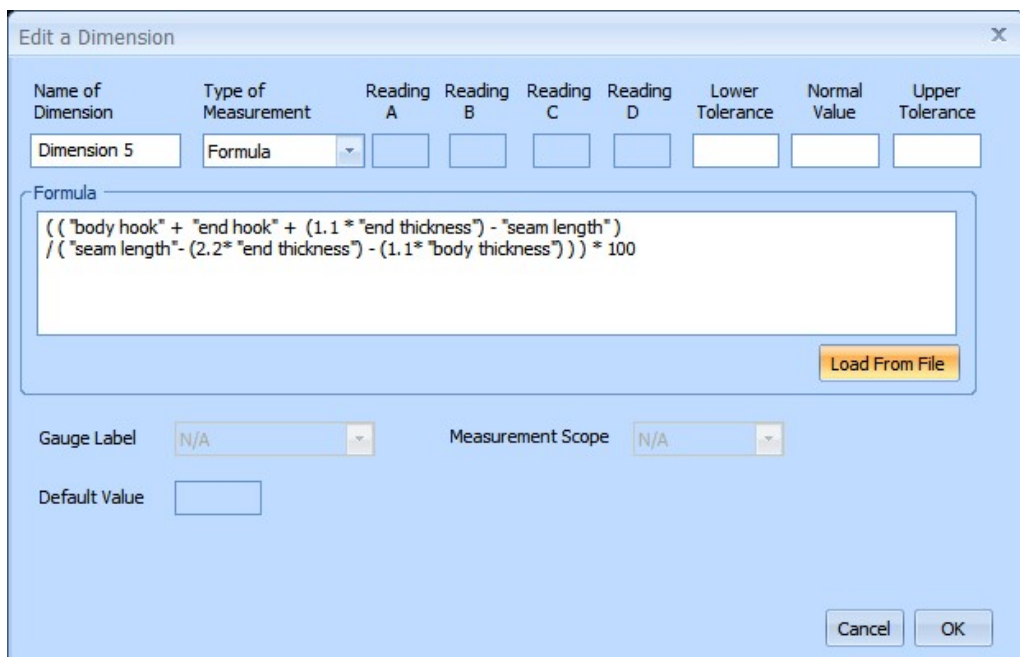
- Click the **Load from File** button.

The 'Select a Formula' box appears:



- Select the formula required, and click the **OK** button.

The formula appears in the 'Formula' box:



Yes/No

This is not an actual dimension but a flag, which the user must input to indicate, for instance, the presence of foreign bodies.

Name of Dimension	Type of Measurement	Reading A	Reading B	Reading C	Reading D	Lower Tolerance	Normal Value	Upper Tolerance
Dimension 1	Yes/No							

Formula

Gauge Label: N/A

Measurement Scope: Each Cut

Default Value: YES

A 'Default Value' may be entered (**YES** or **NO** in capitals).

The 'Measurement Scope' can be selected from the list shown below:

Measurement Scope: Each Cut

- N/A
- Whole Can
- Each Cut

NOTE: Depending on the type of measurement selected, some of the boxes will be 'grayed out' as shown below:

Name of Dimension	Type of Measurement	Reading A	Reading B	Reading C	Reading D	Lower Tolerance	Normal Value	Upper Tolerance
Seam Length	Difference	4	1			2.8	3.1	3.4

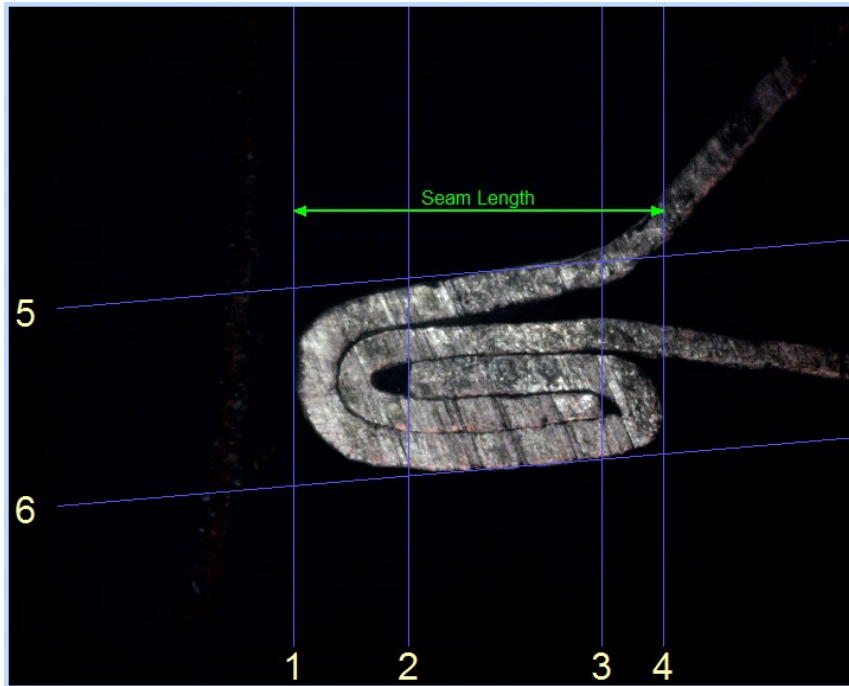
Formula

Gauge Label: N/A

Measurement Scope: N/A

Default Value:

- Once the dimension has been defined as in the above example, click the **OK** button to continue.
- The dimension just added appears in the table and is shown on the image.



Dimensions

Name	Type	Formula	Lower Tol	Upper Tol
Seam Length	Difference	M4 - M1	2.80000	3.40000
Dimension 2	Undefined		0.00000	0.00000
Dimension 3	Undefined		0.00000	0.00000
Dimension 4	Undefined		0.00000	0.00000
Dimension 5	Undefined		0.00000	0.00000
Dimension 6	Undefined		0.00000	0.00000

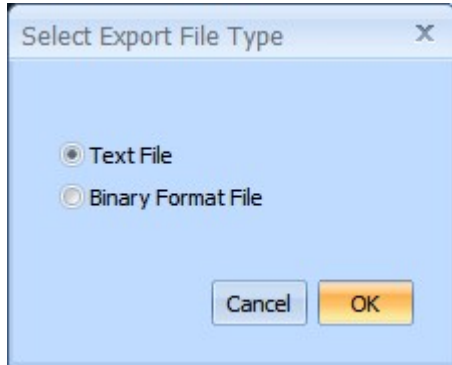
Add Delete Edit Move Up Move Down Export

- Follow the same procedure to define all other dimensions.
A dimension can be added to the table by clicking the **Add** button.
Any dimension in the table can be deleted by clicking the **Delete** button.

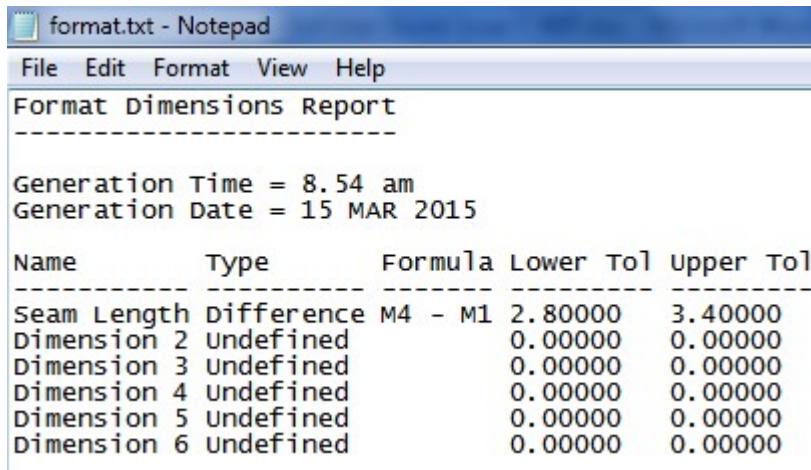
Any dimension in the table can be edited by clicking the **Edit** button.

The order of the dimensions in the table can be changed, by clicking the **Move Up** or **Move Down** buttons.

The dimension table can be exported to a file, either 'binary' or 'text' by clicking the **Export** button.

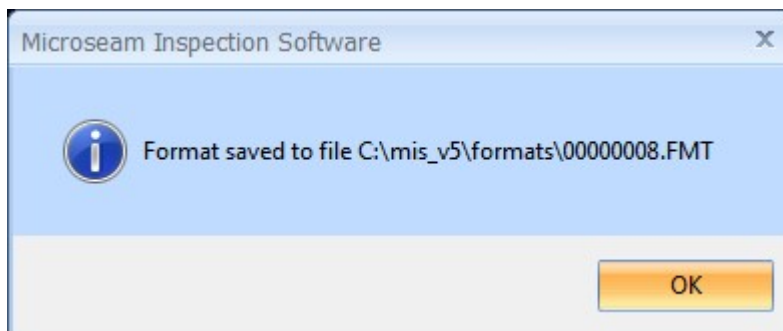


If 'Text File' is selected then the data is written to a 'Notepad' file (format.txt) as shown below:

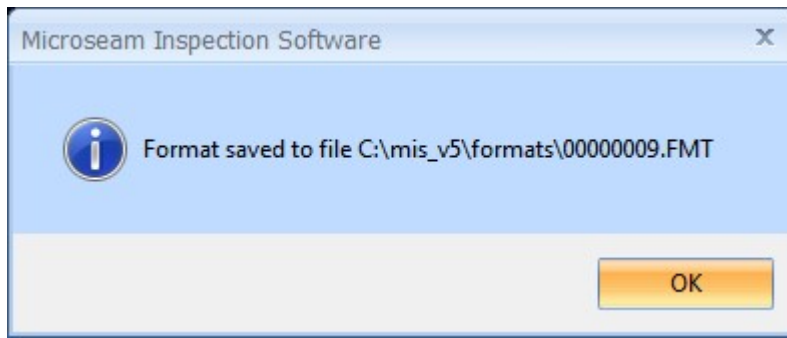


This file can be saved with a new name if required.

If 'Binary Format File' is selected then the table is saved in binary as a .FMT file:



- When satisfied, click the **OK** button at the bottom right of the screen.
A box appears stating that the new format has been saved to a file:



- Click the **OK** button to return to the 'Display Measurements' screen.

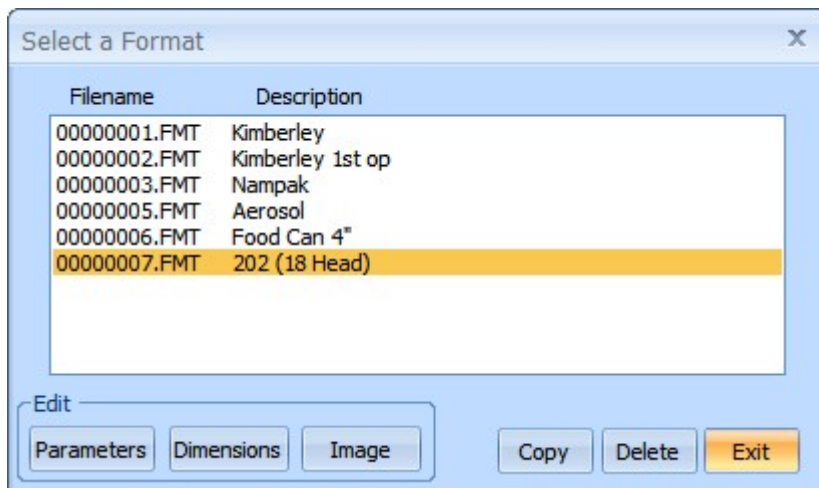
7.4.5 Editing an Existing Format

Existing formats can be edited or a copy can be made of an existing format on which to base a new format. After selecting a format to edit, the procedures and screens are identical, or very similar, to those described in **Creating a New Format** described above.

This function is restricted to a security level of 'Administrator'.

- From the main menu bar, select **Format**, and then **Edit Formats** from the drop down menu.

The 'Select a Format' box appears.



- Click on the format file to edit. The seam image linked to the format appears at the top left of the screen.

Parameters

Allows the description, number of cuts etc to be changed using the 'Enter the Format Parameters' box.

Dimensions

Allows the addition/deletion/change of dimensions, including tolerances.

Image

Allows an image to be chosen for the Format.

Copy

Allows a copy of the current format to be made to a new file, which can then be edited to create a new format.

Delete

To delete the highlighted format in the list. There is a Yes/No confirmation box to prevent unintentional deletion.

Exit

Click to return to the main screen once editing is completed.

7.5 Datafiles

Microseam stores its measurements in 'datafiles'. Each datafile contains measurements made on a particular type of seam using a particular format.

The Administrator can create new datafiles using the 'New' button in the 'Datafile' area of the main 'Display Measurements' screen.

When a datafile is created, its format must be specified, by choosing one of the format files in the library.

Note that subsequent changes to the format file will not apply to the datafile format, because the format is included in the header of the datafile, for exclusive use by that datafile.

There is a separate function for editing the datafile format; the 'Edit' button in the 'Format' area of the main 'Display Measurements' screen as described later.

7.5.1 Datafile Parameters

When a datafile is created the following parameters must be specified:

Description – Descriptive name for the datafile.

Machine – The identity of the closing machine used.

Product – The product in the can.

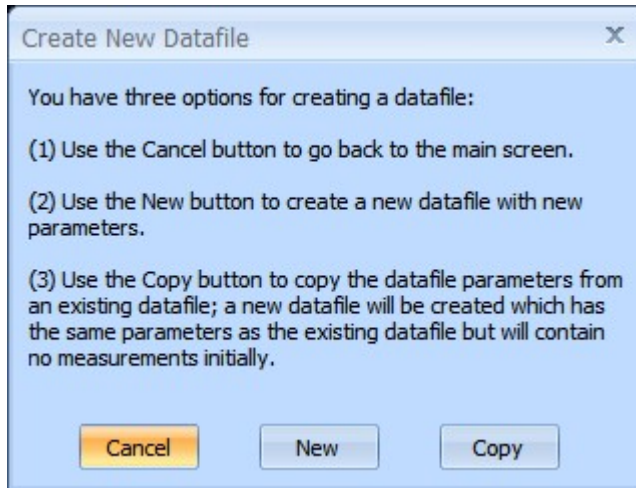
Units – The unit of measurement; choose between 'Inches' or 'Metric'.

These parameters can be changed later (using the Edit button in the Datafile area of the main Display Measurements screen). Note, however, that if you change the units of a datafile which already contains measurements, those measurements are not converted.

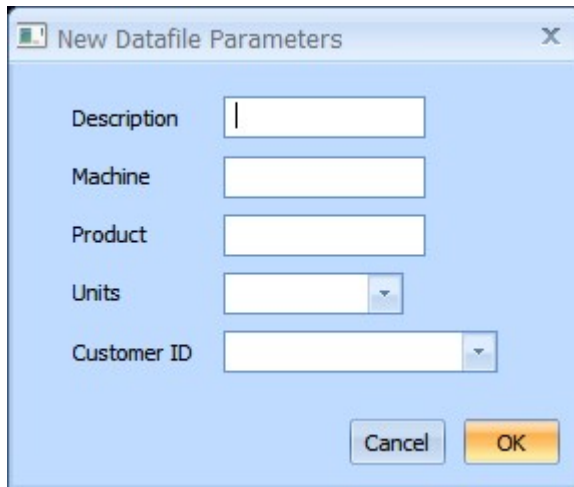
7.5.2 Creating a New Datafile

The Administrator can create a new datafile from scratch or by copying the format plus parameters from an existing datafile, as follows:

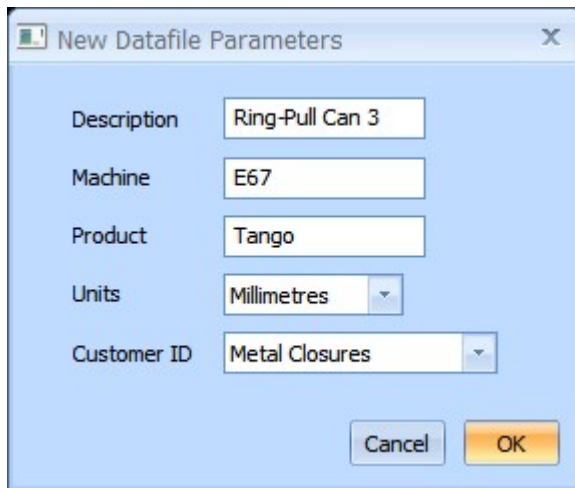
- Run Microseam and log on as **Administrator**.
The main 'Display Measurements' screen appears.
- Click the **New** button in the 'Datafile' area at the top left of the screen.
The 'Create New Datafile' box appears:



- Use the **Cancel** button to go back to the 'Display Measurements' screen.
Use the **New** button to create a new datafile with new parameters.
Use the **Copy** button to copy the datafile parameters from an existing datafile. In this case a new datafile will be created, which has the same parameters as the existing datafile but will contain no measurements initially.
- Click the **New** button.
The 'New Datafile Parameters' box appears:



- Complete all entries:



'Units' is selected from a drop down list.



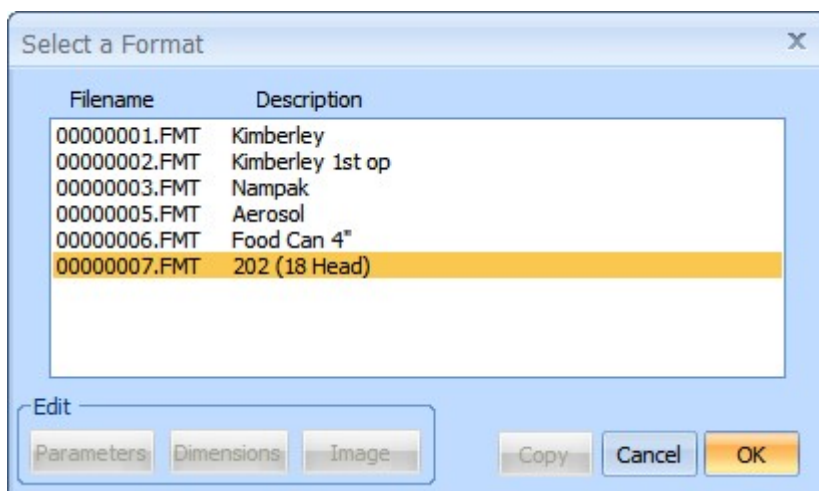
'Customer' is selected from a drop down list.



Note: The 'Customer IDs' must be already defined as described earlier from 'File' 'Customers' otherwise only 'Default' will appear in the list.

- Click the **OK** button.

The 'Select a Format' box appears:

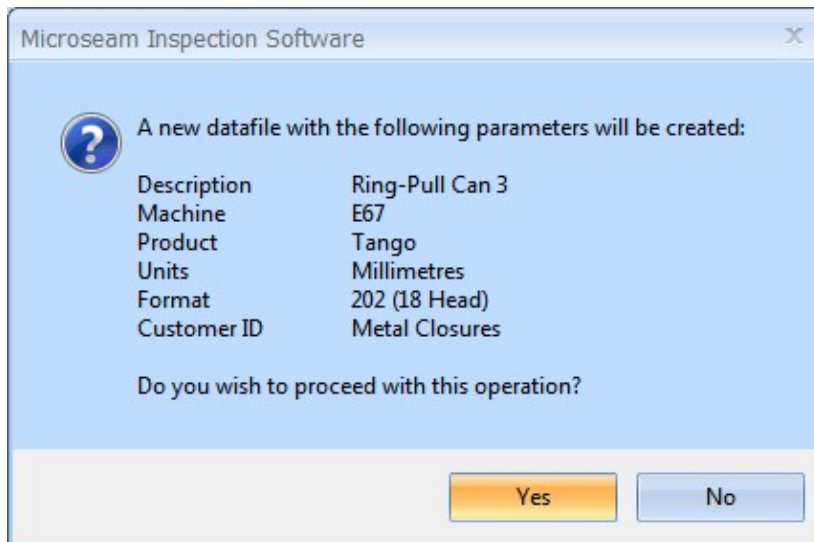


- Click on a format file.

The image associated with the format is displayed at the top left of the screen in addition to the 'Select a Format' box.

- When satisfied, click the **OK** button.

A confirmation box appears:



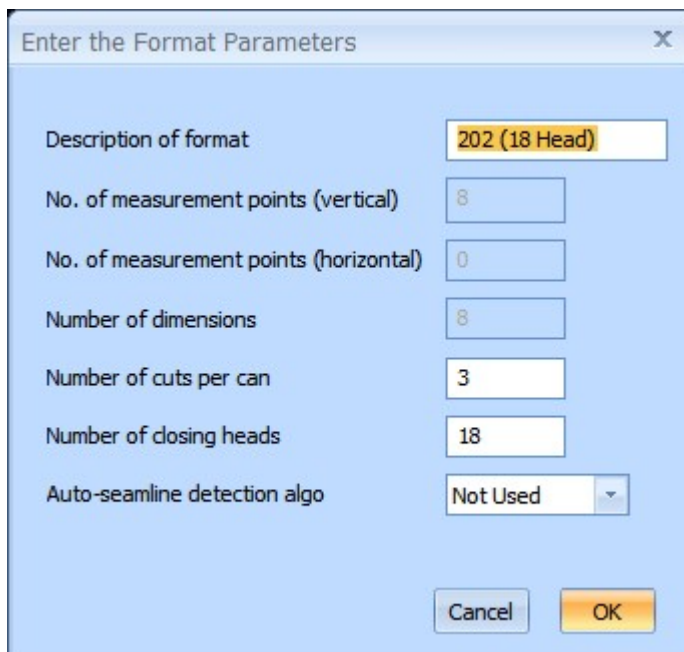
- Click the **Yes** button. The Display Measurements screen re-appears showing the new datafile ready for taking measurements.
- If the choice was to copy an existing datafile rather than create a new one, the 'Edit' button in the Datafile area should be used to change the description.

7.5.3 Deleting a Datafile

The Administrator can delete unwanted datafiles using the 'Edit' button in the 'Datafile' area of the main 'Display Measurements' screen.

7.5.4 Editing the Format for a Datafile

To edit the format used by a datafile (as distinct from editing a format file), use the 'Edit' button in the 'Format' area of the main 'Display Measurements' screen. This allows editing of the 'Description of format', the 'Number of cuts per can' and the 'Number of closing heads' and 'Auto-seamline detection algo'.



The format is embedded in the datafile and editing the format will have no effect on the formats accessed from the 'Format' group of menu options.

8 GETTING STARTED **A+S+U**

8.1 Starting & Exiting Microseam

Microseam can be started, by double-clicking an icon on the desktop, assuming a shortcut has been placed there, or alternatively it can be run from the Windows Start Menu.

