AMETEK®
TEST & CALIBRATION INSTRUMENTS

USB Lab B.O.S.S.

OS-100WX and OS-100WX-HD
USB Brinell Optical Scanning System

Operation Manual

Newage® hardness testing

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AMETEK®

MEASUREMENT & CALIBRATION TECHNOLOGIES DIVISION

DECLARATION OF CONFORMITY

We: Ametek, Inc.
of 8600 Somerset Drive
Largo, FL 33773,
USA,

In accordance with the following Directive(s):

2004/108/EC The Electromagnetic Compatibility Directive

Hereby declare that:

The following Newage hardness testing Brinell Optical Scanning System (Newage is a brand name owned by Ametek, Inc)

Machine	Part No.
B.O.S.S.	OS-300WE-7 & OS-300WE-LS7

Serial Number: 100G and up

Are in conformity with the applicable requirements of the following documents

Ref. No.	Title
EN 61010-1:2010	Safety Requirement for Electrical Equipment for measurement, control and laboratory use. General requirements

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications and is in accordance with the requirements of the Directive(s)

Signed by:.....

Name: Douglas Tilghman
Position:Division Vice President, Engineering
Done at 8600 Somerset Drive, Largo, Florida 33773, USA
On March 21, 2013

Document ref. No. ER-428

The technical documentation for the machinery is available from:

Name: Joel Frie
Position: Division Vice President & Business Unit Manager
Address: Ametek, Inc. Gydevang 32, 3450 Lillerod, Denmark

AMETEK®

MEASUREMENT & CALIBRATION TECHNOLOGIES DIVISION

EUROPEAN DECLARATION OF CONFORMITY

NAME, ADDRESS OF MANUFACTURER AND LOCATION OF TECHNICAL CONSTRUCTION FILE

Ametek, Inc.
8600 Somerset Drive
Largo, FL 33773, USA, PHONE : (727) 538-6084, FAX : (727) 535-4391

DESCRIPTION OF EQUIPMENT

Product: Newage, Brinell Optical Scanning System
Models: B.O.S.S.: OS-300WE-7 & OS-300WE-LS7

Newage hardness testing™

Effective Date: August 2013
Serial Number: 100G & 100GS to 9999G

HARMONIZED STANDARDS USED

A sample of this product has been assessed against the essential health and safety requirements of the Low Voltage and the EMC Directives listed below. Based on conformity with the listed directives, Ametek, Inc. declares the products mentioned above are in compliance with the following:

Machinery Directive 2006-42-EC

BS EN 61010-1: 2010 Safety Requirement for Electrical Equipment

This declaration of conformity is the result of testing and evaluation performed by PSE, Product Safety Engineering approved CE testing laboratories and by Ametek, Inc. Newage is a brand name owned by Ametek, Inc.

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SETUP AND BASIC OPERATION

FILE FUNCTIONS

BASIC SCREEN OPERATIONS

MENU BAR OPERATIONS

APPENDIX

SECTION 1: SETUP AND BASIC OPERATION

1.1 Introduction

Welcome to the Newage® Instruments Computer-Assisted Measurement System Program, a Windows™-based image acquisition and measurement software for B.O.S.S.® (Brinell Optical scanning System). This software was developed to enhance the capabilities of your hardness testers by allowing you to automate the measurement of test impressions, reduce operator influence on test results, and transfer test results directly to a PC for real time, on-screen data management.

It is assumed that the operator has a basic understanding of Windows. If you are unfamiliar with how to use a PC, please refer to your Windows manual for instructions.

The B.O.S.S. computer program is file based. All setup parameters (such as hardness scale, tolerance limits, part information, etc.) are saved with the individual file they are associated with.

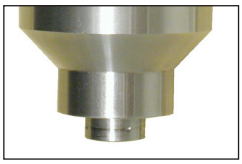
1.2 What's Included

The complete package consists of :

1 - Brinell scan head (see detail at right)
(regular "Lab Boss", or small nose "Lab Small")
1 - CD or flash drive with BOSS software and drivers
1 - Operation Manual

Standard "Lab Boss" style

"Lab Small" style without removable base



"Lab Small" style with removable base

1.3 System Requirements

Computer: Windows XP or Windows 7 and USB-2 port

1.4 Principles of Operation

The B.O.S.S. System uses a scanning head attached to a computer to measure Brinell impression widths. The B.O.S.S.- System is for accurate impression measurement, and data storage/printing only. It does not perform any tests by itself. Operation of the hardness tester remains as described in it's own operation manual. Please refer to it for tester setup and operation.

The B.O.S.S. can be used in either manual or automatic mode. The Brinell impression is measured in both axes and the value averaged and converted to a hardness value. The accuracy is affected by the surface condition of the test specimen. Too rough a surface will cause the tester to report the reading is not good due to the surface condition.

1.5 Lab B.O.S.S. Installation, Software, if required

Instructions for software installation, if necessary, on included media. See ReadMe. rtf file.

1.6 Initial Software Startup

Setup automatically sets magnification to be Lab BOSS

1) Double click the icon to start the program.

2) The program will open up to the last file that was in use. If no data files have been created, the operator can create a new file. (See Sec 2.1.1 Create a New File) Hardness test results will be added to the database of the current open file.

FOR SMALL-NOSE SCAN HEAD BOSS:

If the unit has a small nose scan head (LAB SMALL), the objective must be changed in the Update Dialog Box from Lab BOSS to Lab Small. Please refer to section 3.3.1 for details.

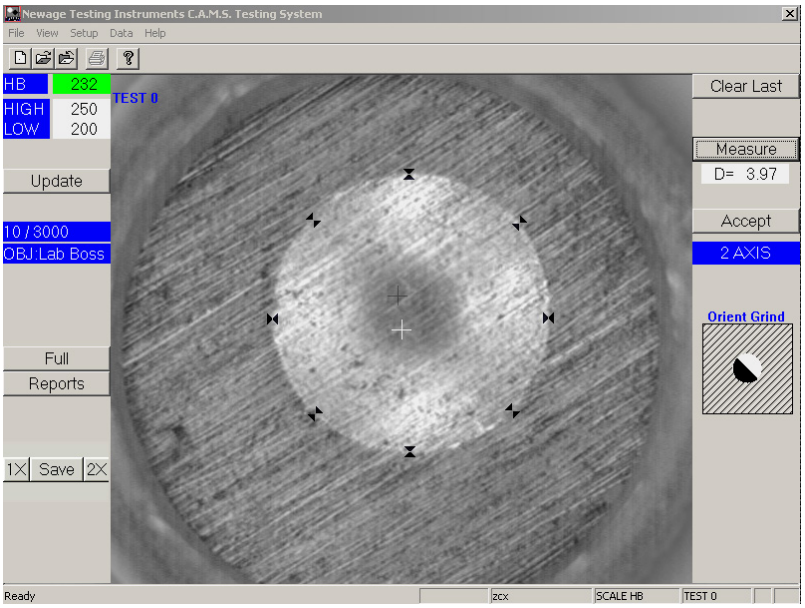
HD UNITS:

Do not select "HD BOSS" under magnification.