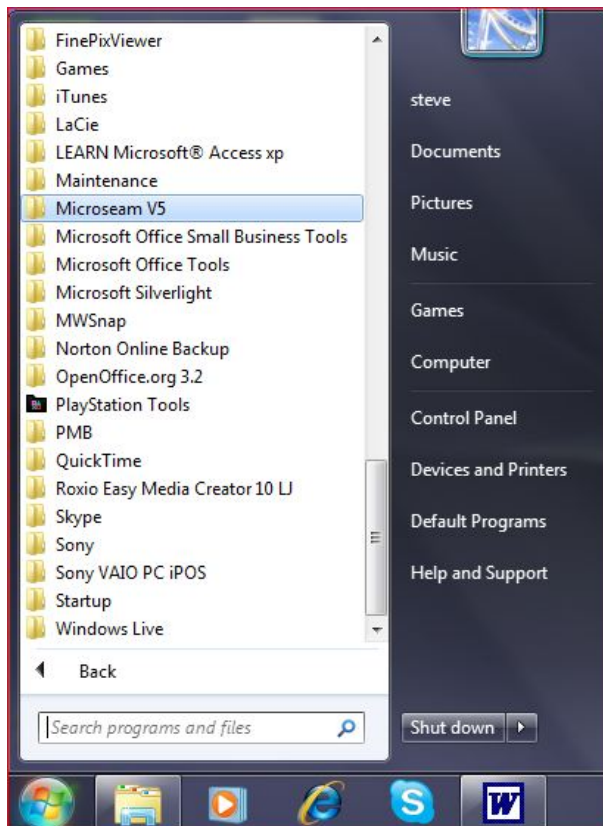


To start from the icon on the desktop, double-click

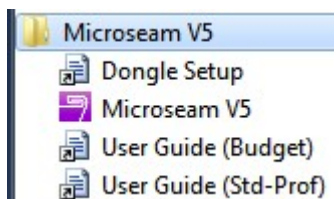
To start Microseam from the Windows 'Start' Menu:



- Click on the Windows **Start** icon at the bottom left of the screen.
- Click **All Programs**, which will display a list of installed programs:

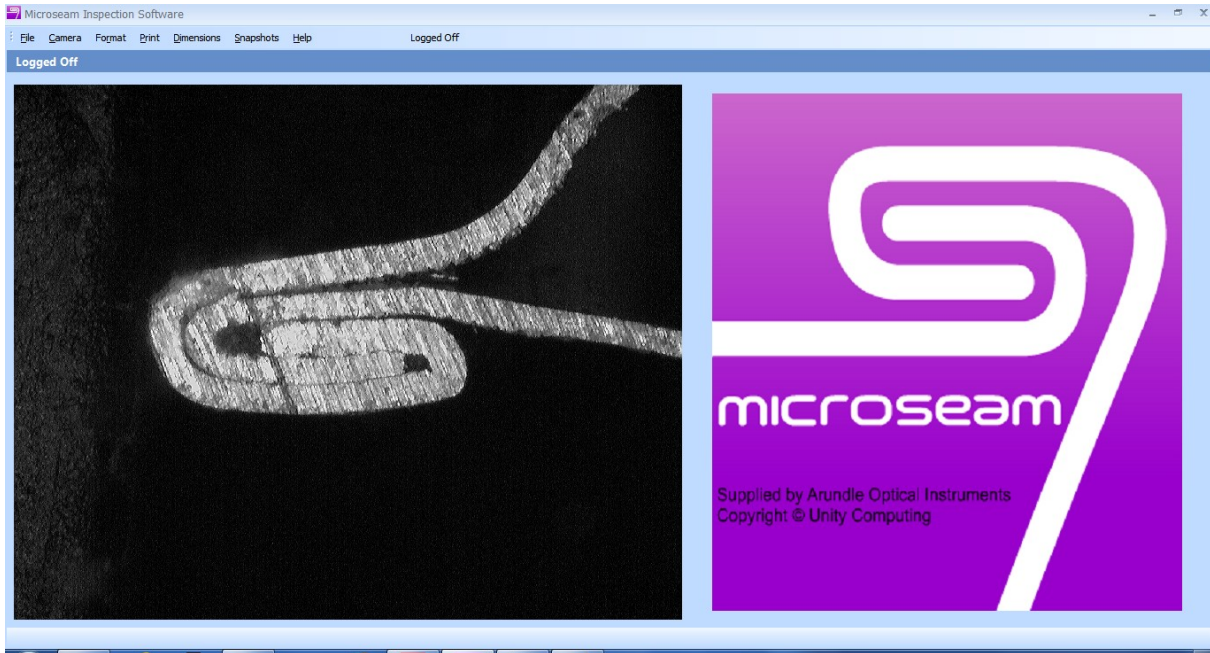


- Click on **Microseam V5**, a list of Microseam programs will appear:



- Click on **Microseam V5**.

The 'Logged Off' screen appears:



The square to the left of the Microseam logo is the live image from the camera. This will appear black unless a can is correctly placed on the camera.

All users must 'log on' before using Microseam.

- To exit Microseam from the 'Logged Off' window, click the **Close** button, which is the cross in the top right hand corner.

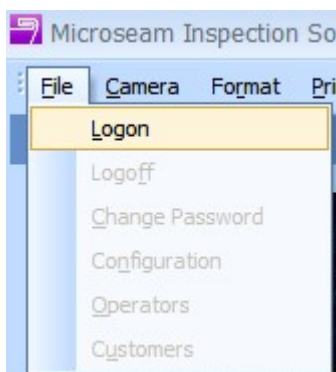


8.2 Logging On and Off

All users will have an 'Operator ID' and 'Password' initially allocated by the Administrator. The password can be changed later.

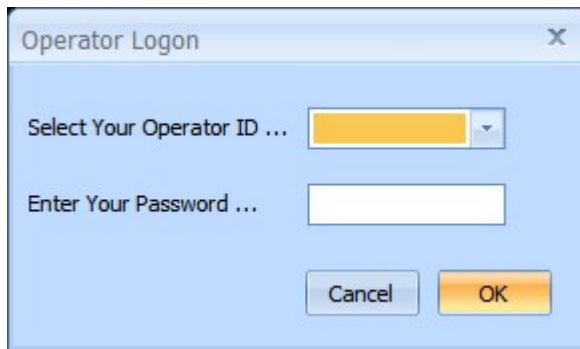
To log on:

- From the main menu bar select **File**.



- From the drop down list select **Logon**.

The 'Operator Logon' box appears:



- Click the downward pointing arrow to the right of the 'Select Your Operator ID' box.

A list of operators appears:

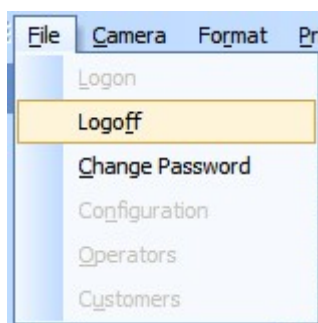


- Select the required 'Operator ID' from the drop down list.
- Enter the allocated password and click the **OK** button.



To log off:

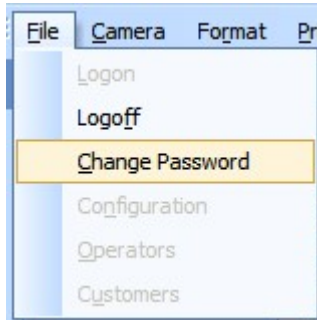
- Select **File** from the main menu bar and select **Logoff**.



8.3 Changing Password

Any user can change their password after logging on, as follows:

- From the main menu select the **File** option.

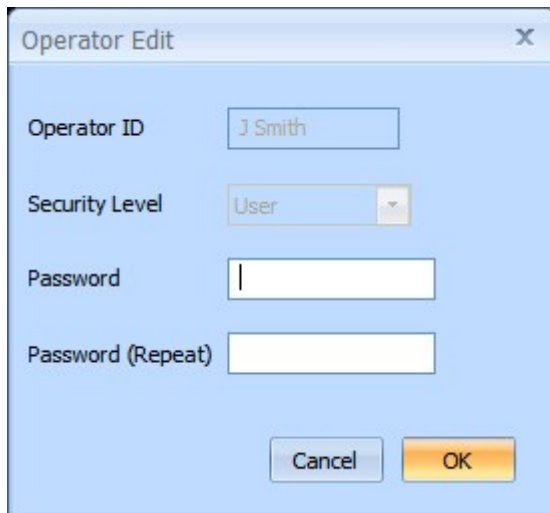


- From the drop down list select **Change Password**.

The 'Enter a New Password' box appears:



- Enter the existing password. The 'Operator Edit' box appears:

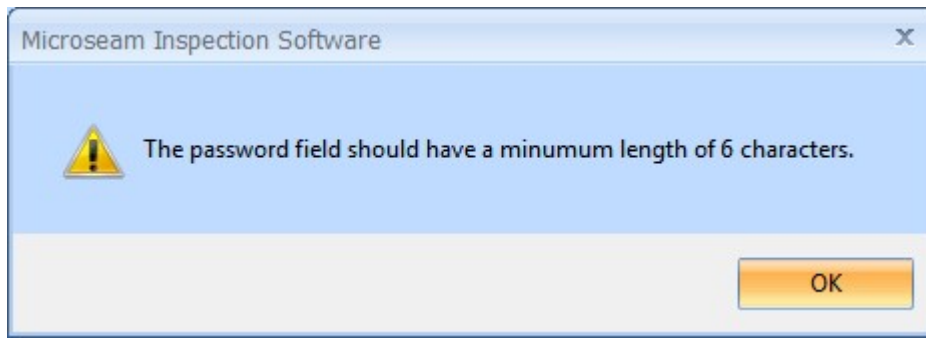


- Enter a new password in the 'Password' box and enter again in the 'Password (Repeat)' box.

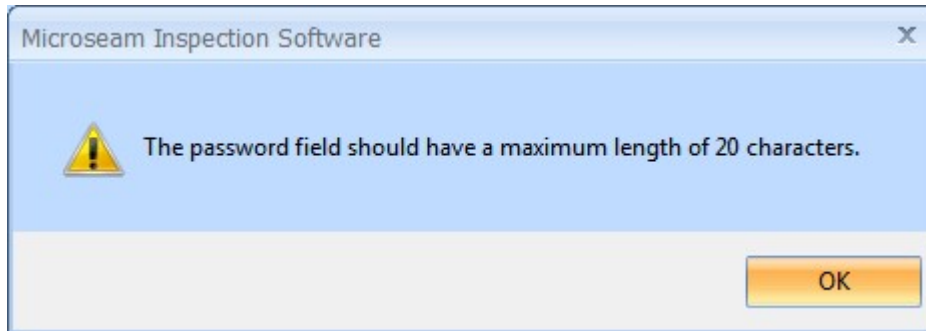
The password can be alpha numeric between 6 and 20 characters and is not case sensitive i.e. "PASSWORD", "password" and "Password" are all the same.

- Click the **OK** button.

If a password that is too short has been entered, the following error message is received:



If a password that is too long has been entered, the following error message is received:



If a password is forgotten, the Administrator can set a new one.

8.4 Displaying Measurements

When logged on to Microseam, the main 'Display Measurements' screen appears, which shows the last datafile worked on:

The screenshot shows the 'Display Measurements' interface. At the top left, there are fields for 'Datafile' (Filename: 0000003.DAT, Description: Nampak, Machine: Ferrum 706, Product: All, Units: Millimetres, No. of Measurements: 3, Customer ID: Default) and 'Format' (Description: Nampak, Cuts per Can: 3, Closing Heads: 1). Below these are two image windows showing a weld with measurement lines and values (12345 and 678). At the bottom, there is a table with the following data:

Date	Time	Batch No.	Head	Cut	Note	Approved	Operator	Seam Length	Seam Gap	Body-Hook	Actual Overlap	B/Hook Butting	Cover-Hook	Countersink	Seam Thickness
27 JAN 2015	3.13 pm	Batch 1	1	1		NO	Administrator	2.34163	0.03049	1.68305	1.07935	89.39394	1.52450	6.80000	1.20000
27 JAN 2015	3.13 pm	Batch 1	1	2		NO	Administrator	2.41481	0.04269	1.68305	0.95739	86.95652	1.42693	6.80000	1.21000
27 JAN 2015	3.13 pm	Batch 1	1	3		NO	Administrator	2.33553	0.04269	1.60987	1.06105	86.51685	1.51230	6.90000	1.20000
Average								2.36399	0.03862	1.65866	1.03259	87.62244	1.48791	6.83333	1.20333
Std. Dev.								0.03602	0.00575	0.03450	0.05370	1.26544	0.04341	0.04714	0.00471

Details of the current datafile and its format are shown at the top left of the screen.

8.4.1 Using the Data Table

The 'Data Table' in the lower half of the screen shows a scrollable list of all measurements that have been taken for this datafile.

The width of individual columns can be changed, by dragging the dividing lines between the column headings. Microseam remembers the new widths the next time this datafile is used.

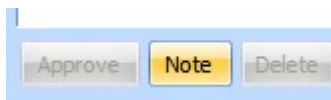
Approved data is indicated by a 'YES' in the 'Approved' column.

If one or more dimensions are out of tolerance, the record is shown in blue with the out-of-tolerance dimensions in red.

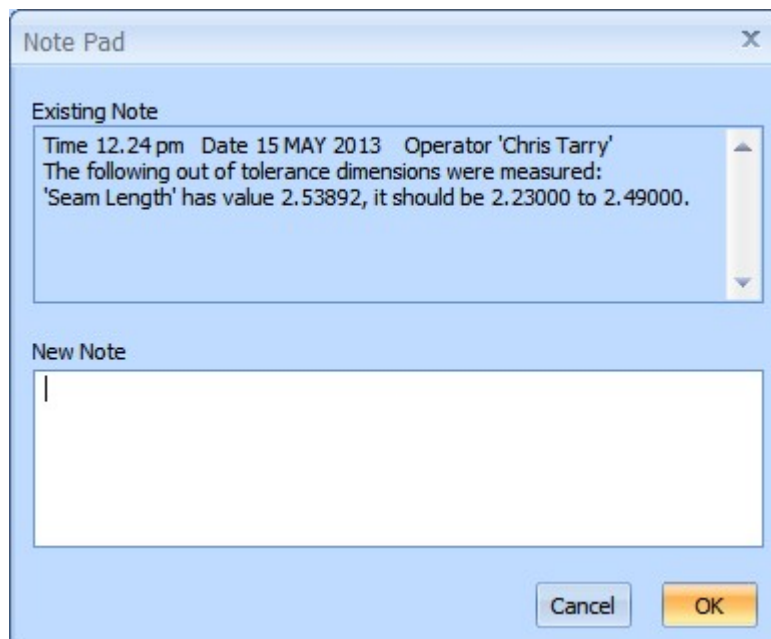
Seam Length	Seam Gap
2.58178	0.04799
2.49607	0.03370
2.39607	0.04799

If a note has been added to a measurement, this will be displayed (in a truncated form) in the 'Note' column. Hover the mouse over a note to show it in full. As an alternative, notes can be viewed and added as follows:

- Click on the **Note** button at the bottom left of the screen:

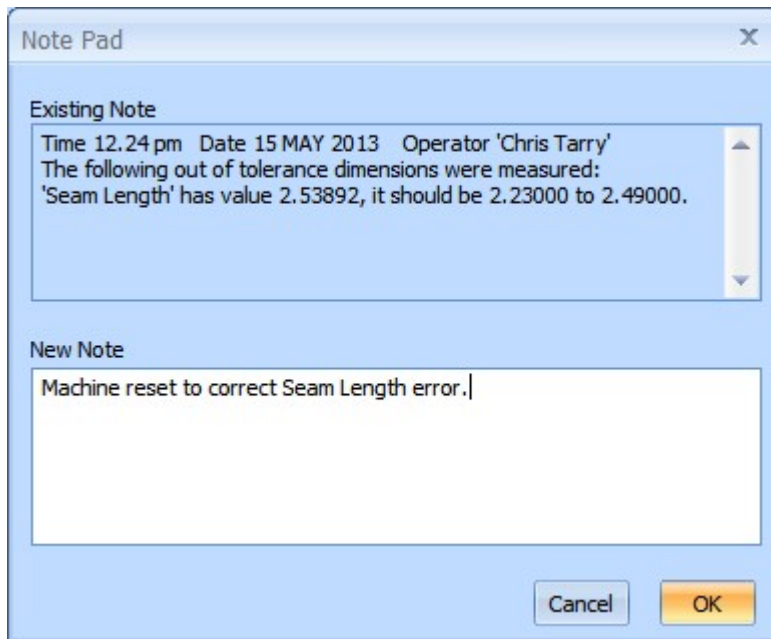


The 'Note Pad' box appears:

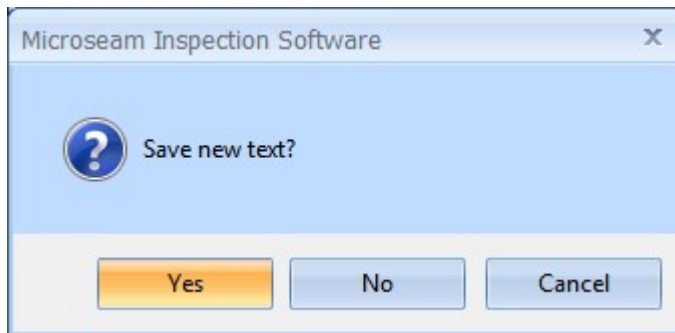


This 'Note Pad' box shows the existing note, which is scrollable.

- Click the **OK** button or, if required, add new note.

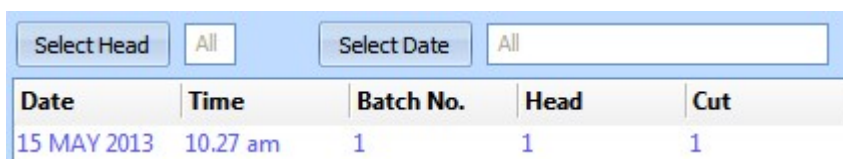


- Click the **OK** button.



- Click the **Yes** button.

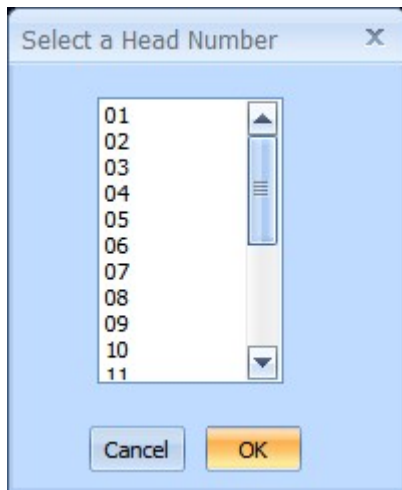
There are two buttons above the Data Table:



Select Head

- Click the **Select Head** button to select for which 'Head Number' measurements are displayed.

The 'Select a Head Number' box appears:

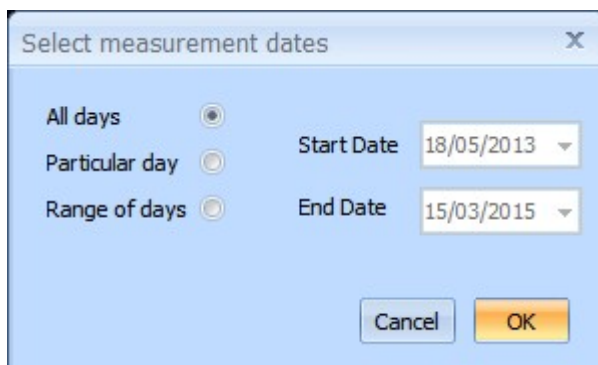


- Select a **Head Number** or **All**. The default is 'All' and the current selection is displayed in the adjacent box

Select Date

- Click the **Select Date** button to select for which 'Dates' measurements are displayed.

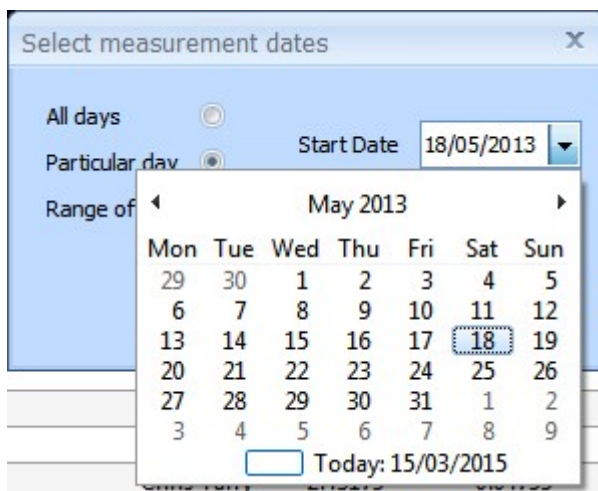
The 'Select measurement dates' box appears:



- Choose either, **All days**, **Particular day** or **Range of days**.

The default is **All**.

A calendar aids the setting of the dates:



8.4.2 Selecting Measurements

To select a single measurement, just click on it.

If a single measurement is selected, and it has a 'Snapshot' associated with it, the snapshot will appear in the top right of the screen.

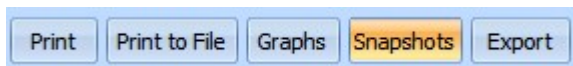
Multiple measurements can be selected using one of the standard Windows selection techniques i.e.

- Click and drag.
- Select first item, hold **shift**, select last.
- Hold **Ctrl** and click each measurement individually.

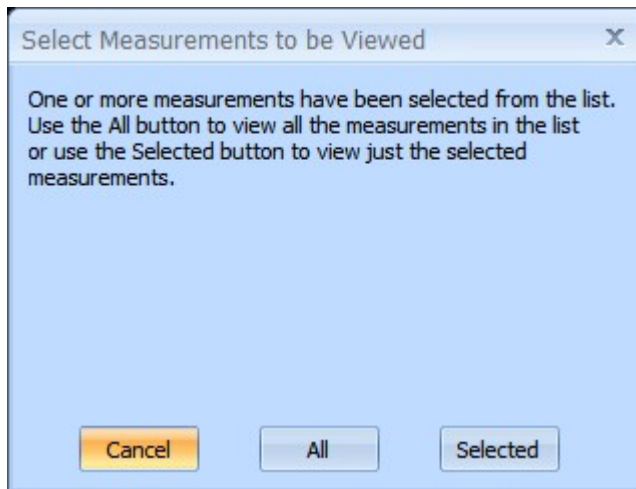
8.4.3 Viewing Historical Snapshot Images **PROF**

After selecting measurements, it is possible to show all selected snapshots associated with those measurements as thumbnails or with one snapshot per page. This feature applies to the Microseam Professional version only.

- Select a measurement or group of measurements.
- Click the **Snapshots** button at bottom right of the screen:

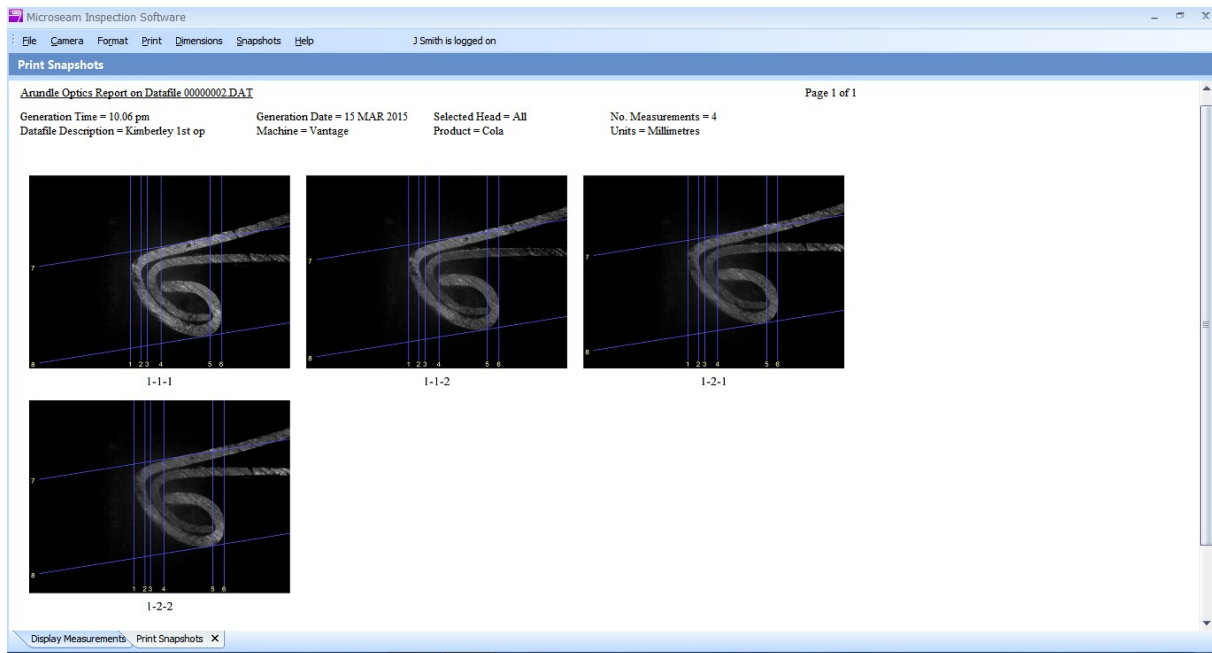


The 'Select Measurements to be Viewed' box appears:



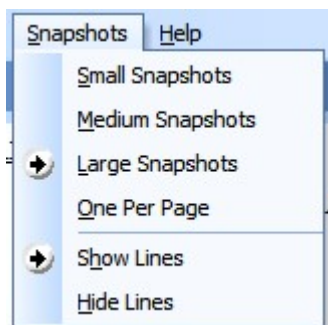
- Click the **All** or **Selected** button.