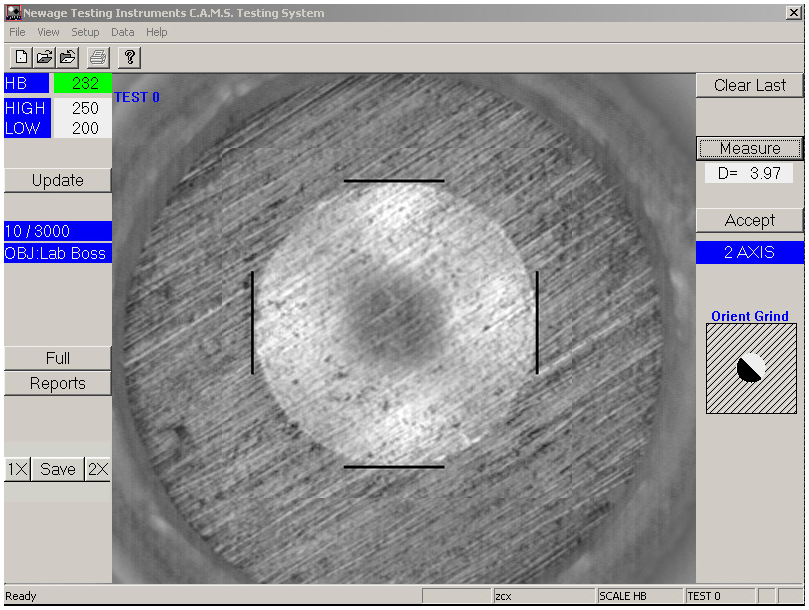
1.7 Procedures for a Test Measurement

1.7.1 For Automatic Measurement

(Operator should also refer to following sections for setting up new files)
Use your Brinell tester to perform a test and create a test impression. When you move the BOSS head into position over the sample, the image of the impression should appear on the monitor. Click on the Measure button on the right side of the computer screen or click the button on the scan head. The indicators defining the indentation edge will appear. If they are correctly placed, accept the reading by clicking on the Accept button. The reading will be displayed with the scale designation on the top left corner and, if selected, the value converted to an alternate scale. If the automatic positioning of the indicators is not accurate the operator can click the right mouse button (with the cursor inside the image area) to clear the measurement indicators and restore a live image, reposition the BOSS head and press the measure button again or perform a manual measurement. (See below.) Press the Accept button to complete the test. To see the test recent measurement results, select the View menu option(s) from the main menu bar.



Automatic Measurement



Manual Measurement

1.7.2 For Manual Measurement

After a test has been made with the tester and the image to be measured is displayed on the monitor, the lines can be manually positioned without using the Measure Button. The operator must make a judgement as to the location of the edges of the impression and click the mouse at the top, bottom, right and left. The small X mark on the center of the screen must fall within the area of the impression to be measured. Otherwise the operator must use the forced positioning arrows near the top right of the screen. After the first line has been placed, the image freezes on the screen. After positioning lines on the sides as well as the top and bottom, accept the reading or click the right mouse button to return to the live image. To see the data select the View menu option(s) from the main menu bar.

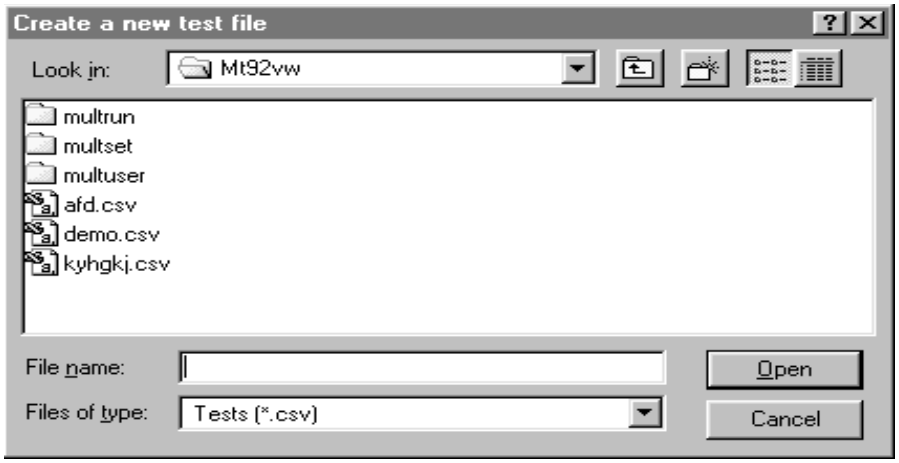
SECTION 2: FILE FUNCTIONS

The Main Menu Bar at the top of the screen contains 5 selections: File, View, Setup, Data, and Help. They can be accessed with the mouse by clicking on the selection. Click on one of them to open up it's individual menu. The File Menu consists of 7 different functions: New, Open, Close, Print, Print Preview, Print Setup, and Exit, as well as a listing of the last 4 files that have been in use.

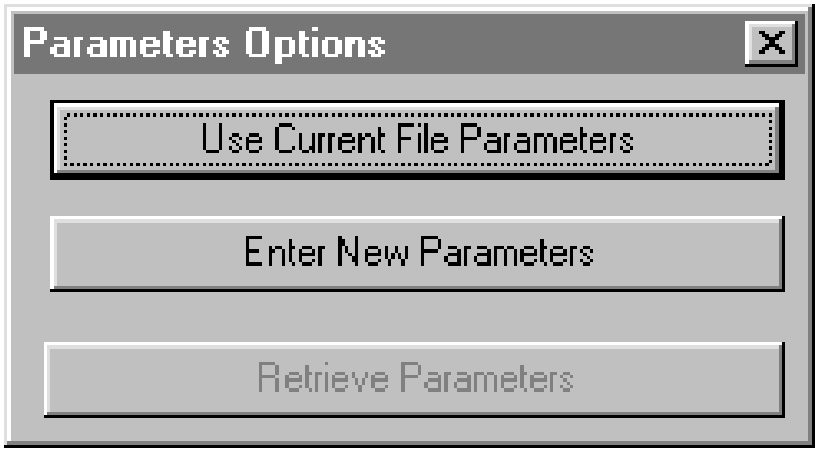
2.1 Create a New File

1) Select New from the File Menu. The Create a New Test File dialog box will appear.

2) Type in the name of the file (8 characters maximum) using the .csv extension and select the OK button (or press Enter.)

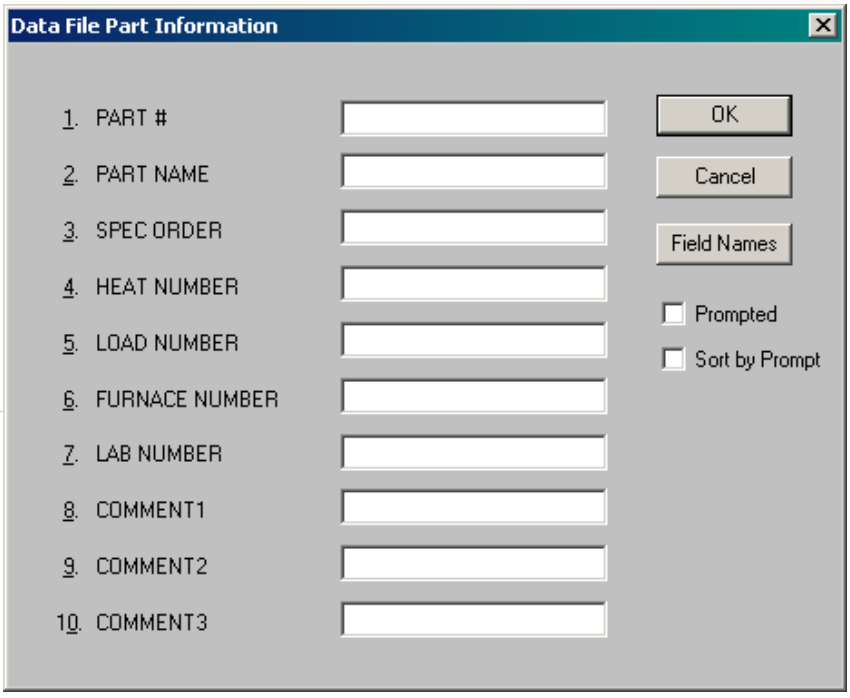


3) You are prompted for what set of parameters to use. You can select USE-CURRENT-PARAMETERS to enter the file parameters from the most recently used file; you are then prompted for a new comment. If you select to ENTER-NEW- PARAMETERS you can set up a completely new set of parameters. (See Following Section.) Finally, you can select to Retrieve Parameters. (Optional - appears grayed out when not activated.) When activated you are prompted to enter the file name from which to retrieve the parameters. You are able to enter a new comment for this selection also.



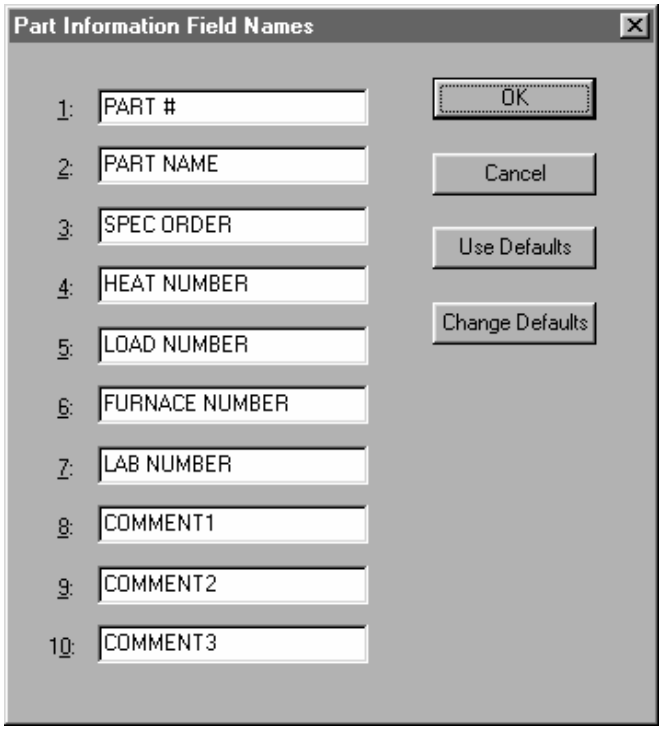
4) The next dialog box requires you to Select a New Scale. Choose one of the Primary Scales listed on the left by highlighting it with the mouse. If you would like the test result automatically converted to another scale, highlight one of the Converted Scales listed on the right .

You will then be prompted for Data Part File Information. This information can be used to keep track of Part Number, Description, Order Number, Comments, etc., related to this file. These headings will appear on printouts. Data entry is not required. Select OK when done.



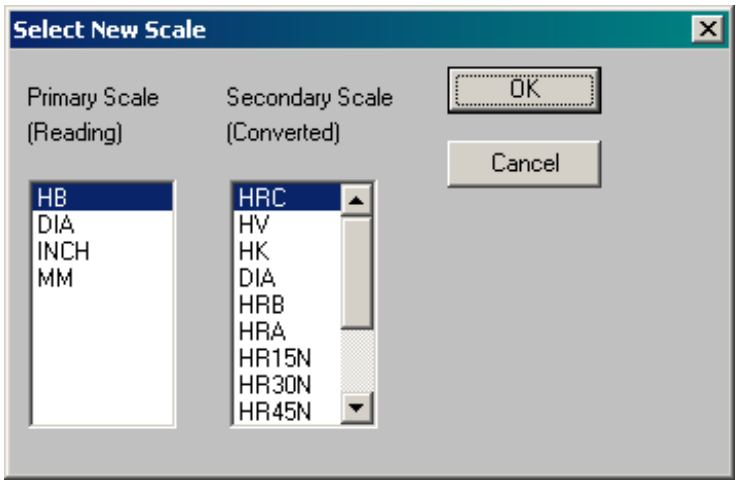
Clicking on the checkbox for “Prompted” will cause this window to appear after each test so the operator can enter relevant data. Selecting "Sort by Prompt" will sort data in the printouts by the prompts so commented data can be readily identified.

Note: You may create custom headings by selecting the Field Names button, highlighting the name you wish to change, and typing in the new heading. To make the new headings you’ve typed the default headings for all new files you create, select Change Defaults. Use Defaults will revert headings you’ve just typed to the current default headings.



The scale abbreviations which may be listed are:

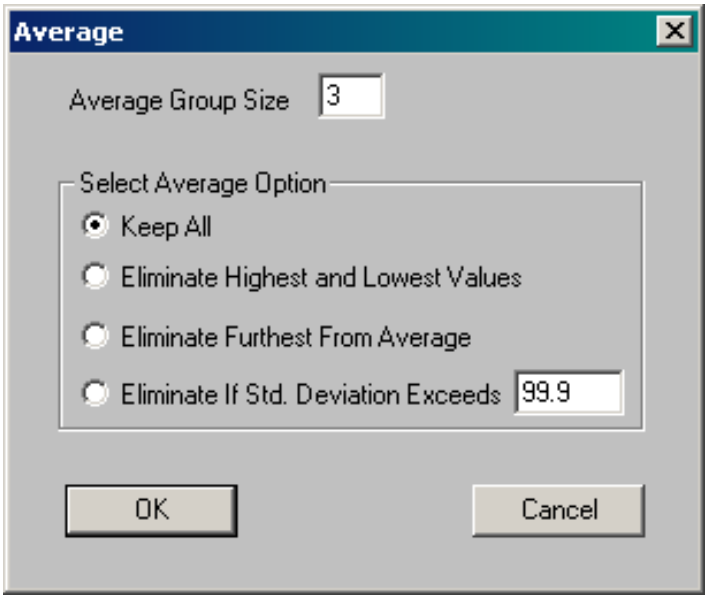
HB = Brinell Scale for BOSS
DIA = Diameter Measurement for BOSS
INCH = Measurement in Inches
for linear measurement
MM = Measurement in Millimeters
for linear measurement
HRC = Rockwell C scale
HV = Vickers Scale for use with B.O.S.S.
HK = Knoop Scale for use with B.O.S.S.
HRB = Rockwell B scale
HRA = Rockwell A scale
HR15N, 30N, 45N = Rockwell N scales
HR15T, 30T, 45T = Rockwell T scales
HRD = Rockwell D scales
HRE = Rockwell E scales



Select OK when done.