The 'Print Snapshots' box appears showing all images from the selected measurements as thumbnails.



For easy reference, each snapshot has its Batch, Head and Cut numbers displayed as a caption below it.

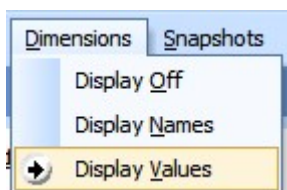
The size of the snapshots can be selected (Small, Medium, Large or One Per Page) using the 'Snapshots' menu at the top of the screen:



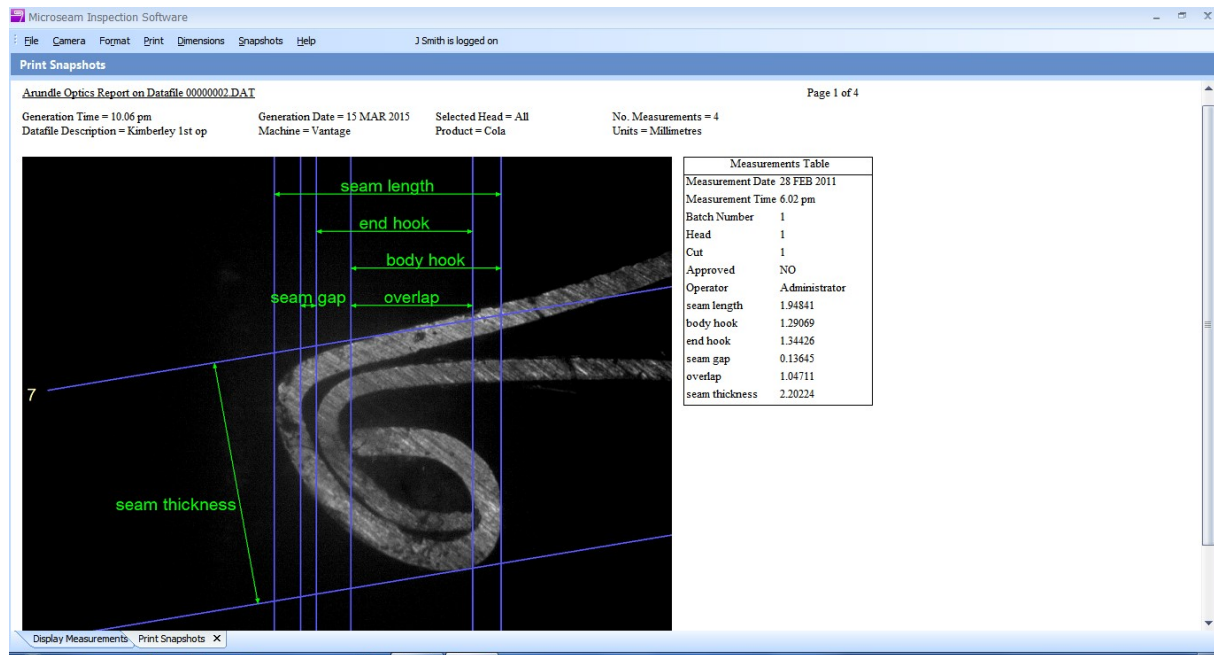
A choice can also be made to overlay measurement lines on each snapshot using 'Show Lines' or to not to display lines using 'Hide Lines'.

If the 'One Per Page' option is chosen, a large snapshot image is shown with the dimension lines and names or values superimposed and also a measurements table by the side.

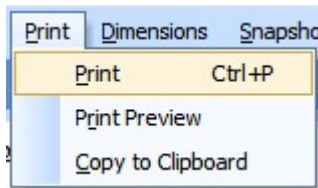
The information superimposed can be selected from the 'Dimensions' Menu at the top of the screen:



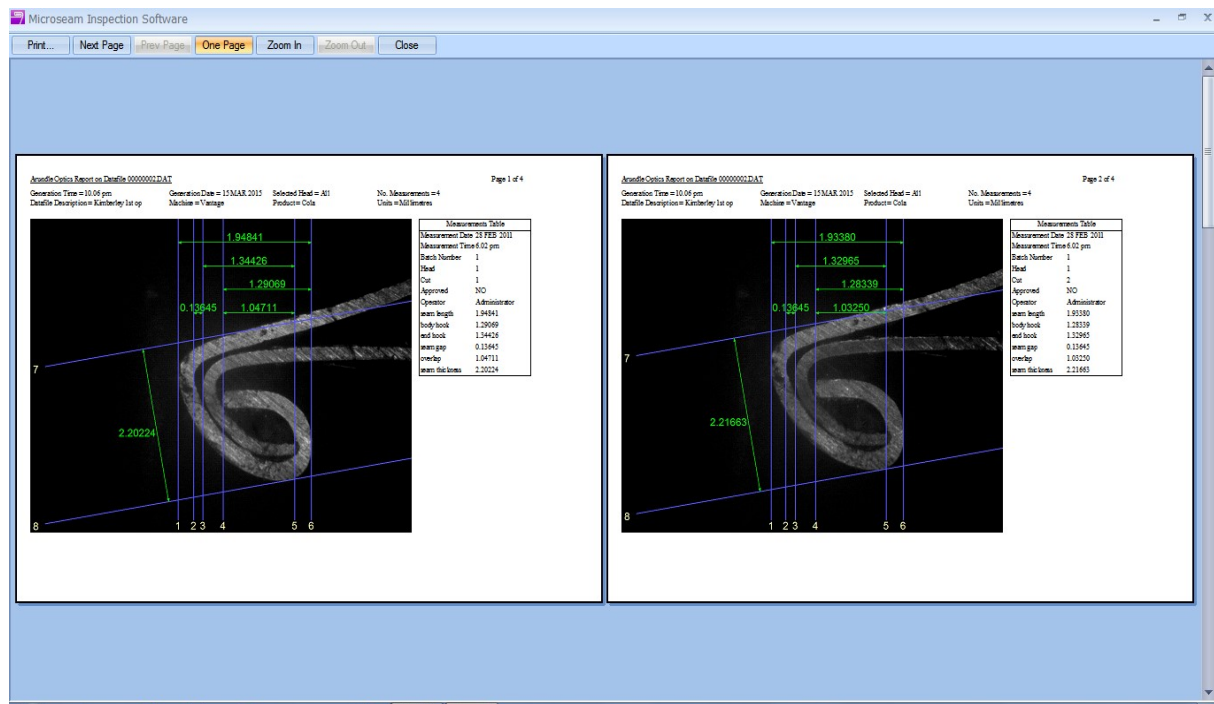
If more than one page is produced, the pages can be selected using the 'Pg Up' and 'Pg Dn' keypad buttons:



To 'Print', Print Preview' or 'Copy to Clipboard' the snapshots as thumbnails or single pages click the 'Print' menu at the top of the screen and make a selection:



If 'Print Preview' is selected, it is possible to scroll through the pages and 'Zoom In' and 'Zoom Out' to examine the pages closely before subsequently selecting 'Print'.

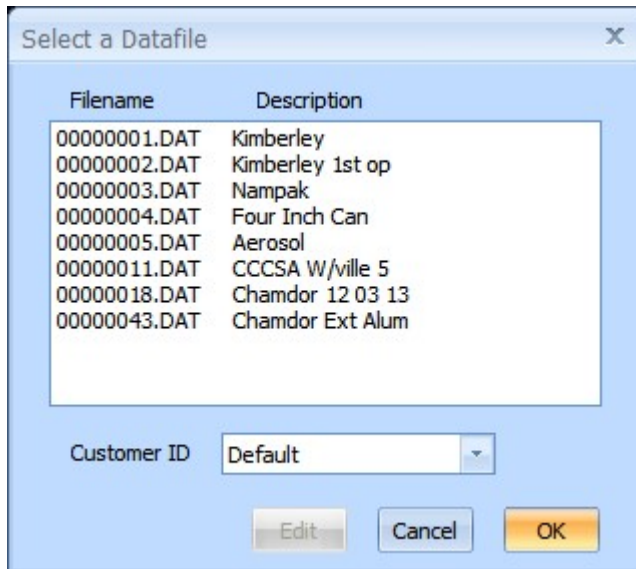


8.4.4 Opening a Different Datafile

To work on data that is held in another datafile:

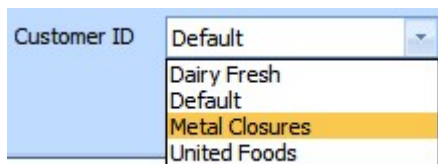
- Click the **Open** button in the Datafile area at the top left of the main 'Display Measurements' screen.

The 'Select a Datafile' box appears:



- Select the required datafile.

If only datafiles for a particular customer are required then click on the 'Customer ID' drop down list and select a customer.

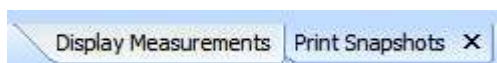


Only datafiles for that customer will appear in the list for selection.

- Click on the required datafile and click the **OK** button. The selected datafile will be displayed.

8.5 Switching Between Screens Using Tabs

There is a 'Tabs' area at the bottom-left of the Microseam window, which shows all active screens. For instance, if the 'Snapshots' button from the 'Display Measurements' screen has been used then a 'Tab' will be shown for 'Print Snapshots'.



A user can switch between the 'Display Measurements' and 'Print Snapshots' screens by clicking on the appropriate tab. The 'Display Measurements' screen cannot be closed in this way because it is the main 'Logged On' screen.

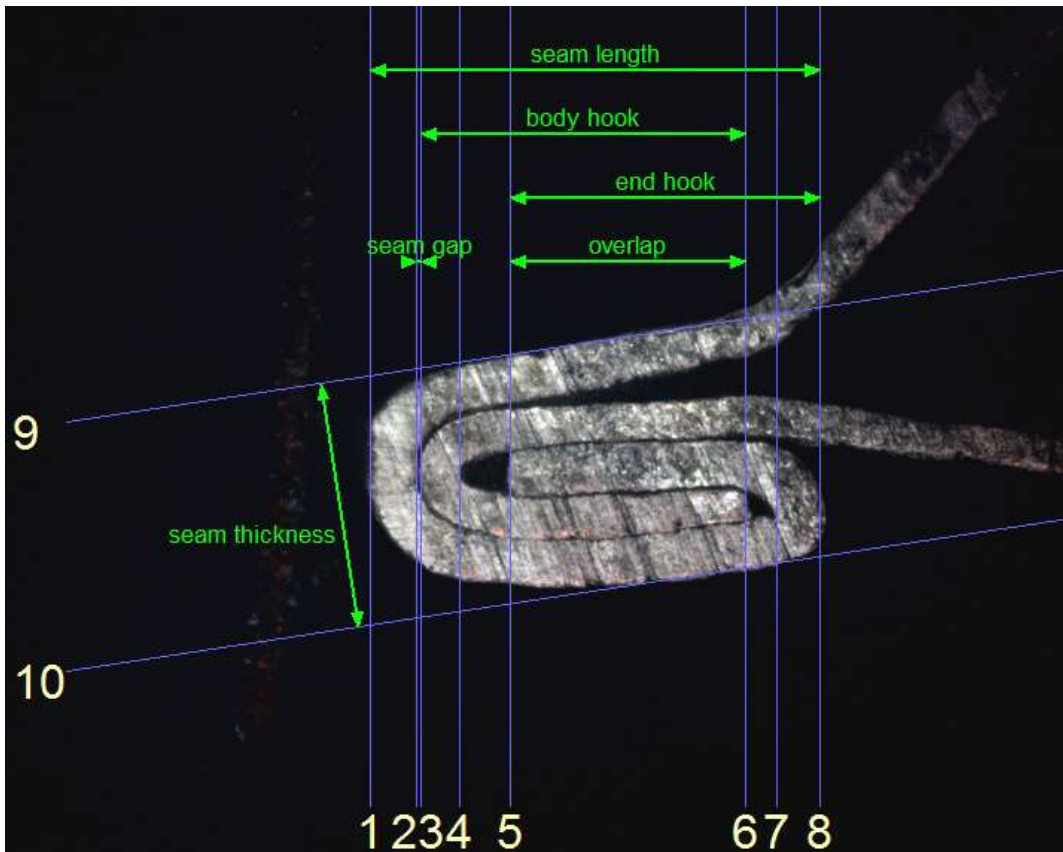
To close a 'Tab', click on the 'x' on the tab.

Note that some buttons may be grayed out when more than one screen is active; for instance, if a format is being edited, then measurements cannot be taken using that format.

8.6 Understanding Formats

A 'Format' describes all the dimensions, which must be measured for a particular type of can, including the allowable tolerances.

The example below is a format image showing 10 measurement points:



There are 8 vertical measuring points (numbered 1 to 8) and 2 horizontal measuring points (numbered 9 and 10).

To measure the 'Seam length' (as shown above), the user would take a can off the production line and produce a snapshot of the seam using the camera.

The blue guidelines, marked 1 and 8, indicating the two extreme points of the seam, would be dragged to line up with the seam image - Microseam then produces an accurate measurement for this dimension.

The Administrator can edit a format to change the names of the dimensions, add new ones, or change the tolerances.

9 USING MICROSEAM A+S+U

This section describes the actions most commonly performed by users, taking measurements and producing reports.

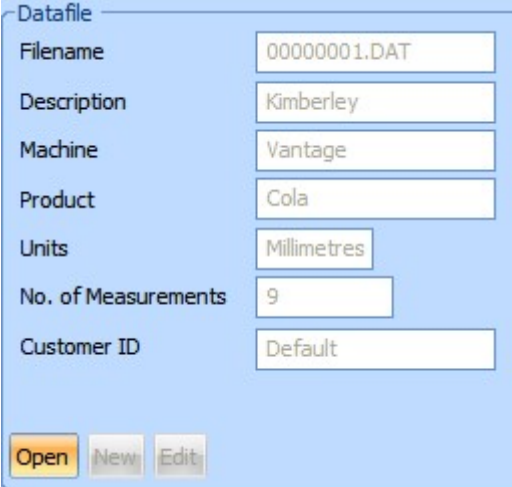
9.1 Seam Measurements

The Administrator will create a datafile ready to receive measurements (see earlier sections).

It is important that, before taking measurements, the correct 'datafile' is selected for the type of seam to be measured.

9.1.1 Selecting a 'Datafile'

- Click the **Open** button in the 'Datafile' area at the top left of the main 'Display Measurements' screen.

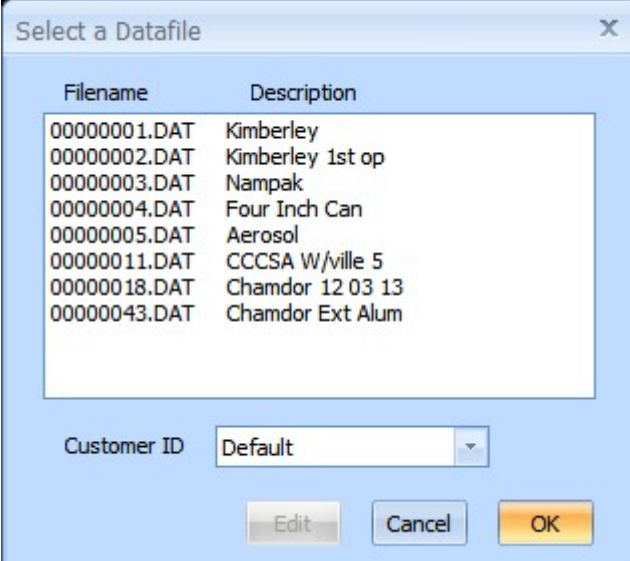


The 'Datafile' form contains the following fields and values:

Field	Value
Filename	0000001.DAT
Description	Kimberley
Machine	Vantage
Product	Cola
Units	Millimetres
No. of Measurements	9
Customer ID	Default

Buttons: Open, New, Edit

The 'Select a Datafile' box appears.



The 'Select a Datafile' dialog box displays a list of datafiles with the following columns:

Filename	Description
0000001.DAT	Kimberley
0000002.DAT	Kimberley 1st op
0000003.DAT	Nampak
0000004.DAT	Four Inch Can
0000005.DAT	Aerosol
0000011.DAT	CCCSA W/ville 5
0000018.DAT	Chamdor 12 03 13
0000043.DAT	Chamdor Ext Alum

Customer ID: Default

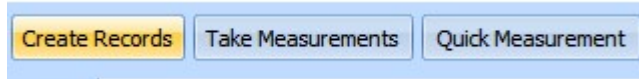
Buttons: Edit, Cancel, OK

- Click on the required datafile, and then click the **OK** button.
The selected datafile will be displayed.

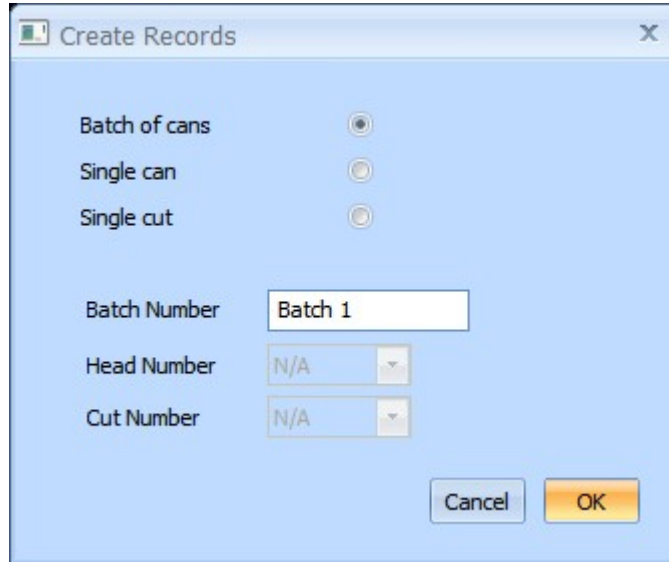
9.1.2 Creating Records

Before it is possible to take measurements, 'records' must be added to hold the measurement data:

- At the bottom left of the 'Display Measurements' screen click on the **Create Records** button:



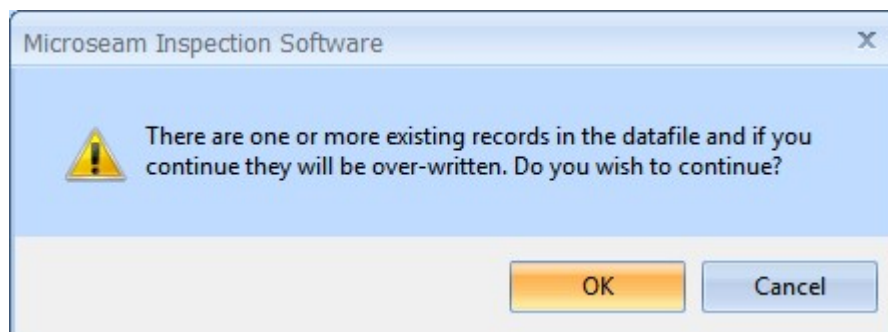
The 'Create Records' box appears:



- Select if measurements are to be of a 'Batch of cans', a 'Single can' or a 'Single cut'.

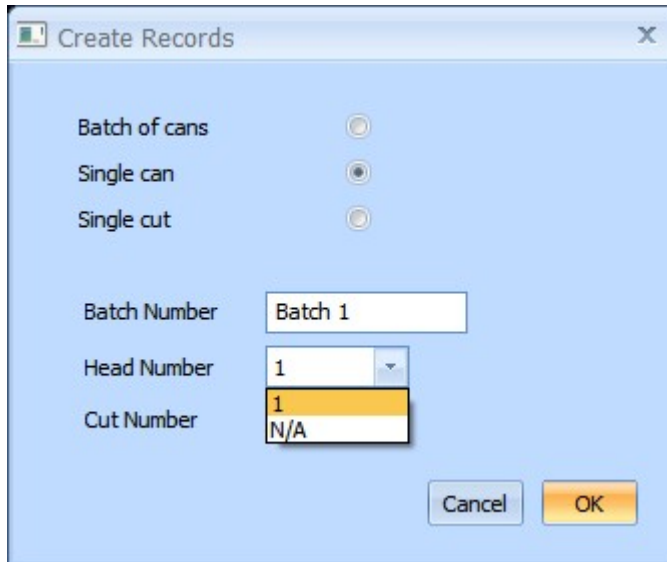
If 'Batch of cans' is selected, a number of records will be created depending on the number of closing heads, and cuts defined in the chosen format.

The 'Batch Number' is inserted automatically but can be changed if required to any alpha numeric. If a batch number is duplicated, with a batch number already existing, the following error message is received:

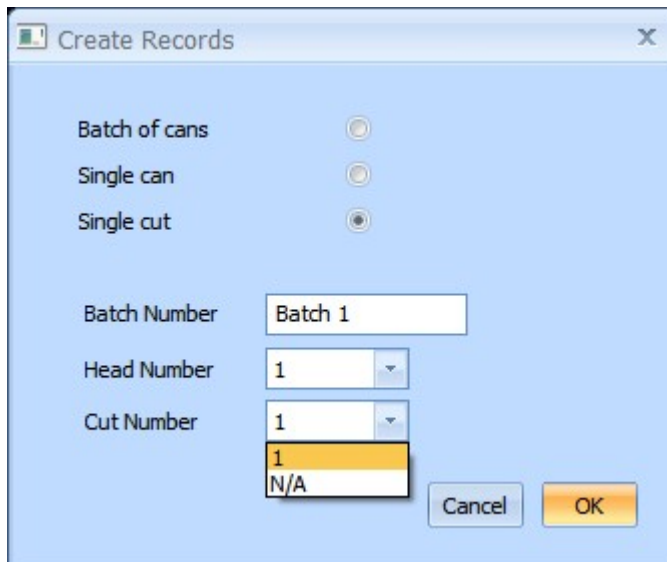


If 'Single can' is selected, a number of records will be created depending on the number of cuts defined in the chosen format.