NOTE: The scale cannot be changed for a data file that contains test results. The operator will be prompted to change files if he tries to change scales with data in the file

5) After selecting the scale you will be prompted for Average Mode. The operator may select to record averages of multiple tests rather than the individual tests. Enter a value into the Group Size. The radio buttons on the remaining box are enabled. The selections are as follows:



Keep All

The default setting. Returns the Average Mode to the standard mode

Eliminate Highest and Lowest Values

When 3 or more tests are selected to be averaged the system will remove the highest and lowest values from the group average. For example, if the average is set for 5, then 3 results will go into the average. If an average of 2 is selected the average function has no effect.

Eliminate furthest from the average

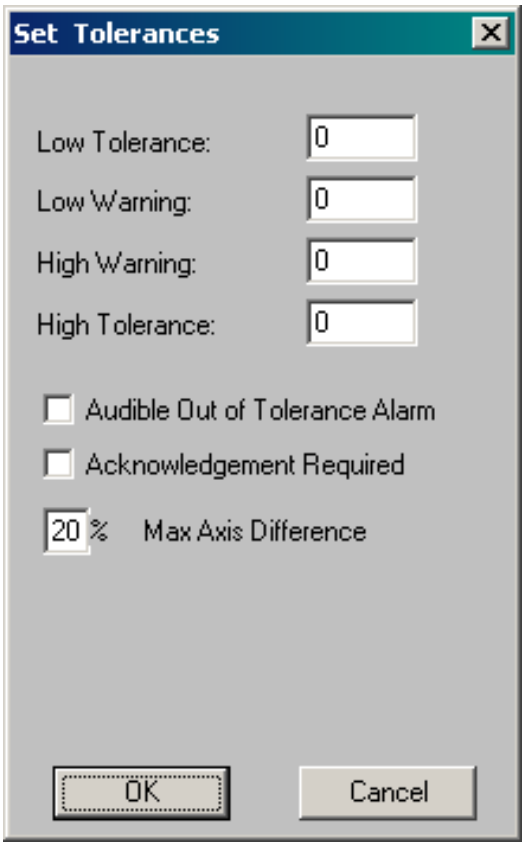
Once the testing is completed the system calculates the average and removes the one test that is furthest from that average. If an average of 2 is selected the average function has no effect

Eliminate if standard deviation exceeds [selection]

The operator is prompted to enter a maximum standard deviation value. When the testing is done the value farthest from the standard deviation allowable is removed. If all the values fall within the standard deviation then none are removed.

6) After selecting the scale, you will be prompted to Set Tolerances. The program uses these settings for statistical

calculations and for HI, LO, and OK indications for individual test results. When the Advanced Statistics Option has been purchased the X-Bar/R Chart uses these settings to plot the “high” and “low” test results as red points on the graph; “acceptable” test results are plotted as green points. You may also set a low warning and high warning number - those test results are indicated by a gray color on the Advanced statistics output. The “Warning” test results do not affect statistical calculations.



Select the desired button, key in the hardness value, and select OK when done. Repeat this sequence for tolerance setting.

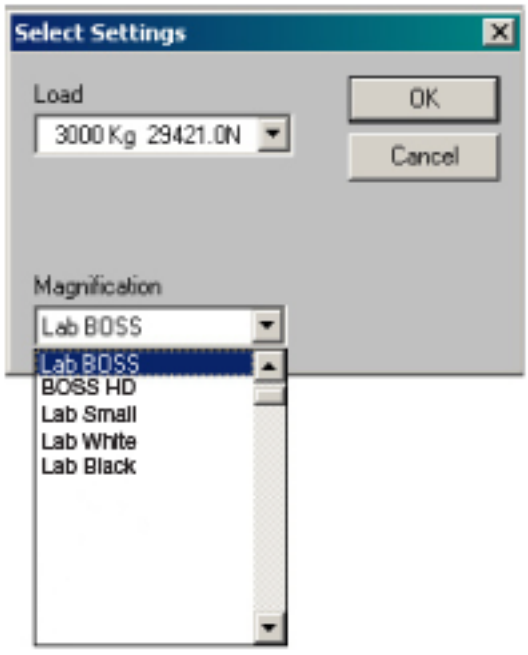
When the Acknowledgment Required box is checked the operator will have to acknowledge every time an out-of-tolerance result is produced. The operator can also enter the default error-checking value to limit the relative size of the two axes on the Vickers scale.

Operators may also adjust the default tolerance setting that controls the allowable difference between the two Vickers axis widths. Any value may be entered.

NOTE: Entering or leaving the values of zero will deactivate the Tolerance function. All readings will then be assigned OK status.

After setting the tolerance values, select OK to proceed.

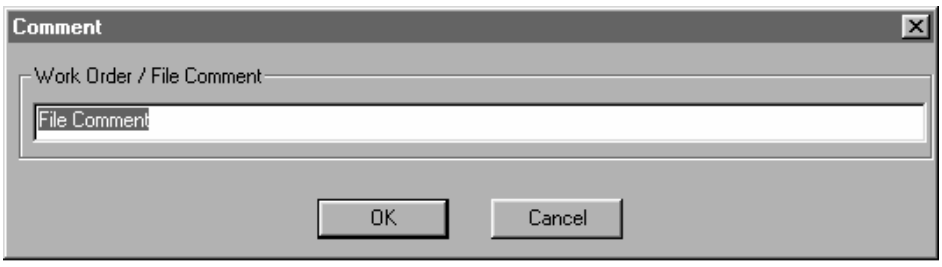
7) Next the operator is given a chance to update the test parameters: load and camera objective. It is important to select the proper parameters for the scale that the test was performed in on the hardness tester. Otherwise the final measured test result will be incorrect.



To change the default values, click on the arrows with your mouse. A selection of all the possible values will appear. For each scale the operator has selected the available selections that appear in these selections for the load, time and magnification will change.

When testing with a Regular BOSS unit the operator must use “Lab BOSS” for the magnification and with a Small-nose BOSS the operator must use the “Lab Small” selection.

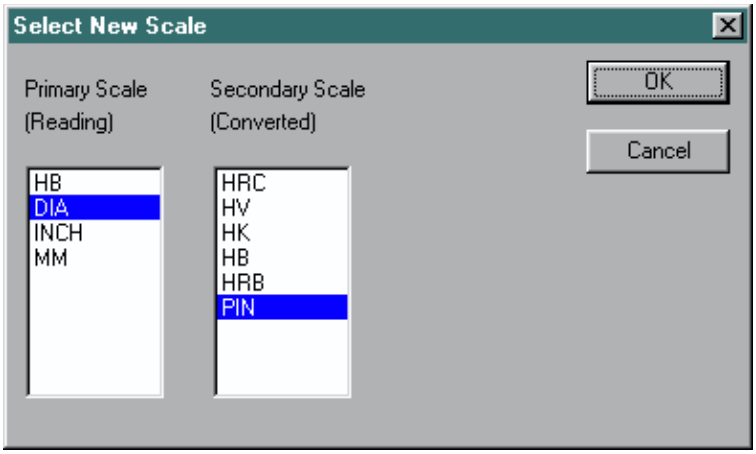
8) Finally the operator has the opportunity to enter a comment. This comment applies to the entire setup file and is used on reports.