The 'Head Number' can be selected from a drop down list, see below:



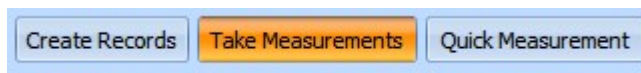
If 'Single cut' is selected, one record will be created. The 'Batch Number' can be edited; the 'Head Number' and 'Cut Number' can be selected from drop down lists:



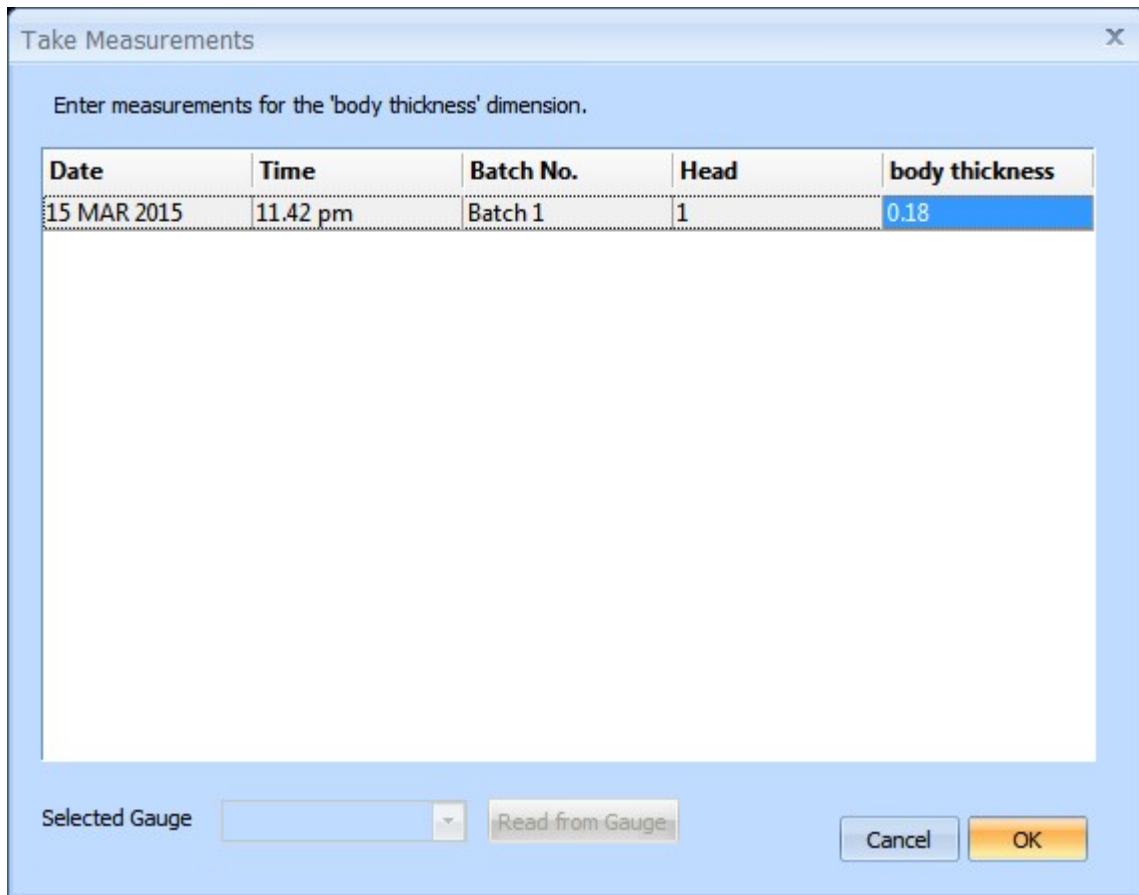
If the 'Create Records' procedure is repeated then Microseam will increment 'Head' and 'Cut' number to avoid duplication.

9.1.3 Taking Measurements

- Click the **Take Measurements** button in the bottom-left corner of the 'Display Measurements' screen.

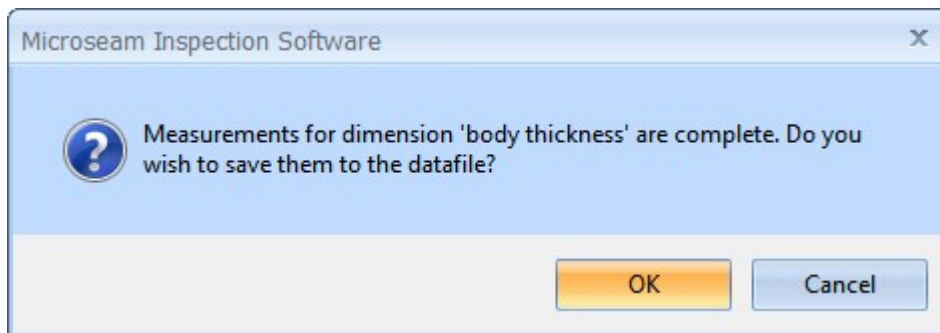


The 'Take Measurements' box appears (Single cut shown). If a 'Batch of cans' had been selected when 'Creating Records', this box would have two entries, one for each head. This allows all like measurements to be taken e.g. all 'Foreign Bodies' then all 'Can Heights' etc etc:

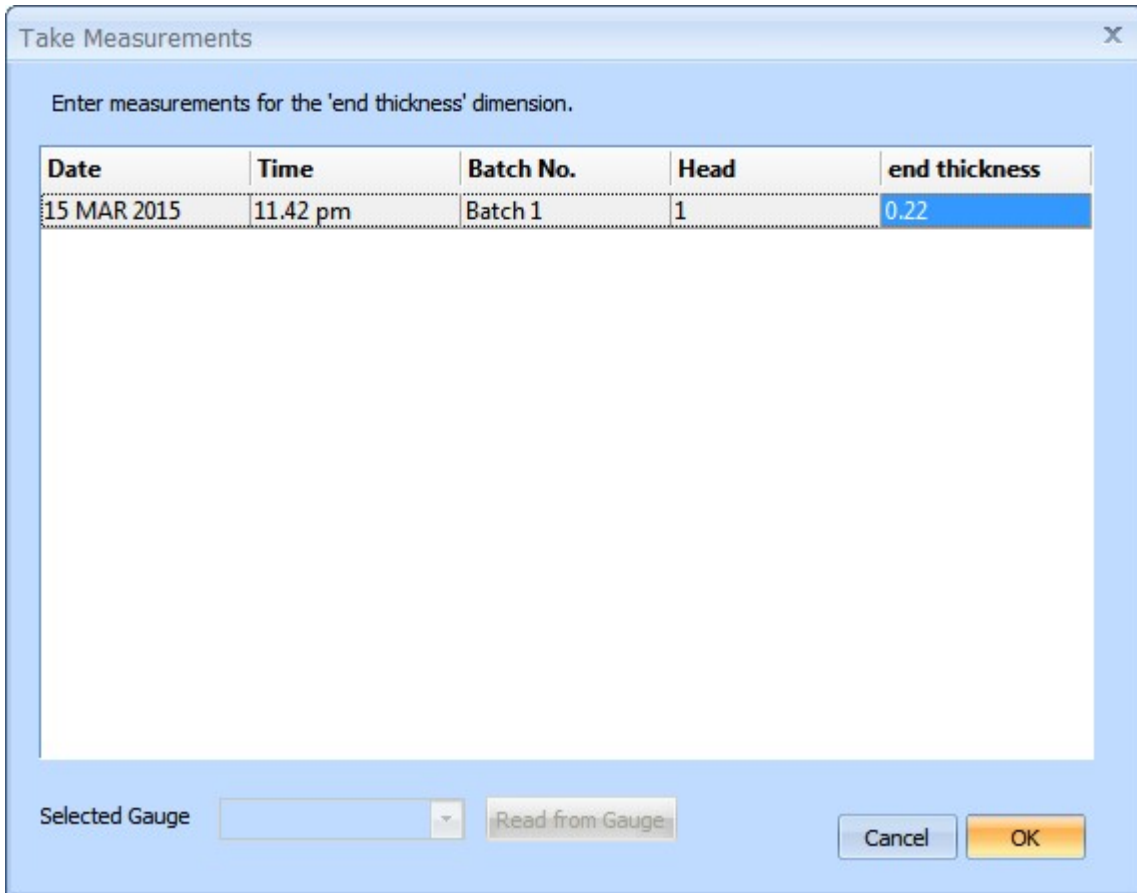


- Click the **OK** button.

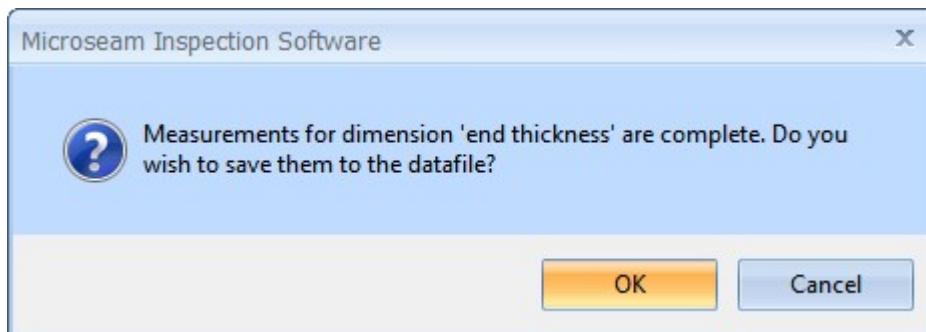
A save confirmation box appears:



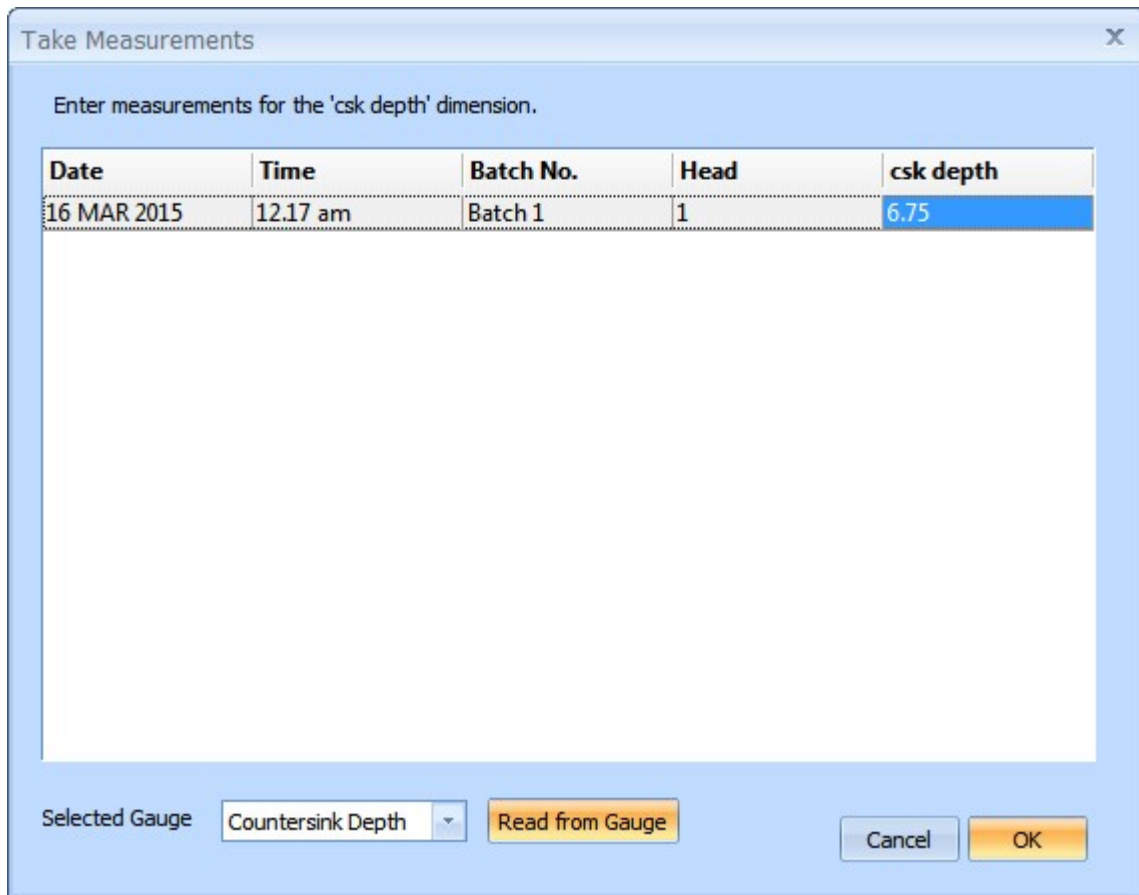
- Click the **OK** button.
The measurement is entered.
- Repeat the above procedure for the next measurement, which is 'End Thickness':



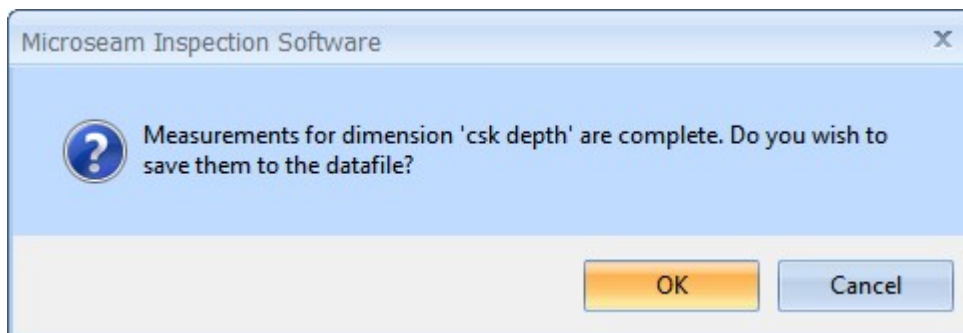
- Measure the 'End Thickness' manually and if the same as the value shown highlighted in blue then click the **OK** button.
If the dimension is different then double click the 'End Thickness' box highlighted in blue, and enter the correct dimension from the keyboard.
 - Click the **OK** button.
- A save confirmation box appears:



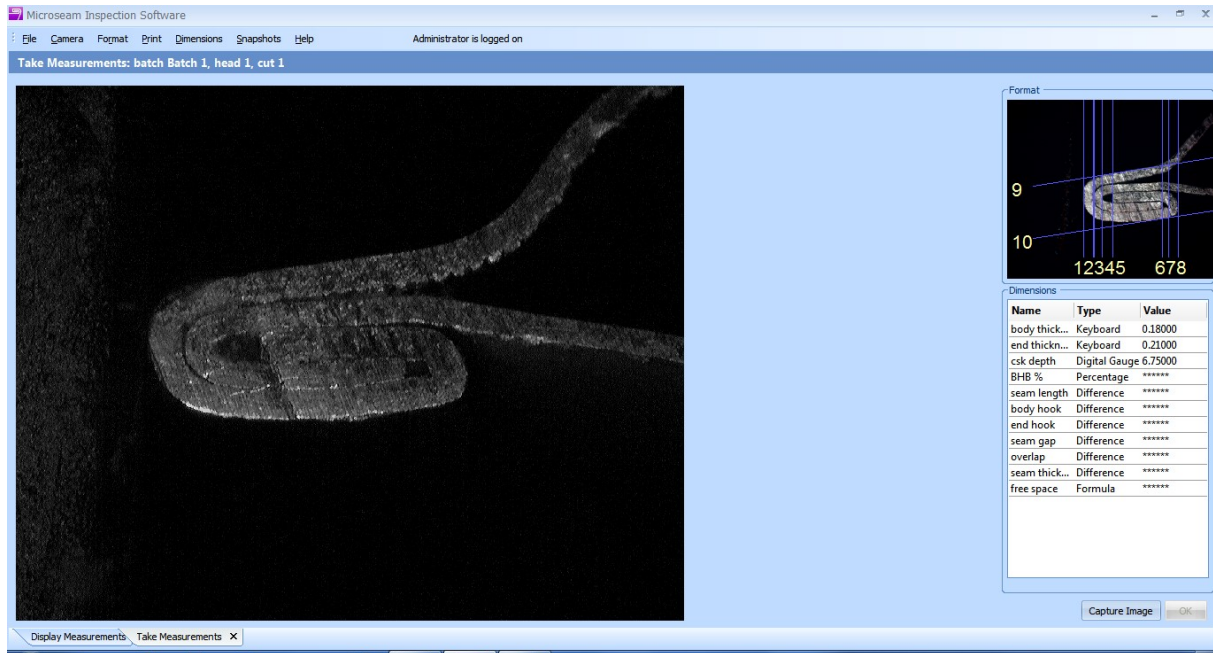
- Click the **OK** button.
The measurement is entered.
- Repeat the above procedure for the next measurement, which is 'Csk Depth':



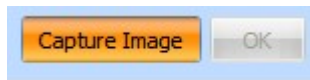
- Measure the 'Csk Depth' manually and if the same as the value shown highlighted in blue then click the **OK** button.
If the dimension is different then double click the 'Csk Depth' box highlighted in blue, and enter the correct dimension from the keyboard.
If a digital gauge is connected then the measurement can be taken by clicking on the **Read from Gauge** button then clicking the **OK** button.
- Click the **OK** button.
A save confirmation box appears:



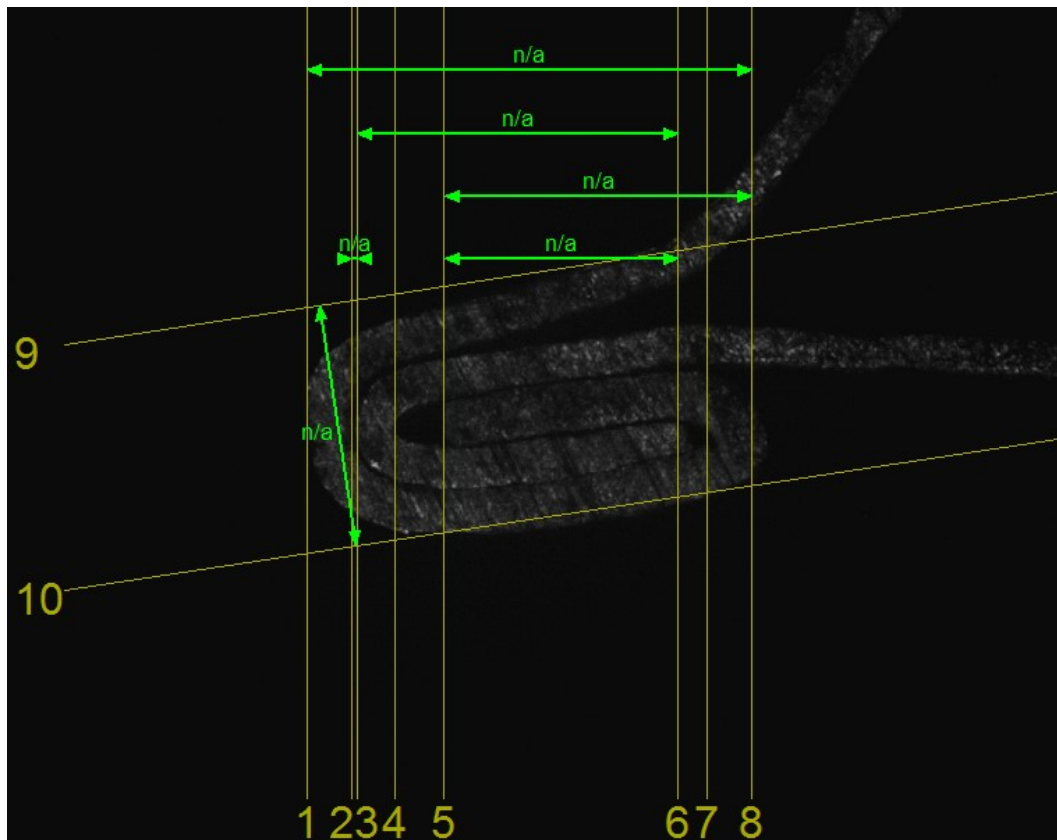
- Click the **OK** button.
The measurement is entered.
- The next measurement is the actual seam profile measured using the camera:



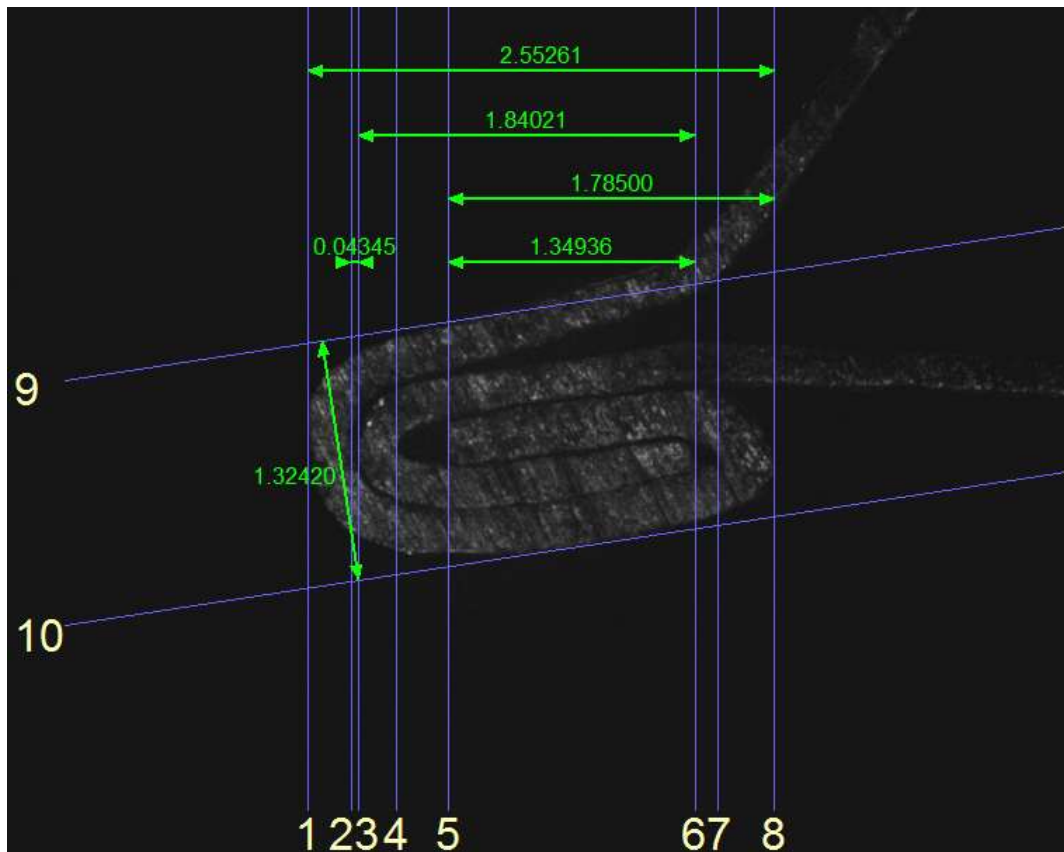
- Place the can on the camera and adjust its position until a clear bright seam image is obtained. This requires a little practice.
- Click the **Capture Image** button at the bottom right of the screen.



An image of the seam appears with the measuring points superimposed in yellow and dimension lines in green.



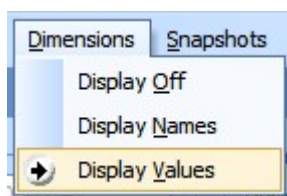
- Drag each measuring point line to the correct measurement point, as shown below:



Once a measurement point line has been moved into position it will turn blue. As more lines are positioned, measurements begin to appear. All lines must be moved and turn blue for all dimensions to appear.

As an aid to positioning the lines accurately, if the right mouse button is clicked while on a line, an enlarged view appears. This can also be achieved by holding down any key while moving a line with the left button.

The 'Dimensions' option on the top menu bar allows control over the display of dimensions.