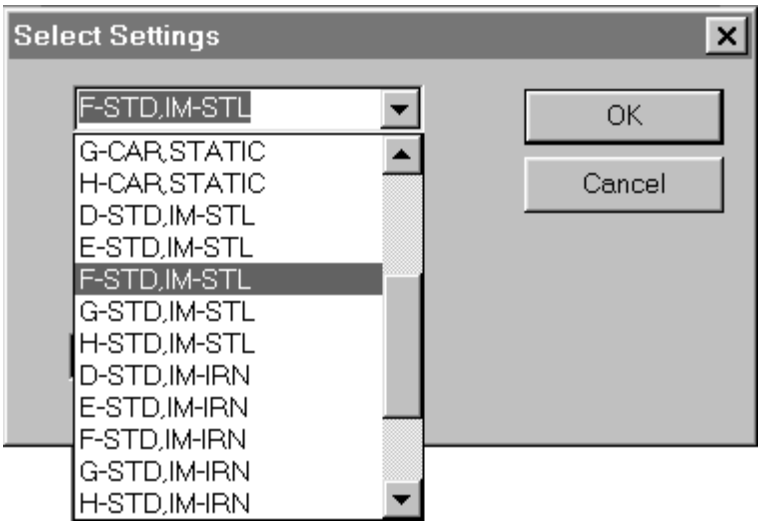


2.1.1 Create a New File - Pin Brinell Testing (Optional feature)

If the operator is using the BOSS for testing impressions from the Pin Brinell, the DIA scale should be selected, then the conversion must be PIN for the Pin Brinell.

The next pop-up provides the opportunity to select the pin type: D, E, F, G, or H pins, the type of indenter, standard or Carbide (STD, CAR) and the configuration of the tester, Impact or Clamp (IMPACT, STATIC) and the material (STEEL or IRON). When setup of the PIN-scale is complete, proceed like any other scale.





2.2 Open an Existing File

1) Select Open from the File Menu.

2) Choose the desired file to open by highlighting it from the list on the left with the mouse or by typing in the file name.

3) Open the file by selecting the OK button or by double clicking on the file name in the list.

NOTE: If the file you want to open is one of the 4 files listed in the File Menu, simply click on it or press the corresponding number key to open it.

NOTE: If you open a new file with another file already open, the current file will be automatically saved and closed.

2.3 Close an Open File

1) Select **Close** from the File Menu. The file is immediately closed leaving the program still running and on-screen. The operator may then select a new file or exit the program.

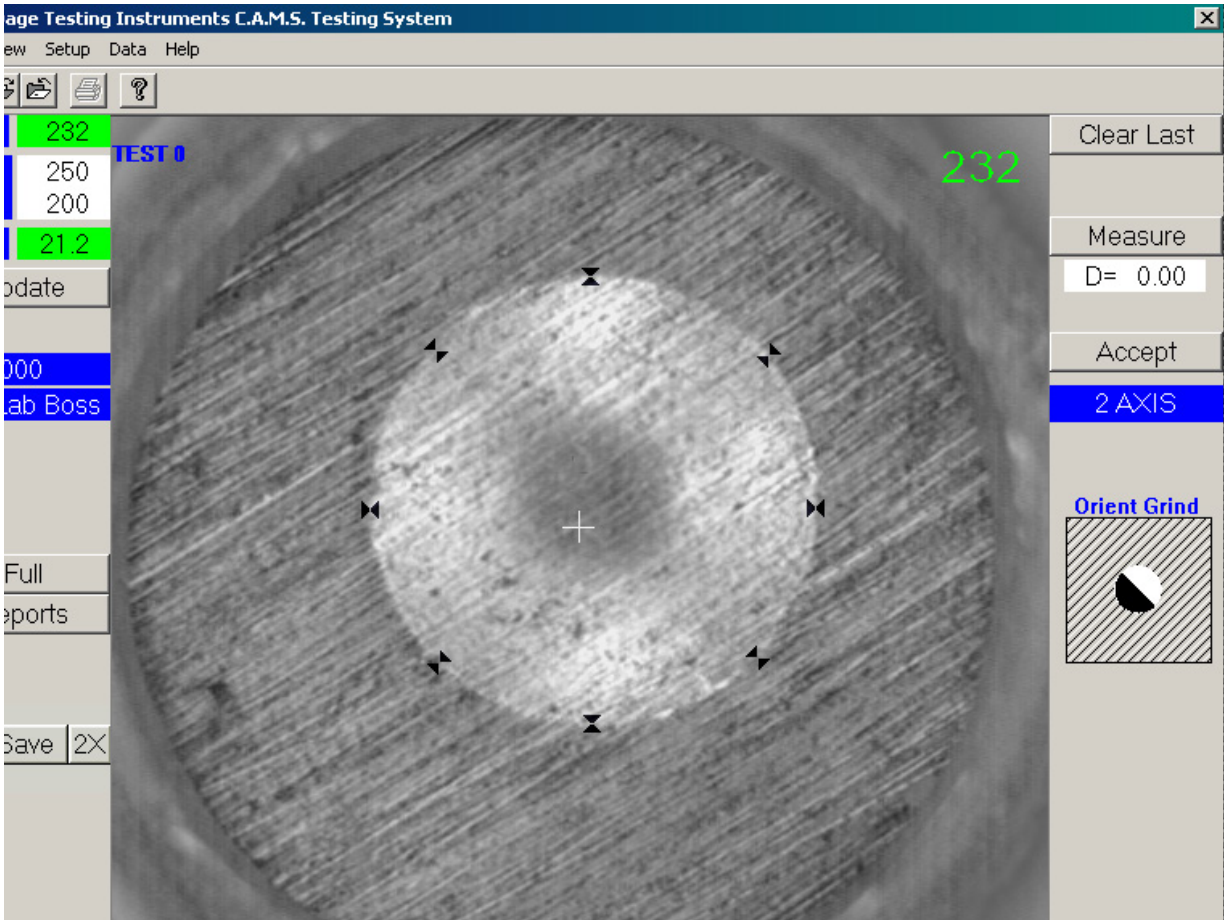
NOTE: The operator cannot exit the program by double clicking in the upper left corner of the screen. He must use the FILE/Exit routine

SECTION 3: BASIC SCREEN OPERATIONS

The buttons on the main screen are used for:

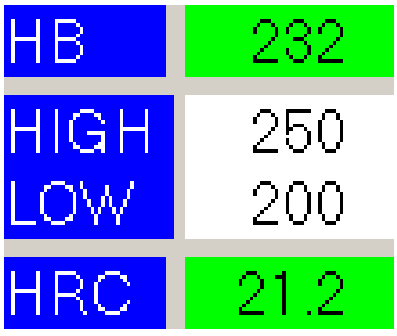
- basic testing
- calibration and screen setup
- accessing certain user adjustable parameters

The main screen has many controls. A brief description is as follows



NOTE: Select 2x for BOSS HD

3.1 Screen Controls



3.1.1 Result and Tolerance Display

Displays the current test result, any tolerances set in the main menu under Setup, and the test result converted to another scale (If a conversion value was selected). The current test result displays green if it is within tolerances, yellow is within warning tolerances and red if outside of tolerances. If no tolerances are setup the result is displayed in white.

3.1.2 Clear Last Button

This selection acts the same as Data Menu Function - Clear Last Test.

3.1.3 Measurement Displays

These displays show the current distance between the lines in the horizontal and vertical axes. If HK, IN or MM scales are selected, only one axis is shown for HB or Diameter, only D is shown.