Display Off

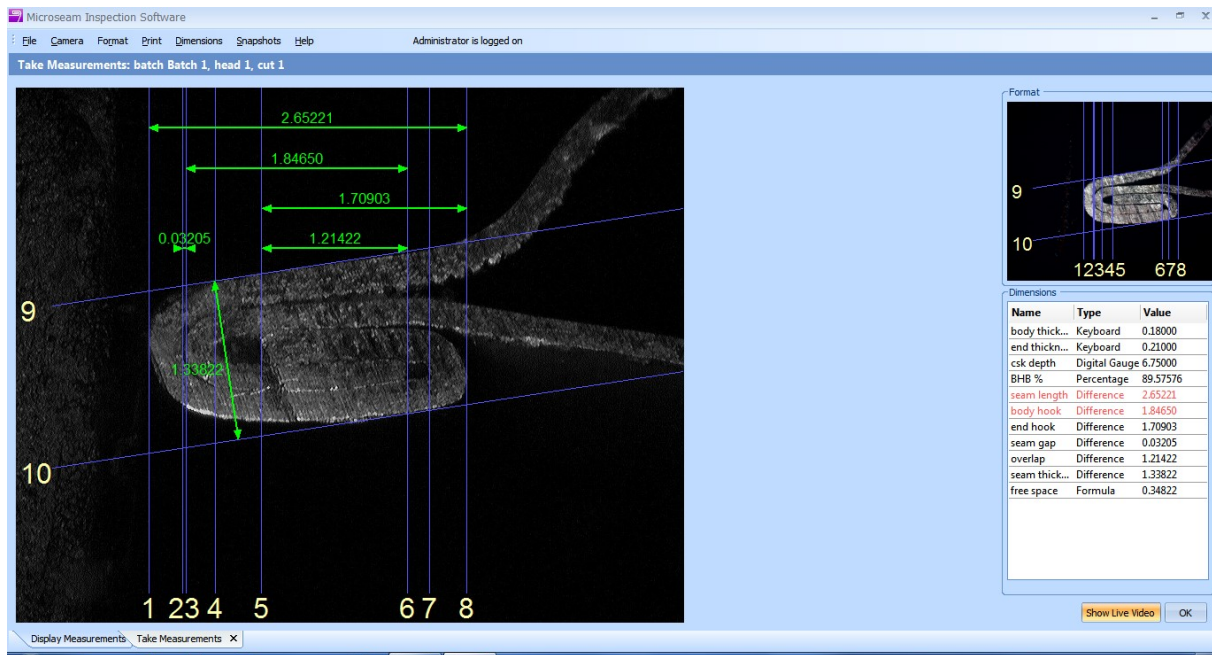
Shows a clean seam image with no dimensions or lines.

Display Names

Shows dimension lines and the names of the dimensions.

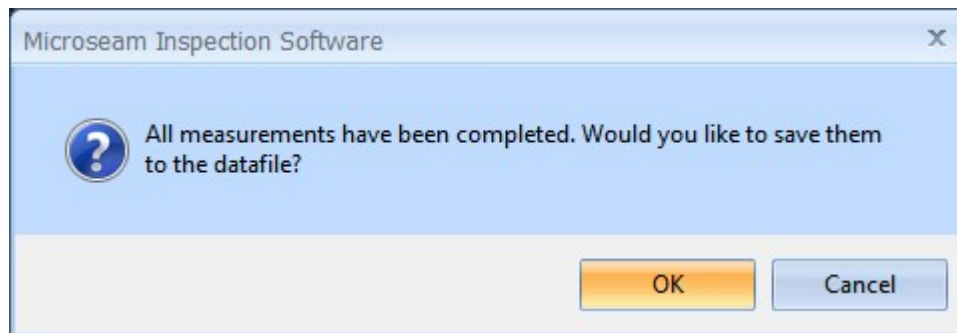
Display Values

Shows dimension lines and the actual measured dimensions.



- When happy with the measurements click on the **OK** button at the bottom right of the screen.

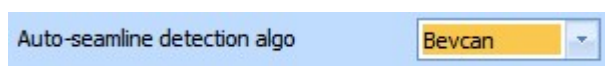
A save confirmation box appears.



- Click the **OK** button to save.
The Take Measurements screen reappears to take measurements on the next cut with the live video image and with all dimensions cleared.
- Reposition the can to the next cut if applicable and repeat the above procedure.
- When all cuts are completed close the 'Take Measurements' tab.
The 'Display Measurements' screen appears with all the dimensions entered.

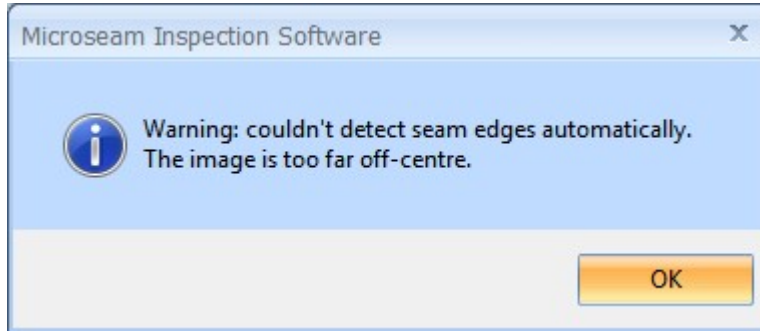
9.1.4 Auto Seamline Detection **PROF**

This feature is available in the Professional version only: a software algorithm will auto-place the measuring point lines to the correct positions on the image. This is only true if the format used has this feature selected and the correct seam type algorithm chosen as shown below:



- Manipulate the seam image to be in the centre of the screen.

- When the 'Capture Image' button is clicked, the software algorithm will attempt to place the lines. Lines successfully placed will be blue and lines that could not be placed will be yellow. In practice the algorithm will not always successfully place the lines correctly in which case the lines will need to be manually adjusted by the user until they are satisfactorily positioned.
- If the image is not placed on the screen correctly, the following warning will appear and auto placement will fail. Reposition the image and try again.



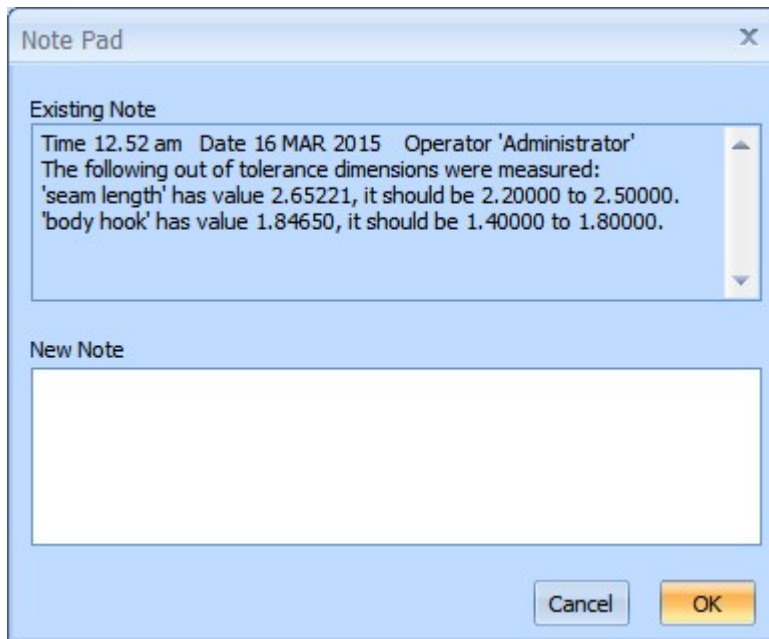
9.1.5 Out of Tolerance Dimensions

While taking measurements, if any dimension is out of tolerance (as defined in the format) it appears in red in the list of dimensions taken at the right of the screen:

Dimensions		
Name	Type	Value
body thick...	Keyboard	0.18000
end thickn...	Keyboard	0.21000
csk depth	Digital Gauge	6.75000
BHB %	Percentage	89.57576
seam length	Difference	2.65221
body hook	Difference	1.84650
end hook	Difference	1.70903
seam gap	Difference	0.03205
overlap	Difference	1.21422
seam thick...	Difference	1.33822
free space	Formula	0.34822

If one or more dimensions for a cut are out of tolerance, a note is automatically added, to the 'Display Measurements' screen against the offending line item listing the out of tolerance dimensions:

Note	Approved	Operator	body thickness	end thickness	csk depth	BHB %	seam length	body hook	end hook
Time 12....	NO	Administra...	0.18000	0.21000	6.75000	89.57576	2.65221	1.84650	1.70903
	NO	Administra							



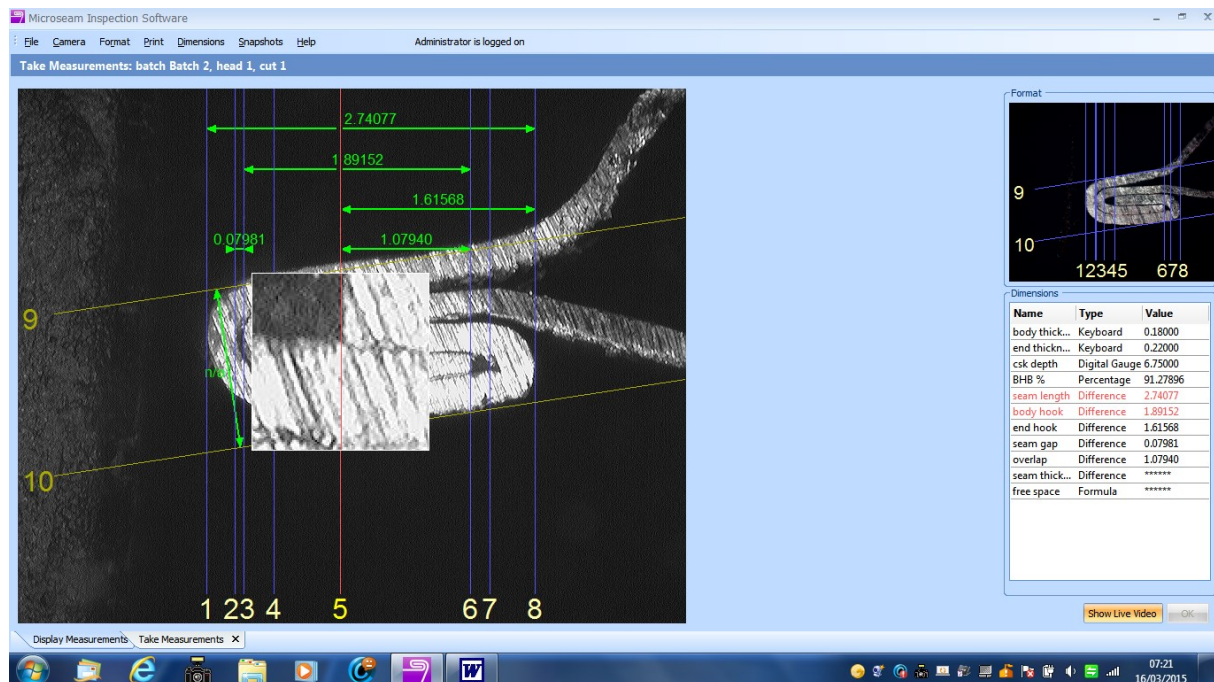
9.1.6 Zooming In

While taking measurements of a seam image, as an aid to positioning the lines accurately on the measurement features of the seam, an enlarged view can be obtained:

- Click on and drag a line with the **right** mouse button, an enlarged view appears.

OR

- Click on and drag a line with the **left** mouse button and while dragging hold down any key. An enlarged view appears:

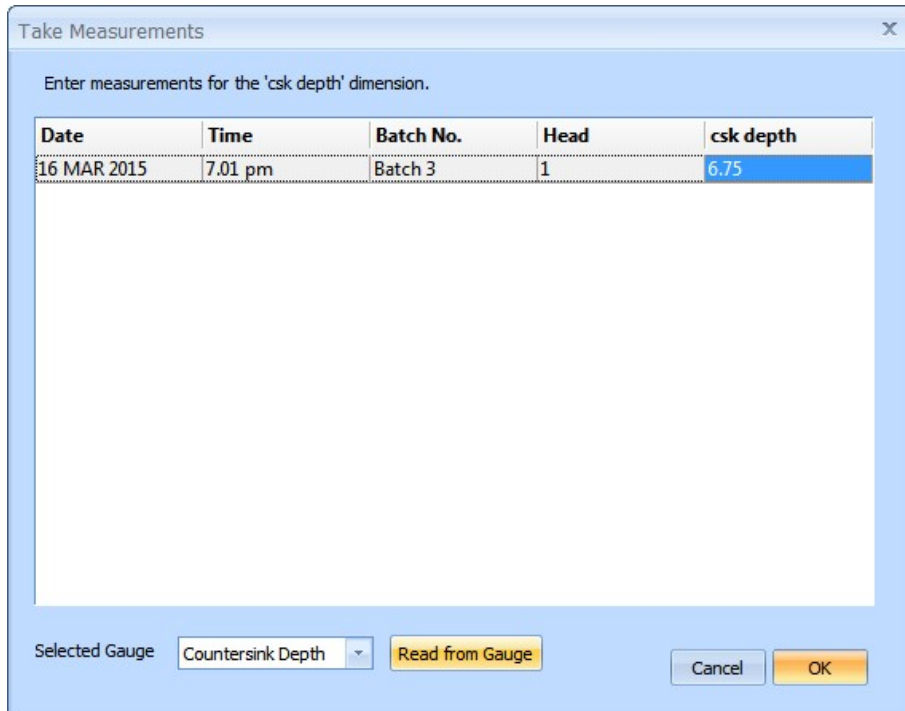


The enlarged view box disappears when the mouse button or key is released.

9.1.7 Using a Digital Gauge

A format may contain dimensions with type 'Digital Gauge' allowing measurements to be input using a digital gauge such as the Sylvac S229 dial gauge, which is connected to the PC via USB.

Measurements can be entered with a digital gauge when taking or editing a measurement at times when a 'Take Measurements' box appears with a 'Read from Gauge' button at the bottom.

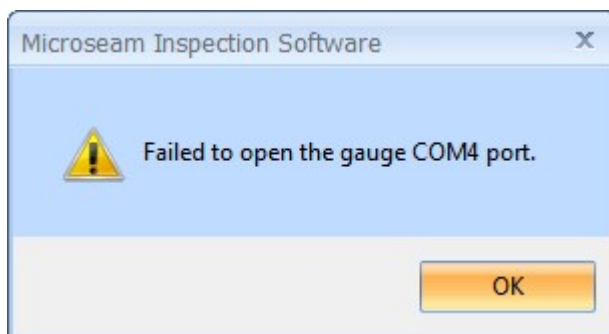


- Click the **Read from Gauge** button.

This will cause the gauge to output its current reading.

- Click the **OK** button to accept the reading.

An error message appears if the 'Read from Gauge' button is clicked with no gauge connected.



If the gauge is not available, the value may be entered directly from the keyboard in the appropriate dimension box.

9.1.8 Notes

Notes can be added to any measurement to hold any information that may be thought to be relevant to the measurement process. Microseam also adds notes automatically, for example when dimensions are out of tolerance. Once a note has been added, it cannot be deleted.

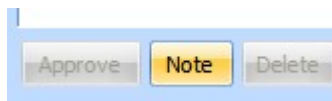
If a note has been added to a measurement this will be displayed, in a truncated form, in the 'Note' column. To view in full:

- Hover the mouse over the note to show it in full.

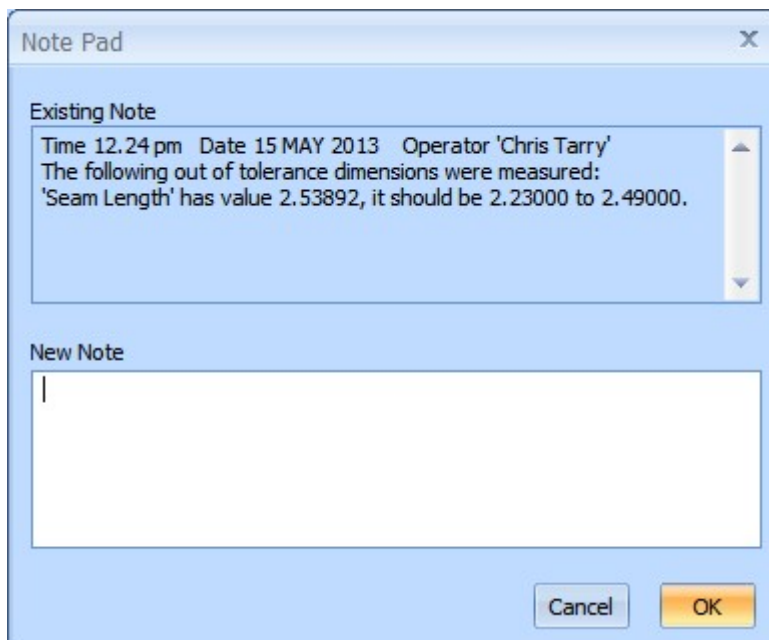
Note	Approved	Operator	body thickness	end thickness	cs
Time 12.52 am	NO	Administra...	0.18000	0.21000	6.7
	NO	Administra...	0.18000	0.22000	6.7
Time 12.52 am Date 16 MAR 2015 Operator 'Administrator' The following out of tolerance dimensions were measured: 'seam length' has value 2.65221, it should be 2.20000 to 2.50000. 'body hook' has value 1.84650, it should be 1.40000 to 1.80000.					
	NO	Administra...	0.18000	0.22000	6.7

As an alternative, notes can be viewed and added as follows:

- Click on the **Note** button at the bottom left of the screen:



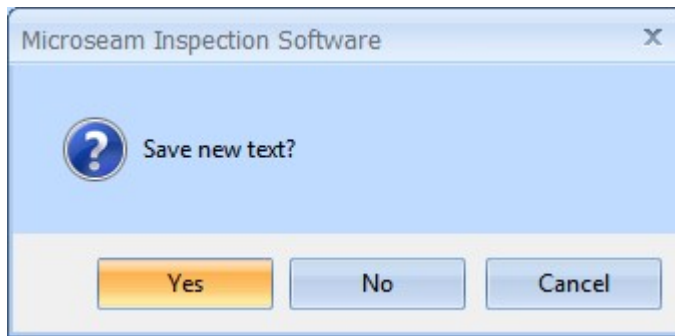
The 'Note Pad' box appears:



The 'Note Pad' box appears with any existing note shown.

This 'Note Pad' box shows a Microseam automatic note, which is scrollable.

- To close 'Note Pad' without adding a 'New Note', click the **OK** or **Cancel** buttons.
- To add a new note, enter the text in the 'New Note' box and click the **OK** button. A confirmation box appears:



- Click the **Yes** button to save the note or click the **No** or **Cancel** button to abort.

Note: Microseam automatically inserts the time, date and operator at the top of the note.

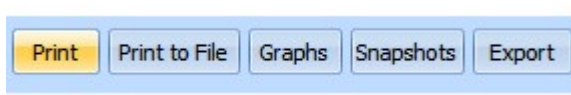
9.2 Printing & Exporting Measurements

9.2.1 Printing Measurement Data

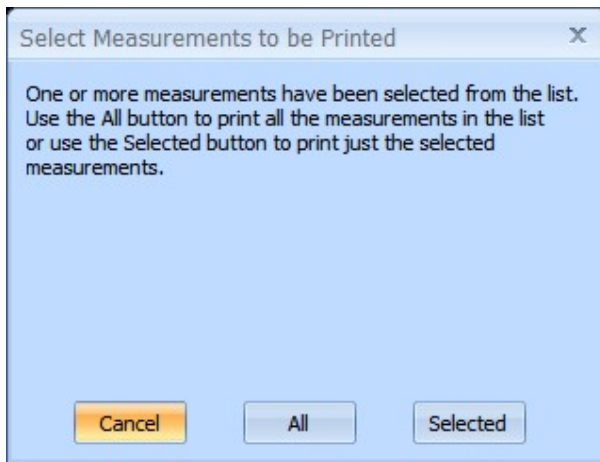
It is possible for any user to print measurement data by following the procedure below:

From the 'Display Measurements' screen:

- Select the lines to be printed. If no selection is made all lines will be printed and the 'Select Measurements to be Printed' box will not be displayed.
- Click the **Print** button at the bottom right of the screen:



The 'Select Measurements to be Printed' box appears:



Cancel

Will abort the process.

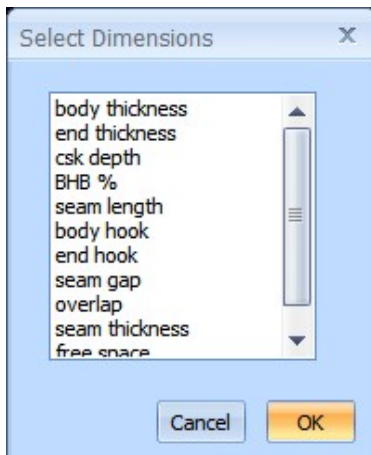
All

Will print all lines irrespective of what was selected.

Selected

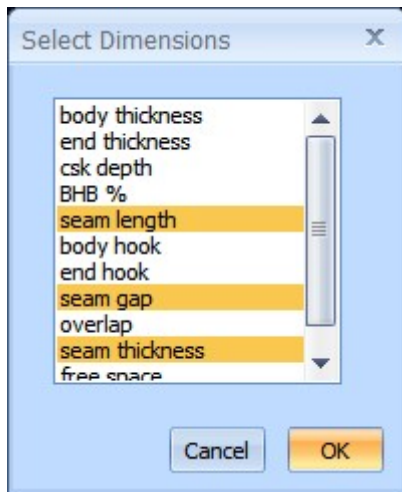
Will print only the selected measurement lines.

Click the **All** or **Selected** button. The 'Select Dimensions' box appears:



This has a list of individual dimensions, which can be selected to appear on the print.

- Click on the dimensions required to be printed using standard Windows selection techniques:



- When all required dimensions are selected, click the **OK** button.
- The 'Print Measurements' screen appears showing a table of the selected dimensions together with other information concerning the Datafile parameters.

Arundel Optics Report on Datafile 00000045.DAT Page 1 of 1

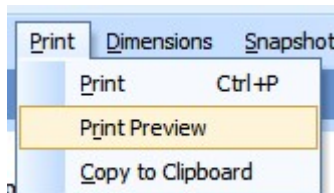
Generation Time = 7.25 pm Generation Date = 16 MAR 2015 Selected Head = All No. Measurements = 1
Datafile Description = Kimberley Machine = Vantage Product = Cola Units = Millimetres

Date	Time	Batch No.	Head	Cut	Approved	Operator	seam length	seam gap	seam thickness
16 MAR 2015	00:17	Batch 1	1	1	NO	Administrator	2.65221	0.03205	1.33822
Average							2.65221	0.03205	1.33822
Std. Dev.							0.00000	0.00000	0.00000

Note, that for this example, only one page is required to display the data as indicated by the 'Page 1 of 1' text top right.

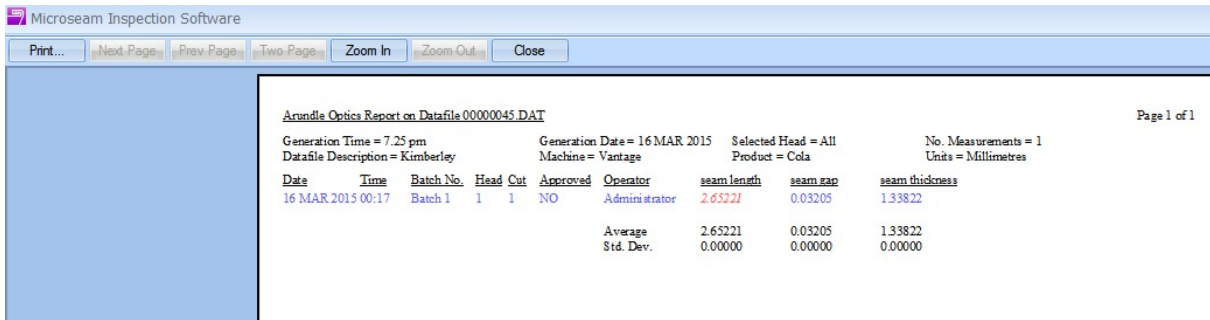
If more than one page is produced, the pages can be scrolled using the **Page Up** and **Page Down** keys on the computer numeric keypad.