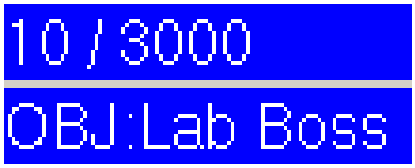
3.1.4 Reports Selection

This function is the same as the View menu selection from the top menu. It will display the currently selected reports. (Refer to Section 4.1.)

3.1.5 Test Axis

Between the Measure and Accept Buttons is a display of the test axis the program is set to measure. If the operator encounters impressions or structures that need to measured in another axis, or in a different number of axes, he must select the button indicated with the question mark to change the axis selection. Note: it is possible to force incorrect measurements through changing the number of axes so be careful. This selection changing to a new default if the operator changes scales.

3.1.6 Load and Magnification Display



This display (at left) shows the currently selected test values for the scale being used. The operator has an opportunity to change these values when setting up a new file. It is important to make any necessary changes through the Update Button if the operator has changed any parameters on the test being made prior to the beading. False test results can be obtained by failing to set these parameters correctly.

3.1.7 Status bar

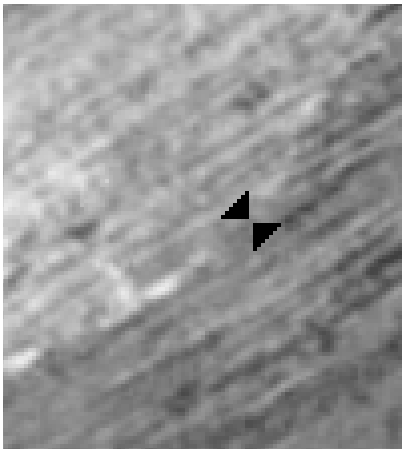
The bottom right corner of the screen has a menu bar that shows the current selections for: file name, test scale, and test number.

3.2 Making Measurements

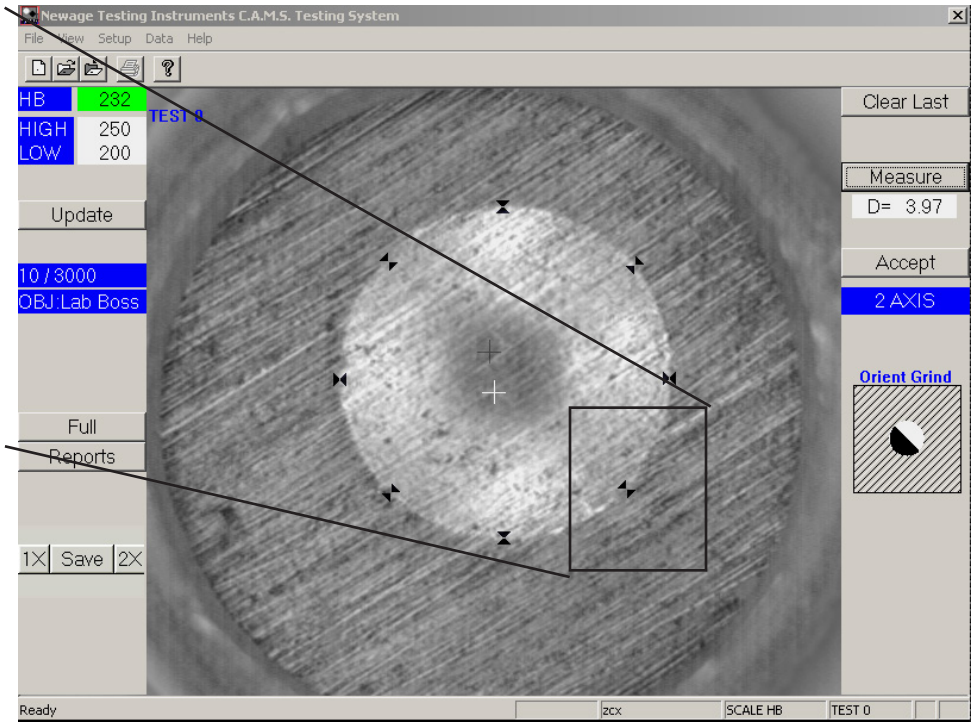
The first step is to orient the grain on the test sample to the scan head. The grain, if any should run from lower left to upper right. A diagram on the screen provides a reminder

3.2.1 Automatic Measuring

The measure button always appears when the scale is selected for HB or DIA. Press the Measure Button to automatically perform the measurement of the Brinell impression. With the BOSS system, after the measuring indicators are displayed, if they are not properly positioned, press the right mouse button to clear the indicators and return to a live image. Press the Accept Button to enter the reading. The impression must fall within all four quadrants or he will not be able to automatically position all the measurement marks. (See at right.) Then the operator will need to use the positioning arrows near the top right of the screen.



Automatic Selection Marks

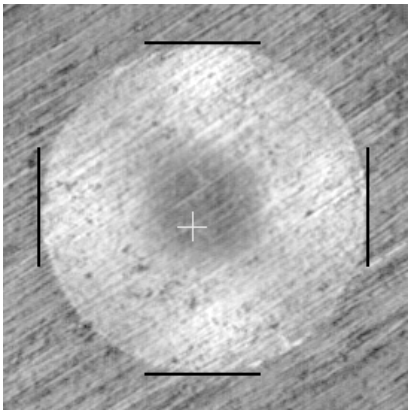


When the Measure Button is selected the selection marks show the identified edge of the test sample. The diameter is automatically displayed in addition to the hardness value (unless the diameter is selected in the scale selection as the primary scale in which case the diameter measurement appears in the measurement display and result display) If the selection marks are not accurately positioned in automatic mode the operator must right click on the mouse to clear the selection and re-measure. Otherwise the operator must select the Accept Button

3.2.2 Manual Measuring

With the B.O.S.S. the linear measurement the lines can be manually positioned without using the Measure Button. The operator must make a judgement as to the location of the edges of the impression and click the mouse at the top, bottom, right and left. The impression must fall within all four quadrants or he will not be able to automatically position all the measurement marks. (See at right.) Then the operator will need to use the positioning arrows near the top right of the screen. (See Section 3.8)

NOTE: After the auto-measure or after the first line has been placed, the image of the impression is captured on the screen (no longer a live image). The other lines can be placed or adjustments to the measurement made to the captured image. Accept the reading or click the right mouse button to return to the live image.



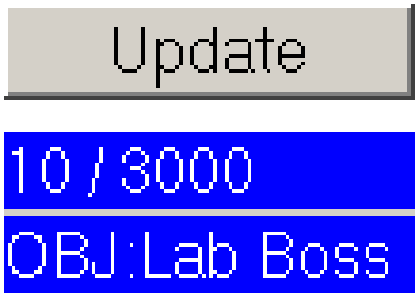
Manual Selection Marks

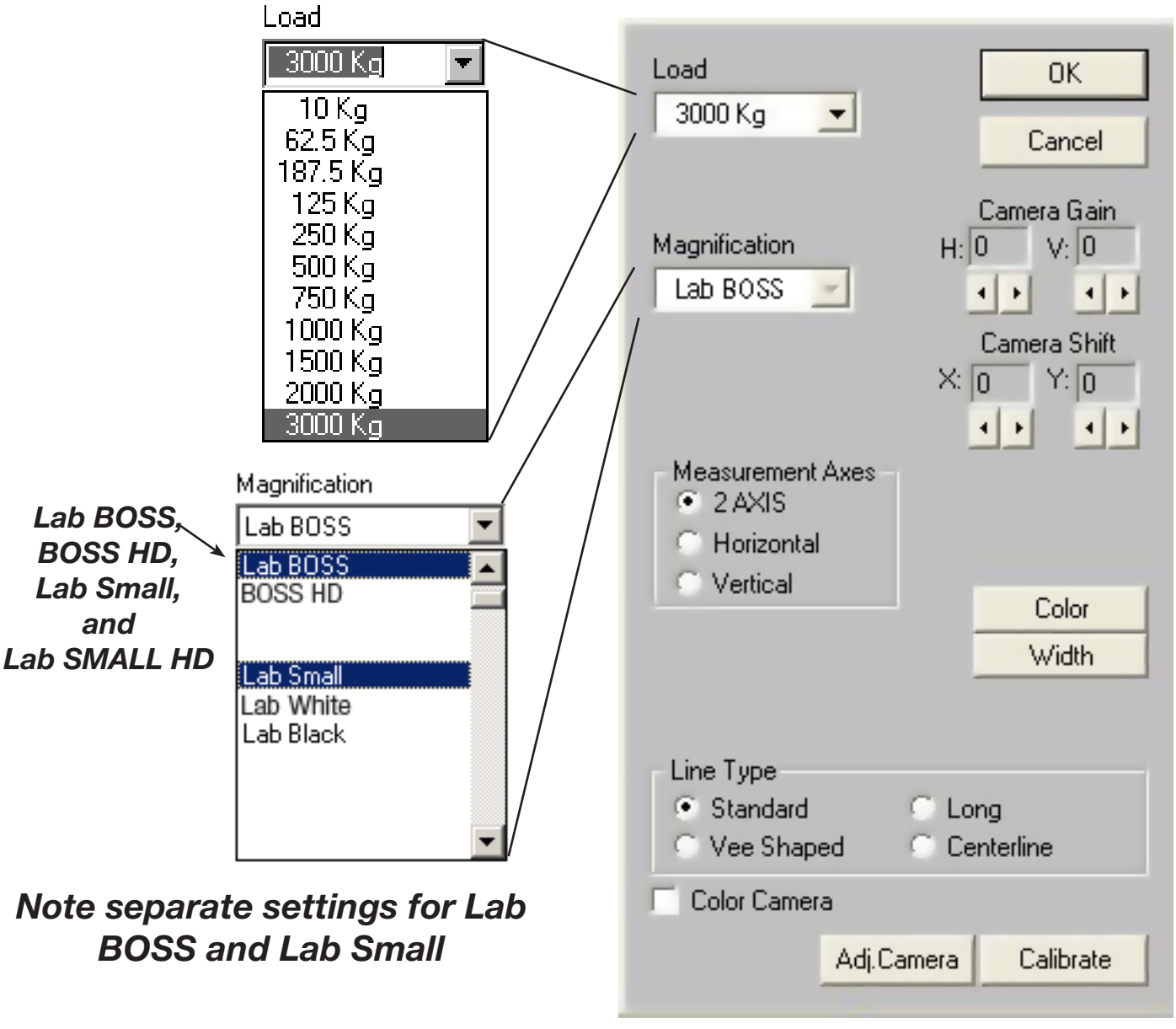
3.3 Update Test Parameters

3.3.1 Changing Load and Magnification (under Update Button)

The Update button at the left of the screen allows the operator to view and change selected test parameters that the computer uses to determine the hardness value: the load and magnification (current selections for load and magnification can be seen under the UPDATE button).

To change the selection, click on the UPDATE button then the pull down selection for LOAD. In these pull-downs the operator can click on the Load, Load Time, or the Magnification selections with the mouse to change to another option. A list of all the possibilities for each is displayed in a drop-down list.





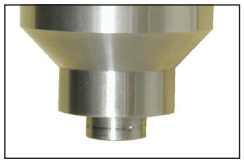
Note separate settings for Lab BOSS and Lab Small

When testing in Brinell scales with the regular BOSS unit you must use the "Lab-Boss" setting for the objective. With the small nose BOSS you must use the "Lab Small". These settings are marked on the display.

Standard USB "Lab Boss" style

B.O.S.S. STYLES (see previous page)

"Lab Small" style without removable base



"Lab Small" style with removable base

3.3.2 Verification/Changing Calibration (under Update Button)

IMPORTANT NOTE: Whenever the scan head part of the B.O.S.S. is swapped out or repaired, it must be calibrated to the computer.

Calibrate Button as seen after pressing the Update Button

1) Using the B.O.S.S. calibration block, place the scan head on the test block so it fits into the circular footprint provided. This footprint helps to reduce scratching on the indentation which can lead to reduced calibration accuracy. Orient the test head so the grain appears to be running in the correct direction on the monitor.

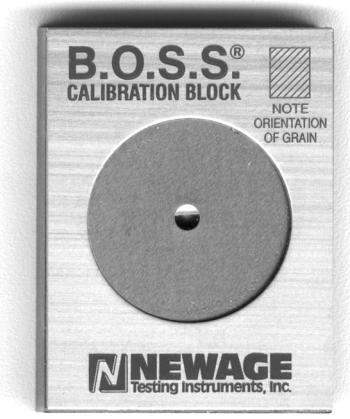
2) Use the mouse to click on the measurement points or select the measure button.

3) Compare the numbers in the measurement window on the right side of the screen to the actual dimensions of the test block. If they are within 0.02 mm the system does not need calibration. If calibration is needed, see the following.

4) Select the Calibrate Button under the Update button on the left of the main screen. The program will then prompt for a password.

5) Key in the actual dimension. Select F1 OK when done. The number in the measurement window on the right side of the screen will change to indicate the corrected number.

6) When finished, select F1 OK to complete the procedure.



B.O.S.S. Calibration Block

3.3.3 Adjust Camera (under Update Button)

This allows the operator to make changes to the image in several ways. If these settings are changed, the operator can re-establish the default settings by selecting the RESTORE button.

3.3.4 Selection Line Control Functions (under Update Button)

The selection lines that appear when the operator clicks on the edges of the test specimen can be changed to make the measurement process easier. The Line Type selections and the Color and Width buttons adjust the way the measuring lines are viewed on the display.

1) Select UPDATE from the Measuring screen. The Update Parameters dialog box will be displayed.