- From the main menu bar, select the **Print** option.

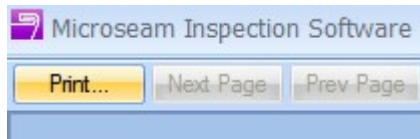


- From the drop down list select **Print Preview**.

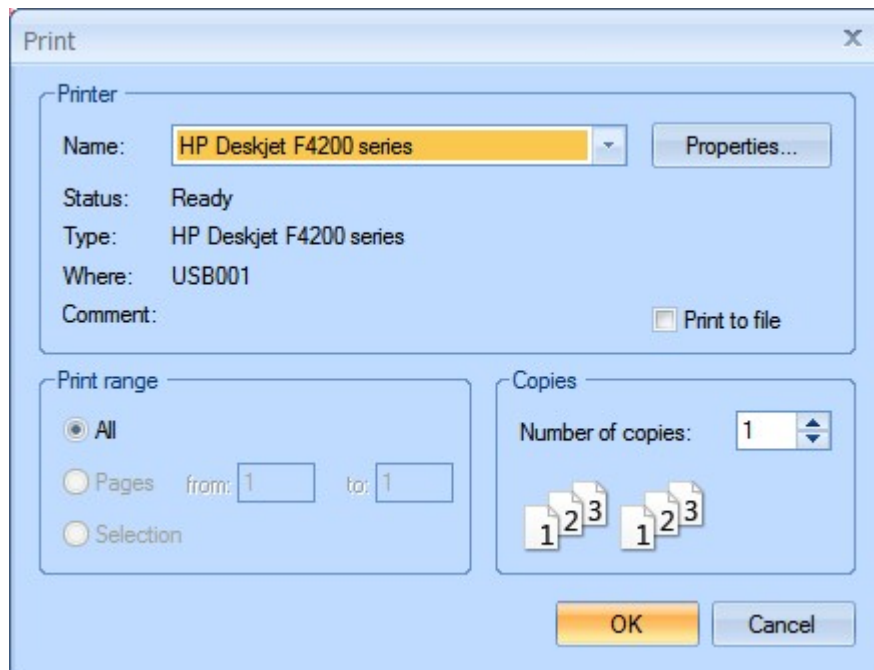
The 'Print Preview' screen appears:



- Click the **Print** button at the top left of the screen.



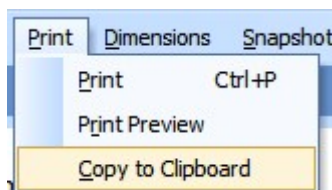
The standard Windows 'Print' window appears:



- Select the **Name** of the printer to be used.
- Click the **OK** button and the print will be produced.

The page can be used in other applications by copying to the Windows Clipboard.

- From the main menu bar, select **Print**, and from the drop down list, select **Copy to Clipboard**.



This allows the page to be 'pasted' into other applications.

9.2.2 Producing Graphs of Measurement Data

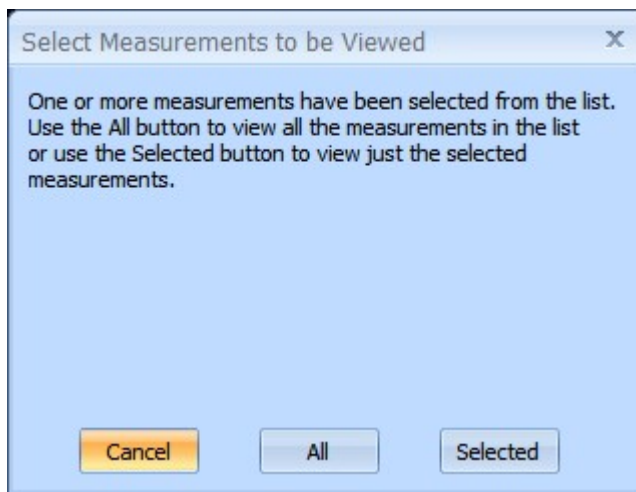
It is possible for any user to print graphs of measurement data.

From the 'Display Measurements' screen:

- Select the lines to be displayed graphically. If no selection is made all lines will be plotted and the 'Select Measurements to be Viewed' box will not appear.
- Click the **Graphs** button at the bottom right of the screen:



- The 'Select Measurements to be Viewed' box appears:



Cancel

Will abort the process.

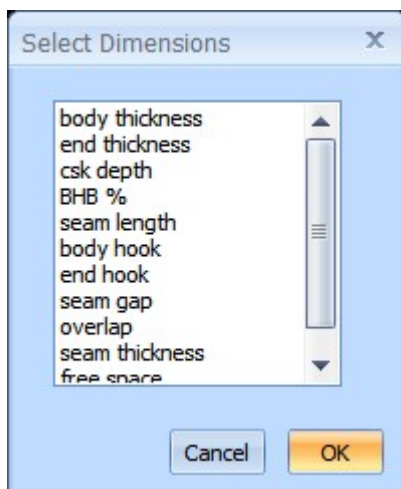
All

Will graph all lines irrespective of what was selected.

Selected

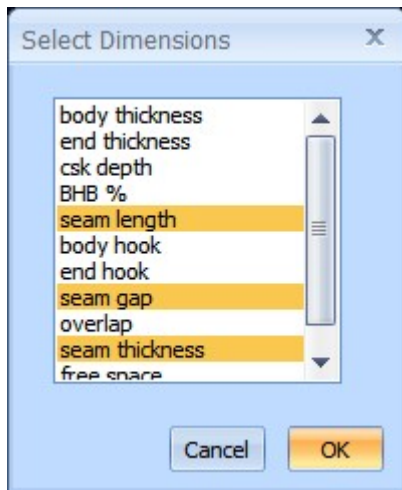
Will graph only the selected measurement lines.

- Click the **All** or **Selected** button. The 'Select Dimensions' box appears:



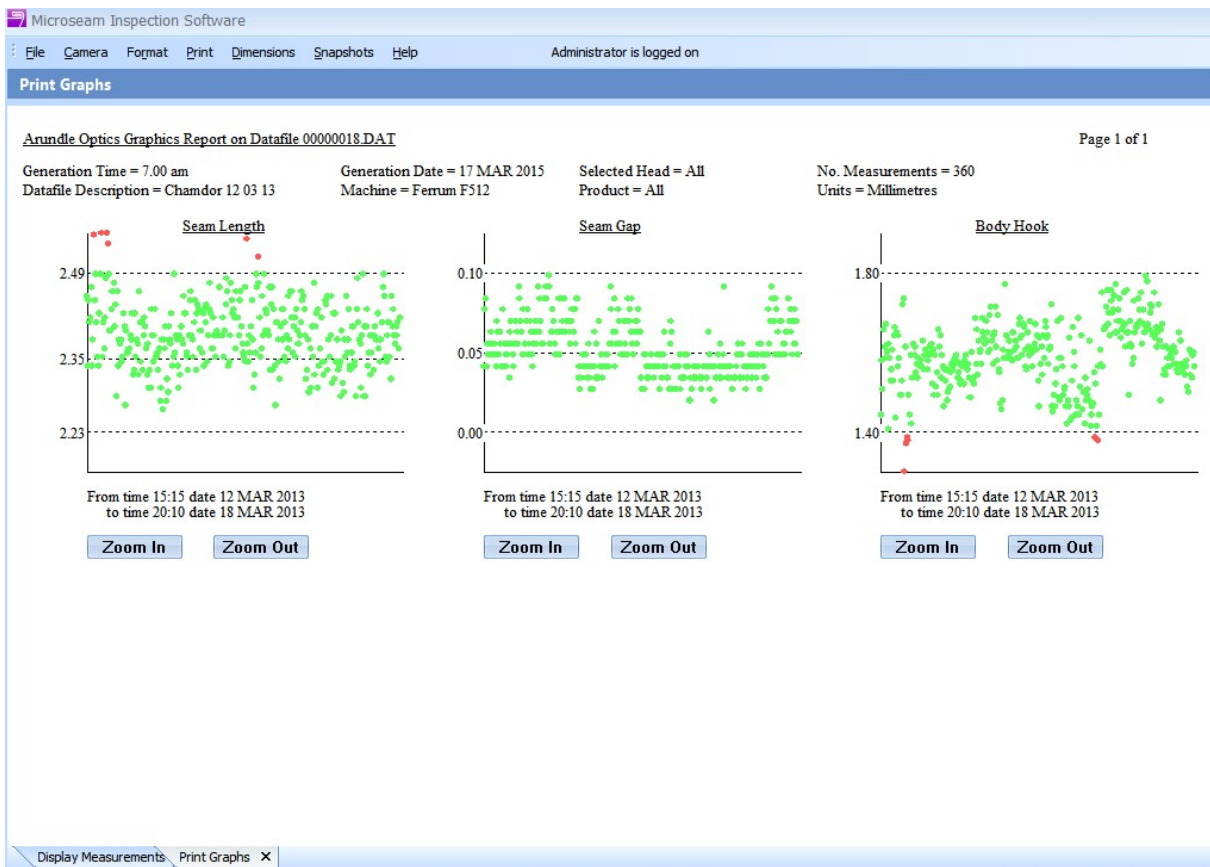
This has a list of individual dimensions, which can be selected to appear on the graph.

- Click on the dimensions required to be graphed using standard Windows selection techniques:



- When all required dimensions are selected, click the **OK** button.

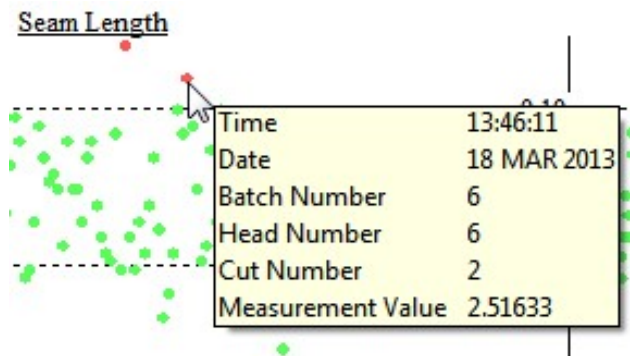
The 'Print Graphs' screen appears showing a series of graphs for the selected dimensions containing points representing the actual measurements together with other information concerning the Datafile parameters.



Note 1: The 'Seam Length' and 'Seam Gap' graphs have a dashed line and value indicating the 'Normal' dimension. This figure was set when the Format was created.

Note 2: For this example, only one page is required to display the data as indicated by the 'Page 1 of 1' text.

Hovering the mouse pointer over a result point on the graph will give information about that point as shown below:

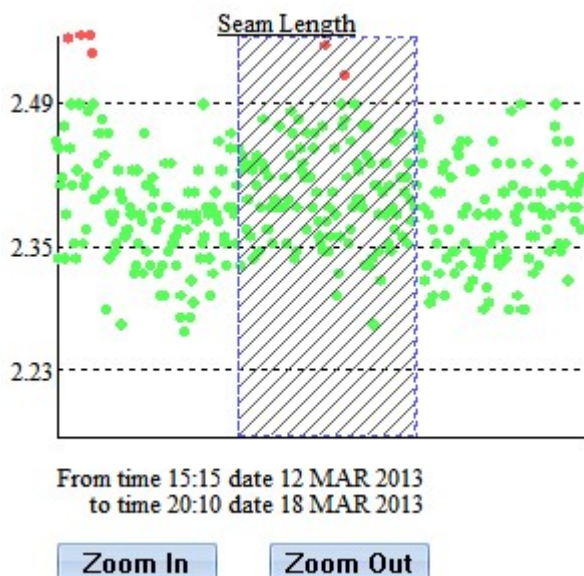


If more than one page is produced, the pages can be scrolled using the **Page Up** and **Page Down** keys on the computer keyboard.

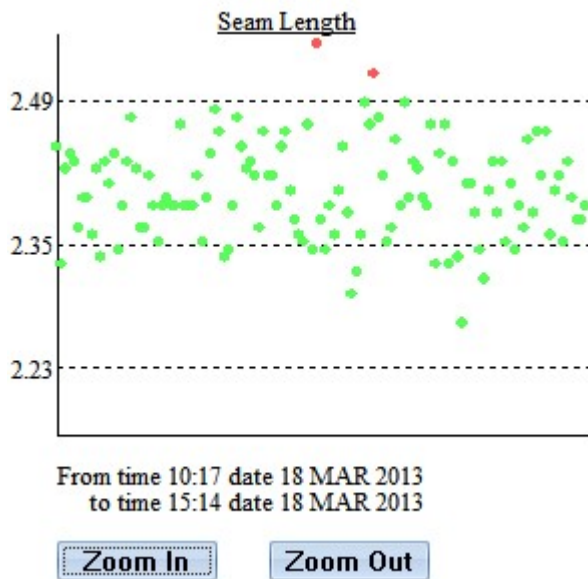
If there is a large amount of data on a graph such that it is not possible to see the detail, a 'Zoom' facility is available as follows:

- Place the mouse cursor on the left of the area of interest on the graph and click the **left** mouse button. A blue vertical dashed cursor is drawn.
- Place the mouse cursor on the right of the area of interest and click the **left** mouse button. A blue vertical dashed cursor is drawn and the area between the lines is hatched.

See the example below:



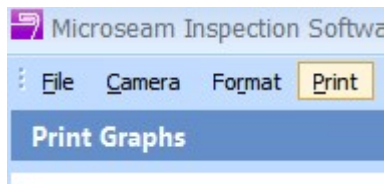
- Click the **Zoom In** button.
The graph expands so that the area of interest between the blue dashed lines fills the X-axis.
The axis legend displays the new time period represented on the graph.



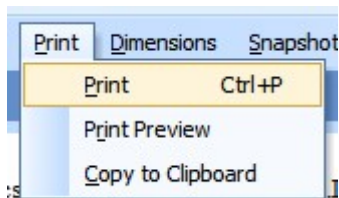
The graph can be expanded further if required using the same procedure. Pressing 'Zoom Out' progressively returns through the zoomed stages until the full period is displayed.

When ready to print the page:

- From the main menu bar, select the **Print** option.



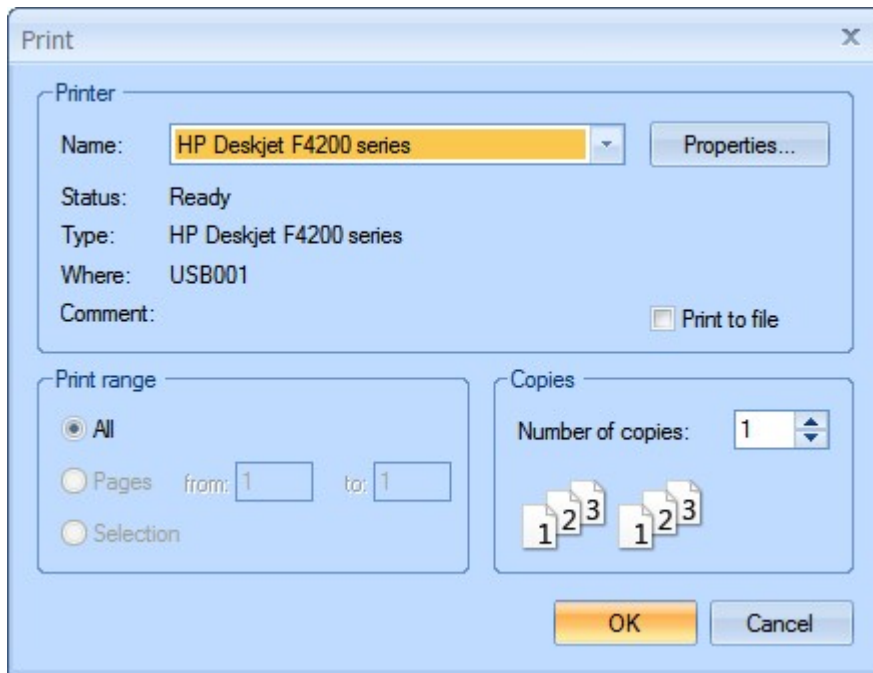
The following list appears:



To Print the graphs:

- Choose **Print**.

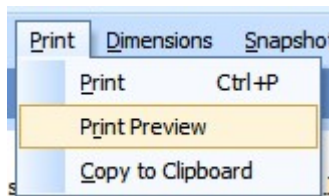
The standard Windows 'Print' window appears:



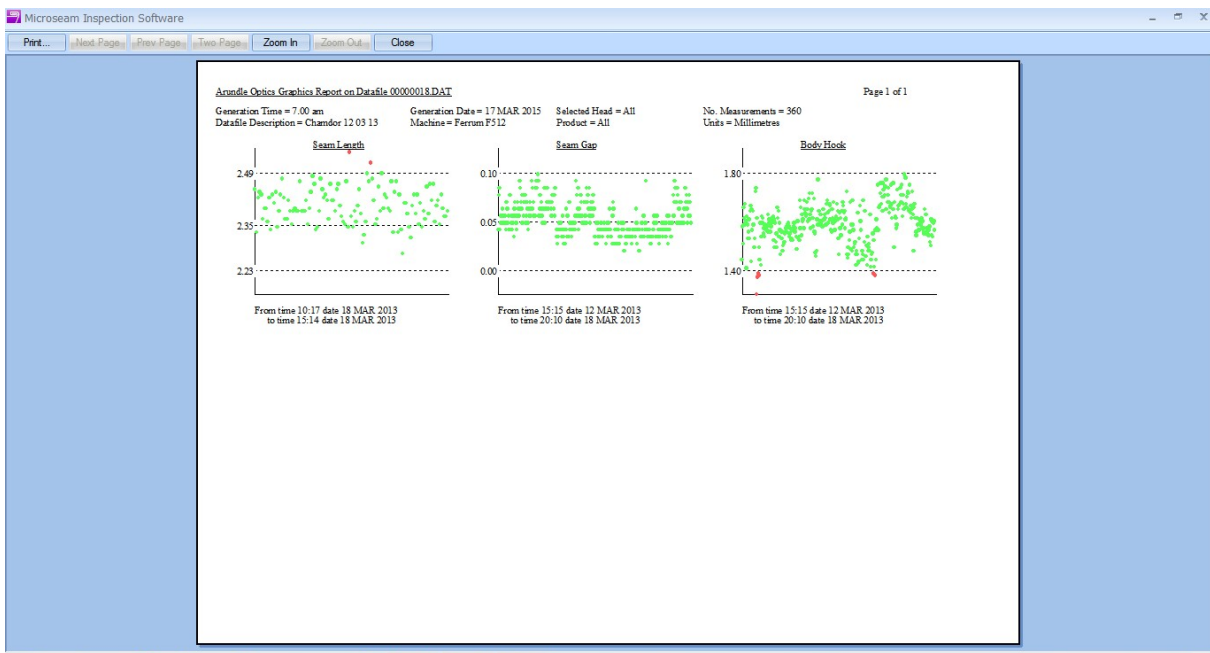
- Select the **Name** of the printer to be used.
- Click the **OK** button and the print will be produced.

To Preview the page before printing:

- Choose **Print Preview**.



The 'Print Preview' screen appears:



The high and low tolerance dimensions are shown on the 'Y' axis and dashed lines from these dimensions across the graph show the tolerance band.

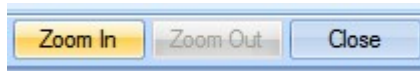
The 'Seam Length' and 'Seam Gap' graphs have a dashed line and value indicating the 'Normal' dimension. This figure was set when the Format was created.

Points that are within tolerance are shown in **green** and points outside tolerance are shown as **red**.

The 'X' axis is designated with the range of times and dates displayed.

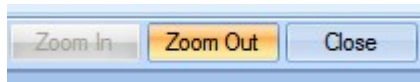
A page 'Zoom' facility is available as follows:

- Click the **Zoom In** button at the top of the screen:



Each time the 'Zoom In' button is pressed the screen enlarges one stage. Two stages of Zoom are provided.

- To 'Zoom Out' Click the **Zoom Out** button:

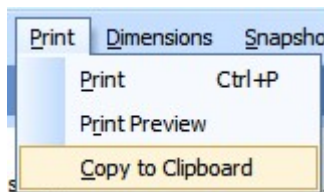


- 'Zooming In' and 'Out' can also be done, by clicking the **Left** mouse button whereupon the cursor becomes a magnifying glass symbol. Each click of the left mouse button 'Zooms In' until maximum zoom is reached then each further click 'Zooms Out'.

To Copy to Clipboard:

To use the page in other applications it can be copied to the Windows Clipboard from where it can be pasted into other applications.

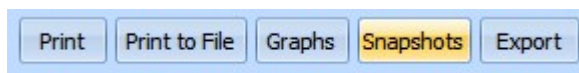
- Choose **Copy to Clipboard**.



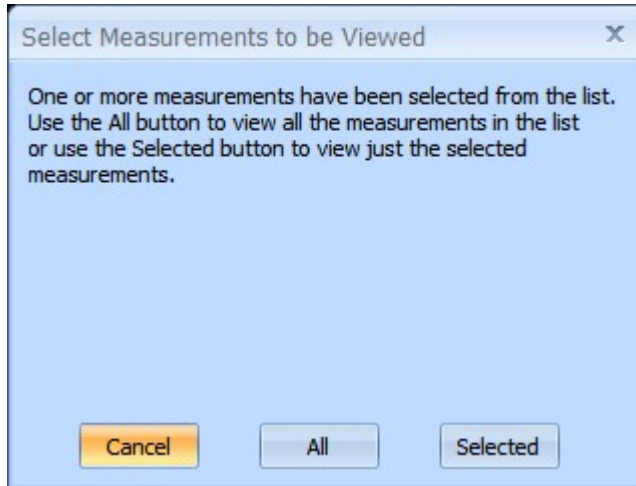
9.2.3 Including Snapshots in Reports **PROF**

Snapshots can be included in reports or copied to the clipboard using a similar method to that used for graphs described above. This feature applies to the Microseam Professional version only.

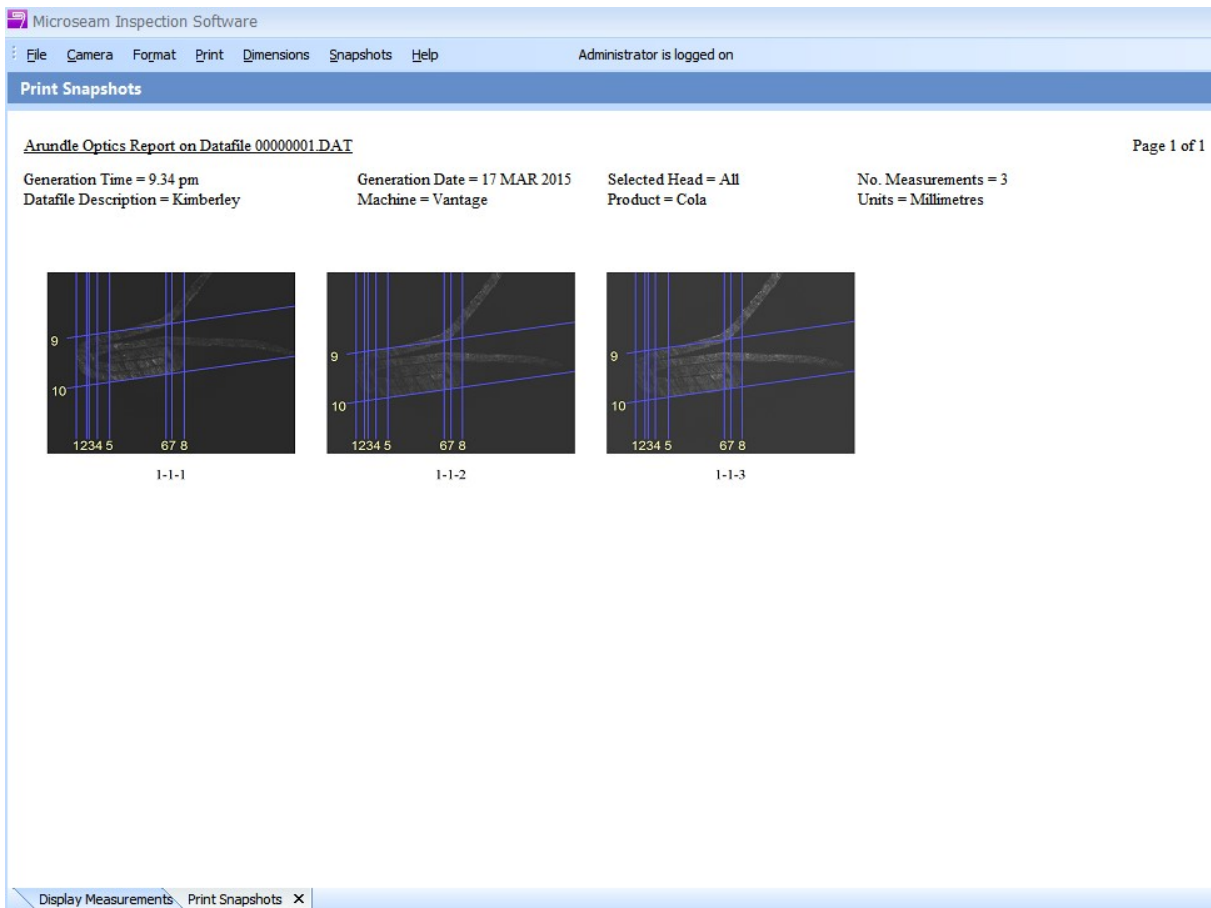
- On the 'Display Measurements' screen, select the measurements containing the snapshots required.
- Click the **Snapshots** button at the bottom right of the 'Display Measurements' screen.



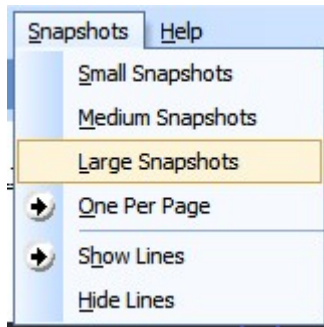
- The 'Select Measurements to be Viewed' box appears:



- Click the **All** or **Selected** button.
The 'Print Snapshots' box appears showing all images from the selected measurements as thumbnails.

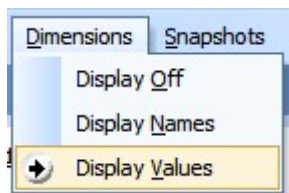


- From the main menu bar, choose 'Snapshots'.



The 'Snapshot' list allows the number and size of 'Snapshots' that appear on a page to be chosen and whether or not measurement point lines are displayed on the image.

- From the main menu bar, choose 'Dimensions'.



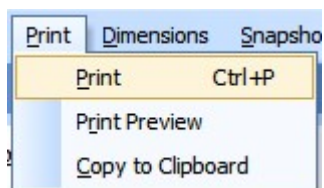
The 'Dimensions' list allows dimension names or values to be chosen for display on the images.

Note that display of names or values is only possible on the 'One Per Page' snapshot.

- Click the **Print** button at the top left of the screen:



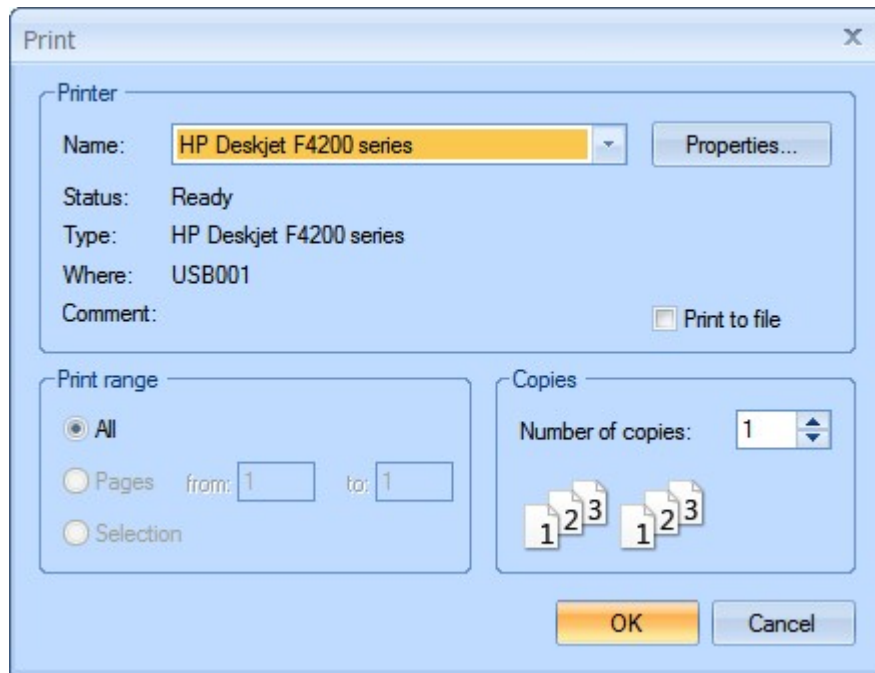
The following list appears:



To print the snapshots:

- Choose **Print**.

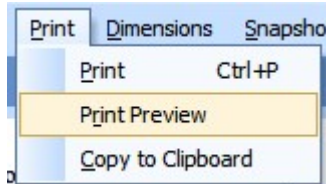
The standard Windows 'Print' window appears:



- Select the **Name** of the printer to be used.
- Click the **OK** button to produce the print.

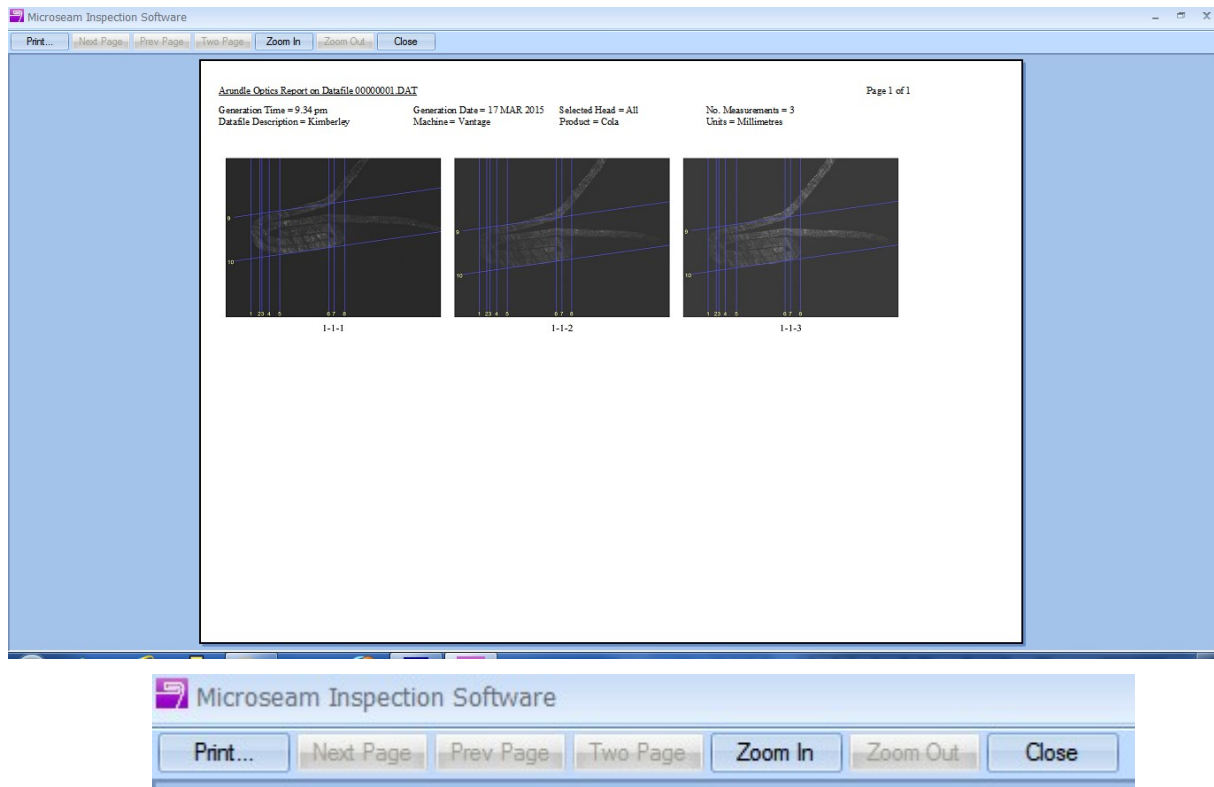
To Preview the page before printing:

- Choose **Print Preview**.



A view of the page to be printed appears which allows the user to Zoom in and out and also allows the page to be printed by clicking the 'Print' button at the top left of the preview screen.

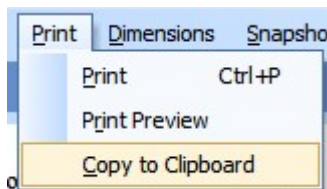
The 'Close' button will close Print Preview.



To Copy to Clipboard:

To use the page in other applications it can be copied to the Windows Clipboard from where it can be pasted into other applications.

- Choose **Copy to Clipboard**.

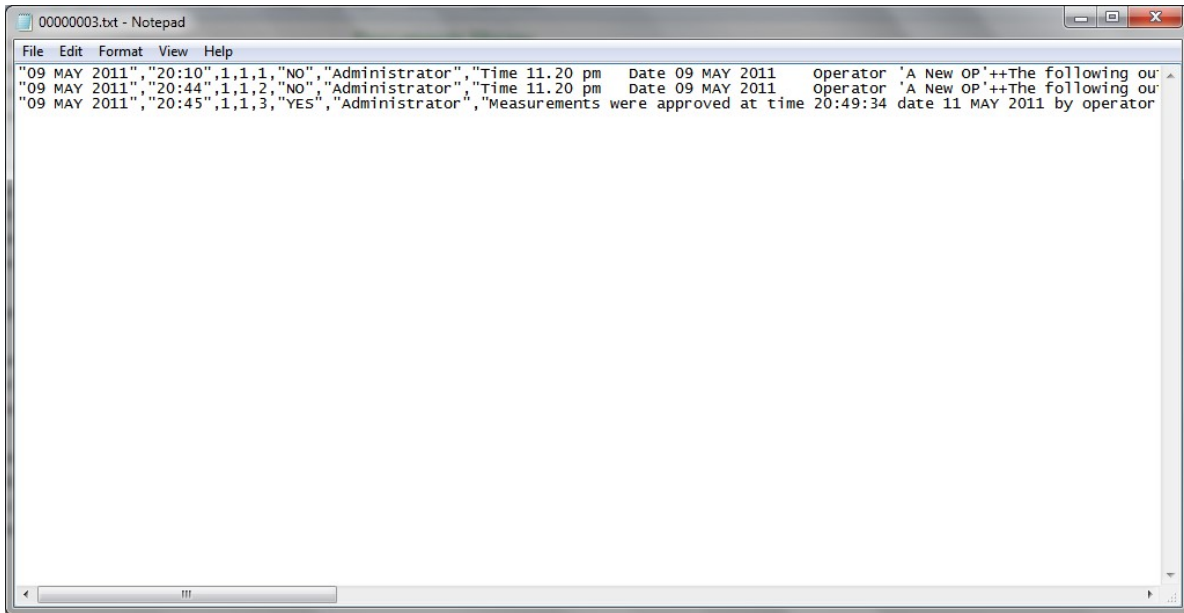


9.2.4 Exporting Measurement Data to Other Applications **PROF**

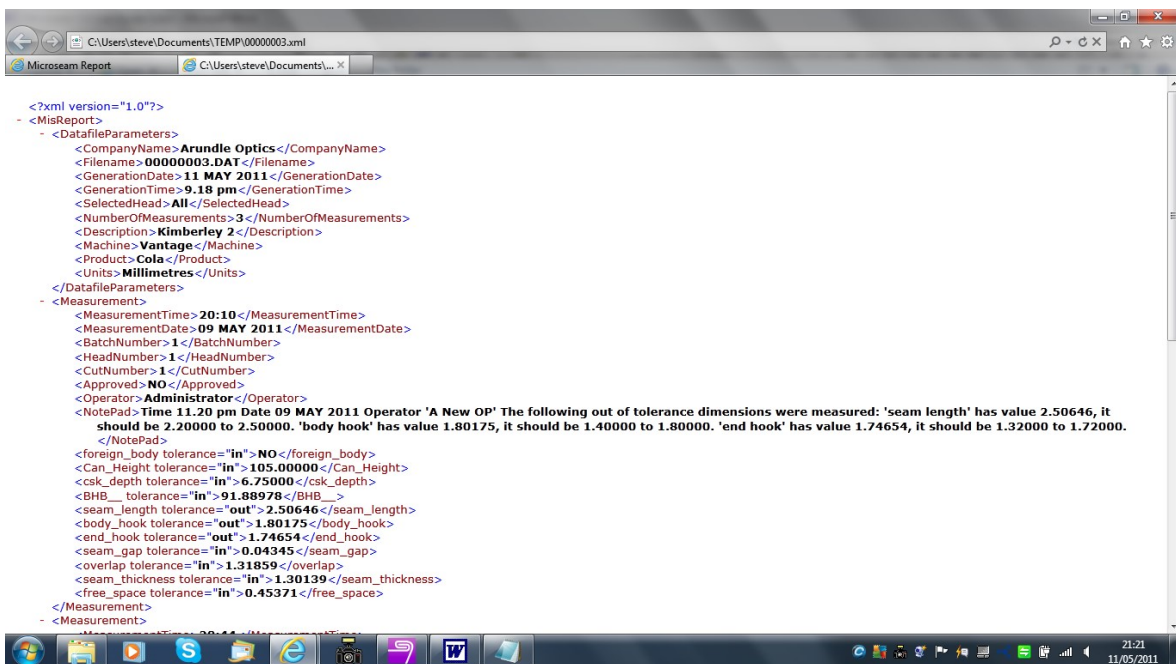
It is possible for any user to export selected measurement data for use by other spreadsheet, database, or word processing applications.

Data can be exported as a comma delimited text file (*.txt) or as an XML file (*.xml) which can be imported into Spreadsheet and Database applications or it can be exported as an HTML file which can be imported into word processing applications.

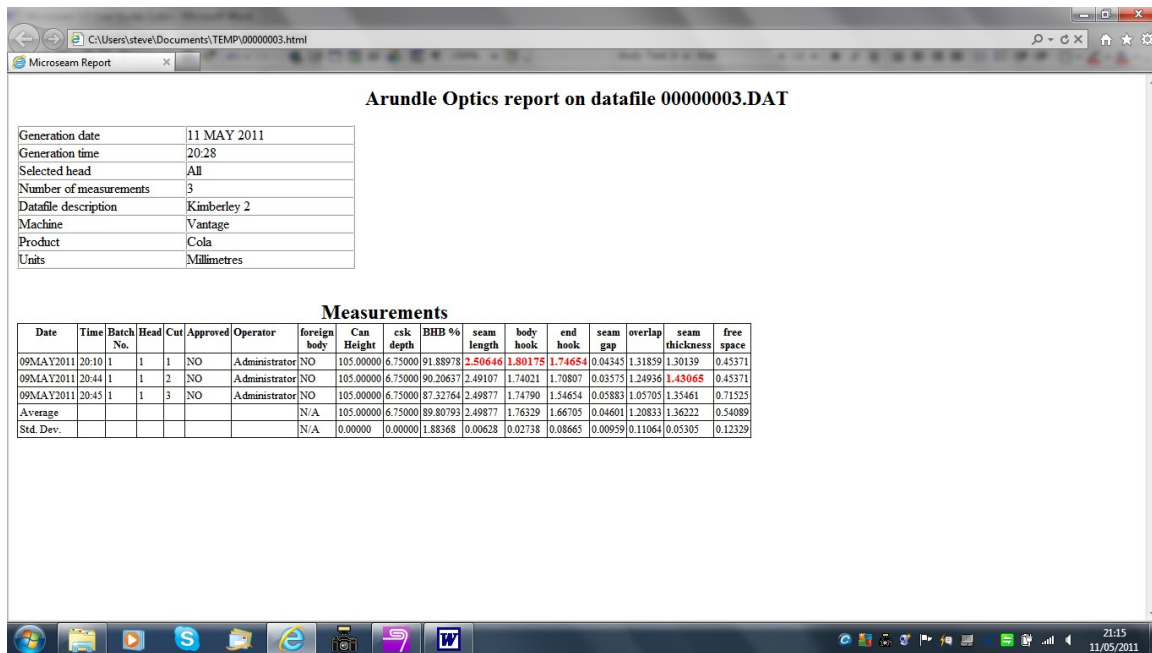
Examples of each type of file follow below:



Example of Comma Delimited Text File



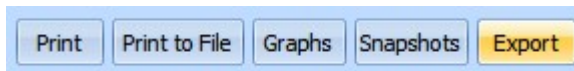
Example of XML File



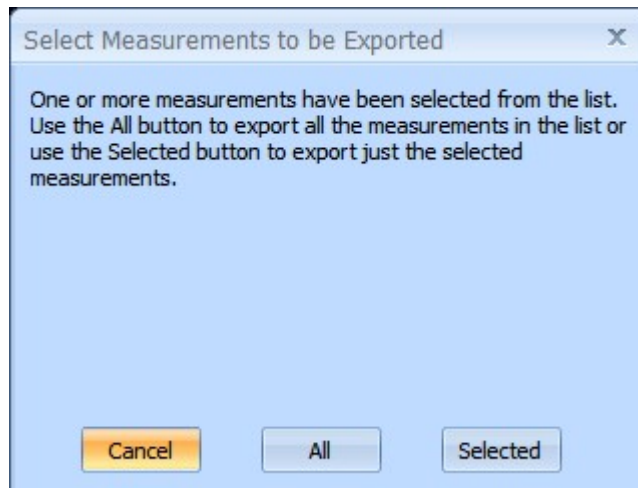
Example of a HTML File

From the 'Display Measurements' screen:

- Select the lines containing data to be exported. If no selection is made all lines will be exported and the 'Select Measurements to be Exported' box will not be displayed.
- Click the **Export** button.



The 'Select Measurements to be Exported' box appears:



Cancel

Will abort the process.

All

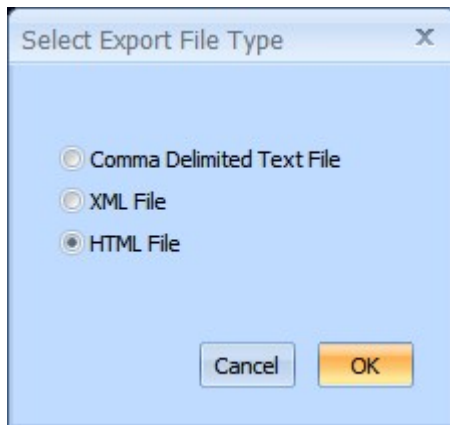
Will export all lines irrespective of what was selected.

Selected

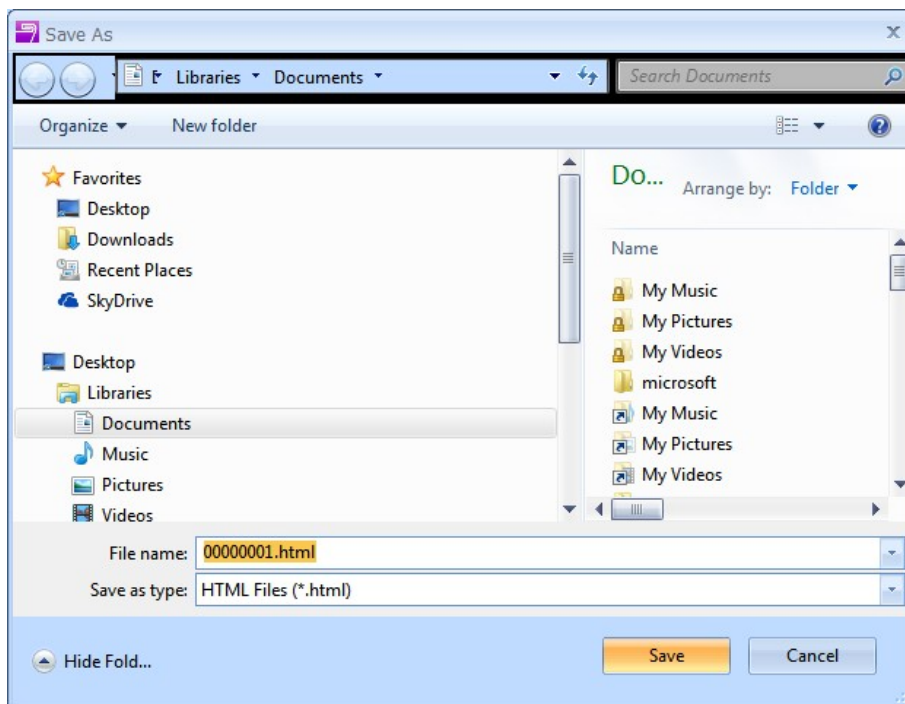
Will export only the selected measurement lines.

- Click the **All** or **Selected** button.

The 'Select Export File Type' box appears:



- Select one of the file types and click **OK**. The 'Save As' box appears showing files, if any, in the last folder used:



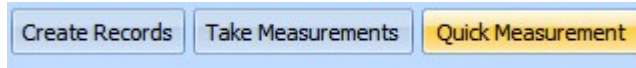
- Navigate to a folder to store the exported data. Use the 'New Folder' icon if required to make a new folder.
- In the 'File name' area provide a meaningful filename for the exported data to replace the Microseam generated filename.
- Click **Save** to save the file.

The data is exported and the 'Save As' box closes.

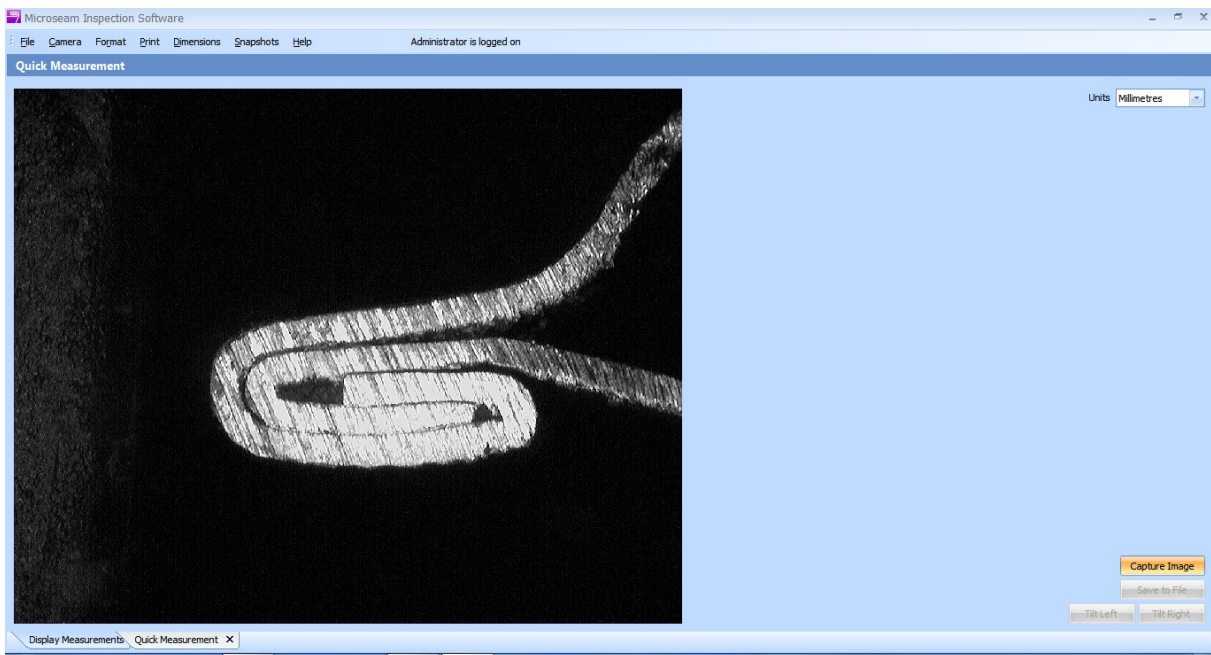
9.3 Quick Measurements

The 'Quick Measurements' feature is used for taking measurements on an ad hoc basis i.e. measurements that have not been pre-defined by a format.

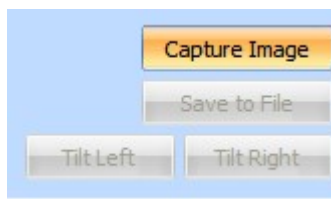
- Click the **Quick Measurement** button at the bottom left of the 'Display Measurements' screen.



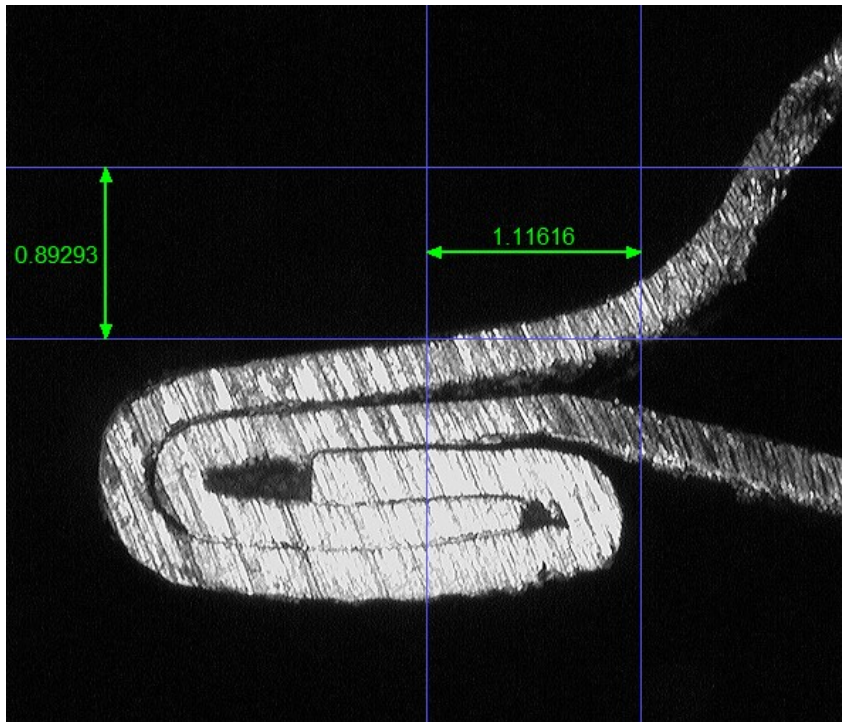
The 'Quick Measurement' screen appears with an image of the can currently on the camera:



- Click on the **Capture Image** button at the bottom right of the screen.



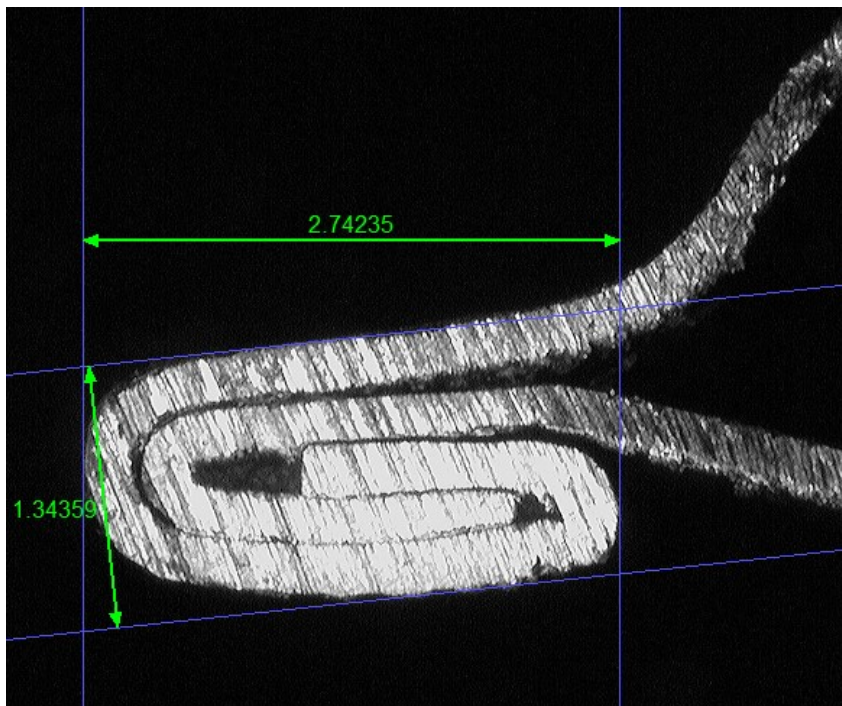
Two blue horizontal and two blue vertical measurement point lines appear on the image with dimensions.



- Drag the lines to touch the image at the point a measurement is required.

The 'Zoom' feature, described earlier in **Zooming In**, is available to aid accurate positioning of the lines.

Also the horizontal lines can be tilted by clicking on the 'Tilt Right' and 'Tilt Left' buttons at the bottom right of the screen.

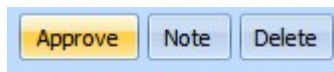


10 SUPERVISOR/ADMINISTRATOR ACTIONS

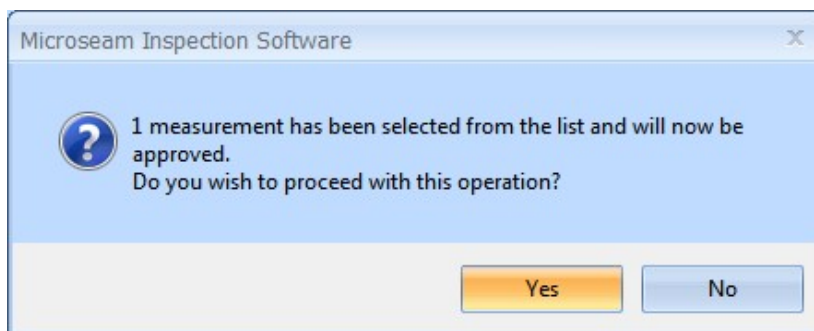
10.1 Approving Measurements **A+S**

At the bottom of the 'Display Measurements' screen is an 'Approve' button which can be used by the Administrator and Supervisor to approve measurements as follows:

- Log on as a **Supervisor** or **Administrator**.
- Select one or more measurements to be approved.
- Click the **Approve** button at the bottom left of the screen.



A confirmation box appears:



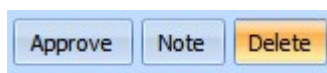
- Click **Yes** to save the approval or **No** to quit.

The 'Display Measurements' screen will re-appear showing a 'YES' in the 'Approved' column.

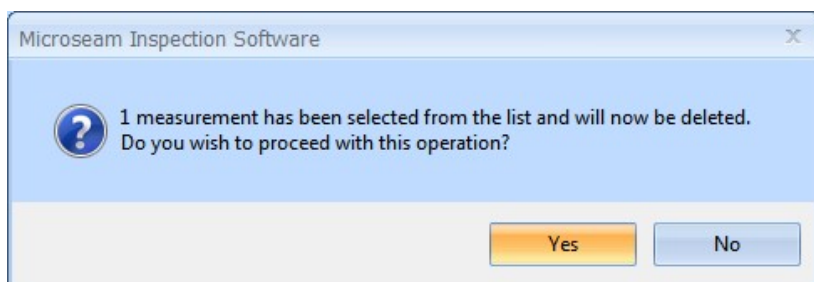
10.2 Deleting Measurements **A+S**

From time to time it may be necessary to delete a measurement. This is achieved as follows and is restricted to Administrator and Supervisor.

- Log on as a **Supervisor** or **Administrator** and select one or more measurements to be deleted.
- Click the **Delete** button.



The following confirmation box appears:

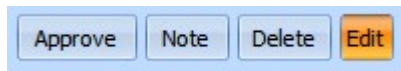


- Click the **Yes** button to complete the deletion or the **No** button to abort the process.

10.3 Editing Measurements **A+S**

The Administrator and Supervisor can change the value of any dimension without re-taking the measurement:

- Log on as a **Supervisor** or **Administrator**.
- Select a single row of measurements in the 'Display Measurements' screen.
- Click the **Edit** button bottom left of the screen.



This redisplay the 'Take Measurements' screen exactly as it appeared when the measurements were first taken, using the stored snapshot.

- Drag any lines with the mouse to new positions.
- Re-enter other dimension values, which were taken using the keyboard or digital gauge, by double-clicking, with the left mouse button, on one of the values in the 'Dimensions' table then enter the new value in the 'Enter Dimension from Keyboard' box that appears:

Name	Type	Value
Seam Length Difference	Difference	1.67424
Seam Gap	Difference	0.02180
Body-Hook	Difference	1.20336
Actual Ove...	Difference	0.77172
B/Hook Bu...	Percentage	89.39394
Cover-Hook	Difference	1.09000
Countersink	Keyboard	6.80000
Seam Thick...	Keyboard	1.20000

Enter Dimension from Keyboard

Dimension 'Seam Thickness' is entered using the keyboard.
 Upper tolerance = 1.23000
 Lower tolerance = 1.13000


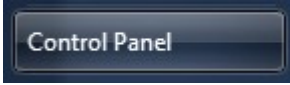
Enter new value:

Notes are automatically generated by Microseam to indicate which measurements were edited, by whom and when.

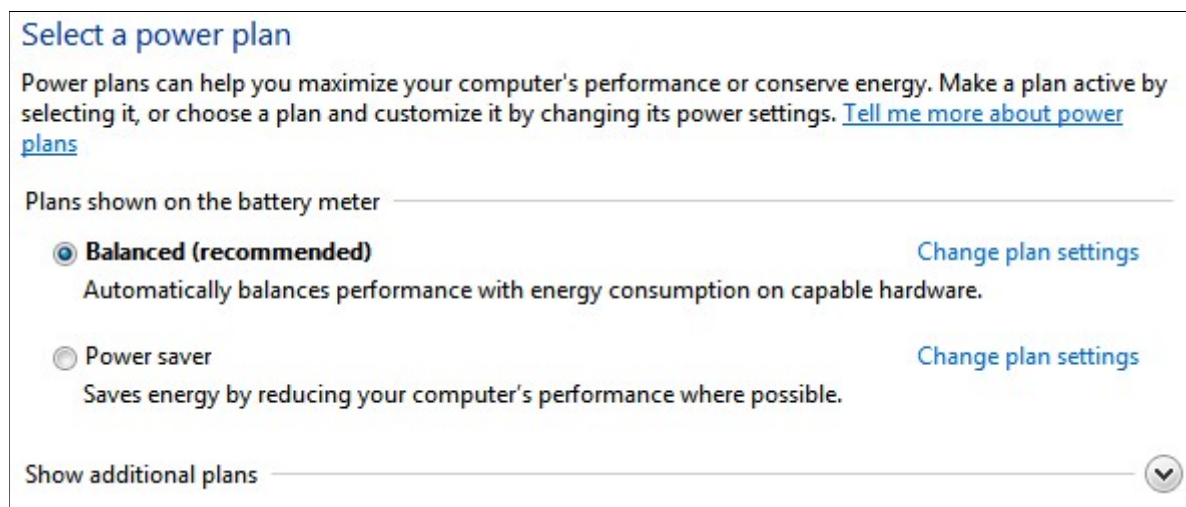
11 USB CAMERA PERFORMANCE

It has been observed when running Microseam on certain laptops that the camera update rate has been very slow, in particular, when the laptop is running under battery power. To cure this problem the following procedures need to be undertaken.

The procedure shown is for Windows 7.

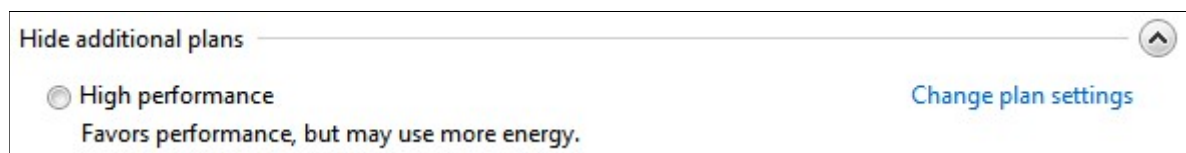
- Click on the Windows **Start** icon 
- Select **Control Panel** 
- Select **Hardware and Sound**.
- Select **Power Options**.

The 'Select a power plan' screen appears:



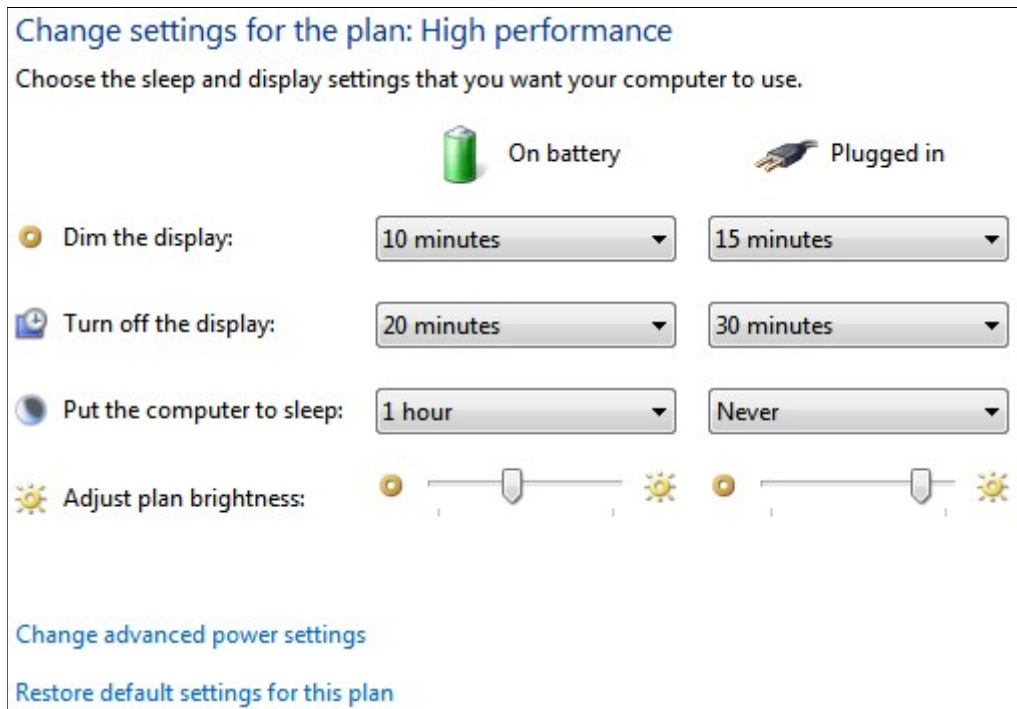
- To the right of 'Show additional plans' click on the down arrow.

The following appears:

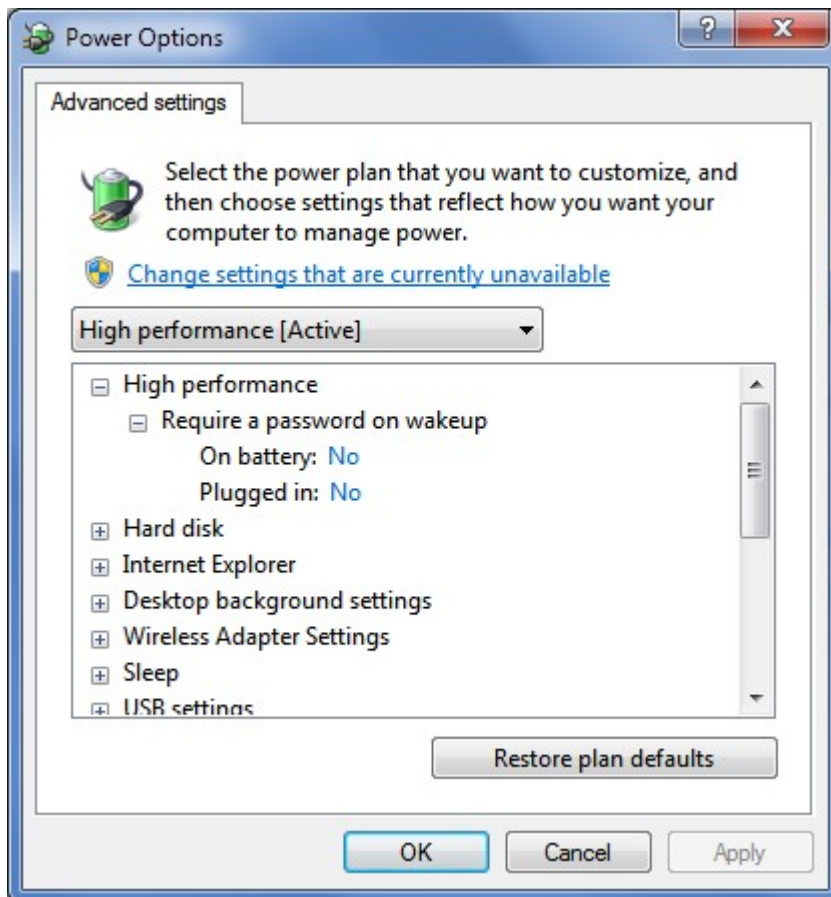


- Click on the **High Performance** button.
- Click on **Change plan settings**.

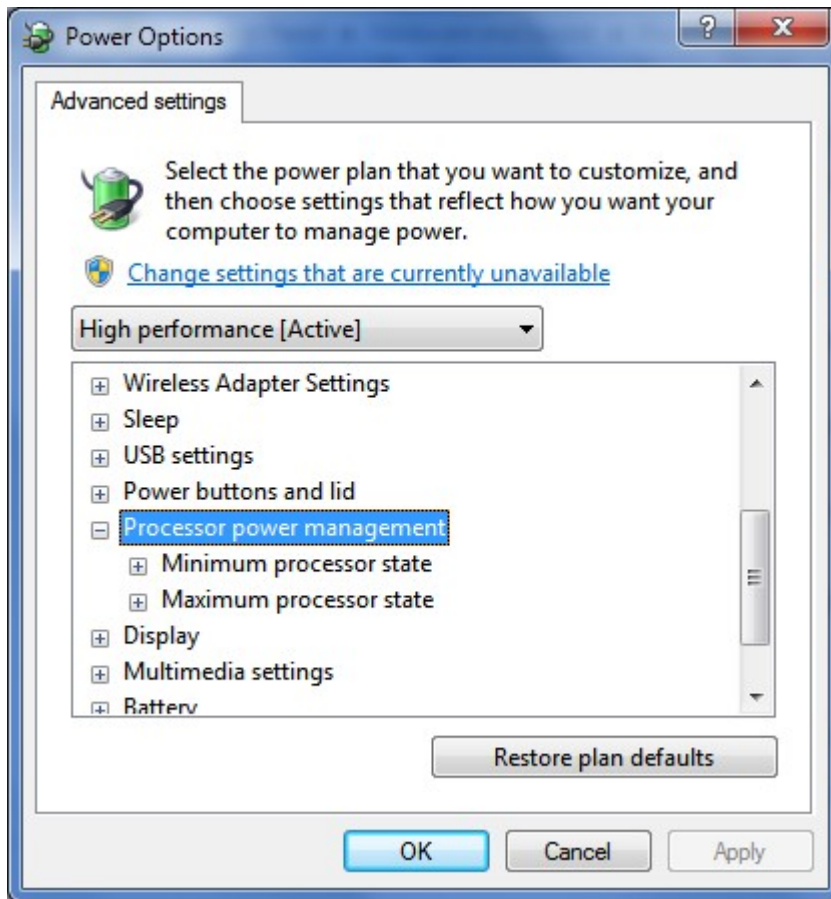
The following screen appears:



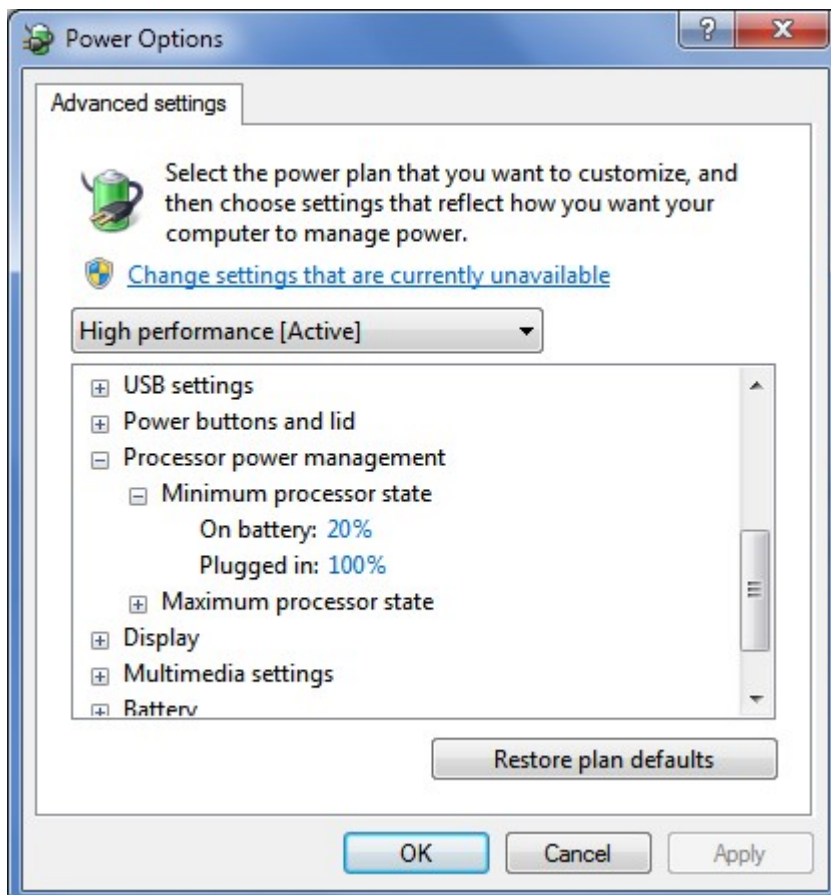
- Click on **Change advanced power settings**.
- The following screen appears:



- Scroll down to the entry **Processor power management** and click the boxed + sign on the left.



- Click the boxed + sign on the left of 'Minimum processor state'.



- Set 'On battery:' to **20%**.
- Set 'Plugged in:' to **100%**.
- Click the **OK** button.

- Close 'Control Panel'



APPENDIX 1 - Calculation of BHB

The following image shows the seam dimensions used in the calculation of the Percentage Body Hook Butting (BHB).