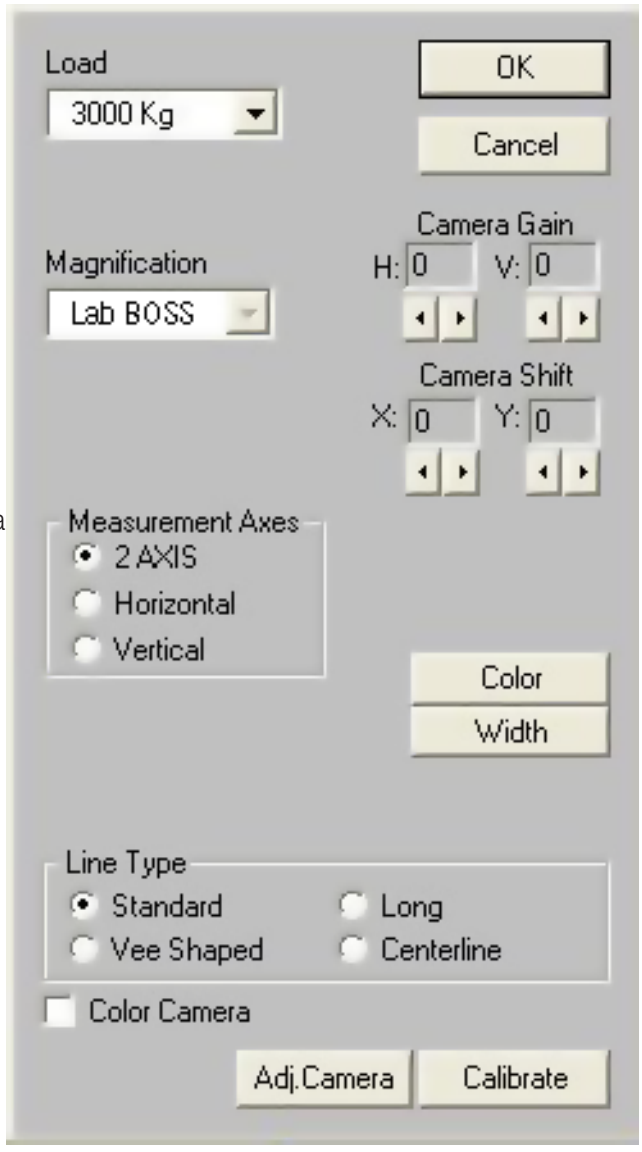
2) Click on COLOR to change the lines to black, dark blue, violet, light blue, orange, or magenta.

4) Click on WIDTH to change the line thickness to fine, medium, or heavy.

5) Click on LINE TYPE selection change the line style to standard (short lines), long lines, Vee shaped, or center lines selections

6) Select F1 OK when done.

Update screen



3.3.5 Camera Gain (under Update)

This option adjusts the positioning of the lines. Adjustment is not usually necessary. To adjust the operator can repeatedly press the forward and backward arrows under the horizontal or vertical scales. This will adjust the lines wider or narrower with respect to the edge of the indentation..

If the operator wants to make a test to check the adjustment, he can press the Measure Button to perform a test. If the gain is not set correctly he can adjust it further.

3.3.6 Camera Shift (under Update)

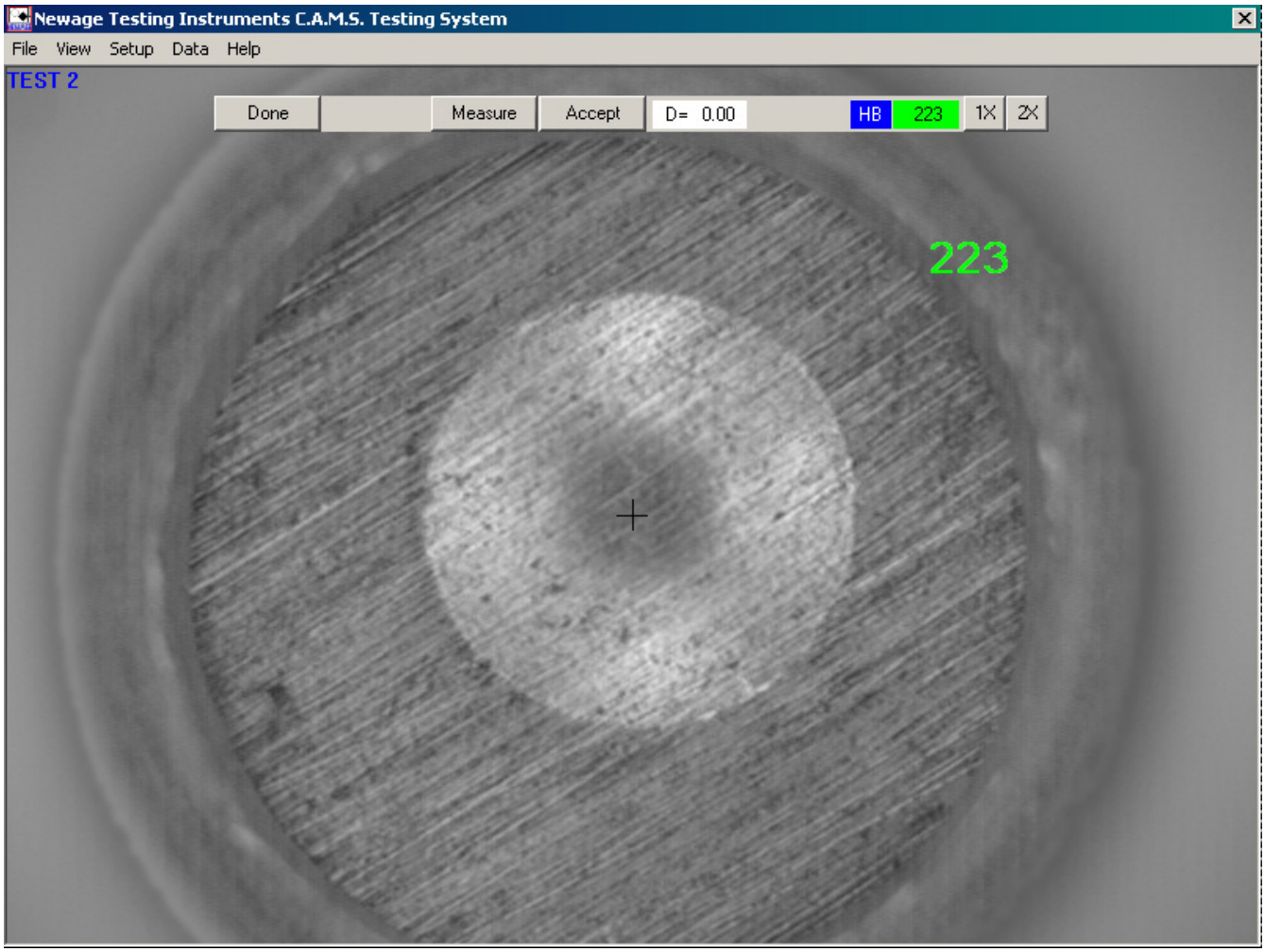
This option adjusts the position of the sets of lines (horizontal or vertical) in relation to the edges of the indentation. Changing the values moves the sets of lines left/right or up/down, respectively.

3.3.7 Color Camera (under Update)

This option enables the image to be seen in color if the appropriate graphics card and scan head are used.

3.4 Full Screen Operation

When the operator selects the Full Button, he is able to see the maximum possible surface area of the test sample. The test operation buttons are repositioned near the top to provide a better view. The operator may also select to view the center area in a magnified view - either 2x (with one click) or 4x (with 2 clicks). Select the Done Button to continue.



3.5 Screen capture and Magnification

The Operator may choose to save an image of the test sample as it appears on the screen (without the BOSS controls). If the operator selects SAVE and provides a name at the prompt, a bitmap (.bmp) file will be created and saved in the default root directory or in another location as setup in the Menu selection for Setup.

The operator may also select to view the image as a magnifiication as shown on the buttons. If 2X is selected, he will be able to choose 4X.

SECTION 4 MENU BAR OPERATIONS

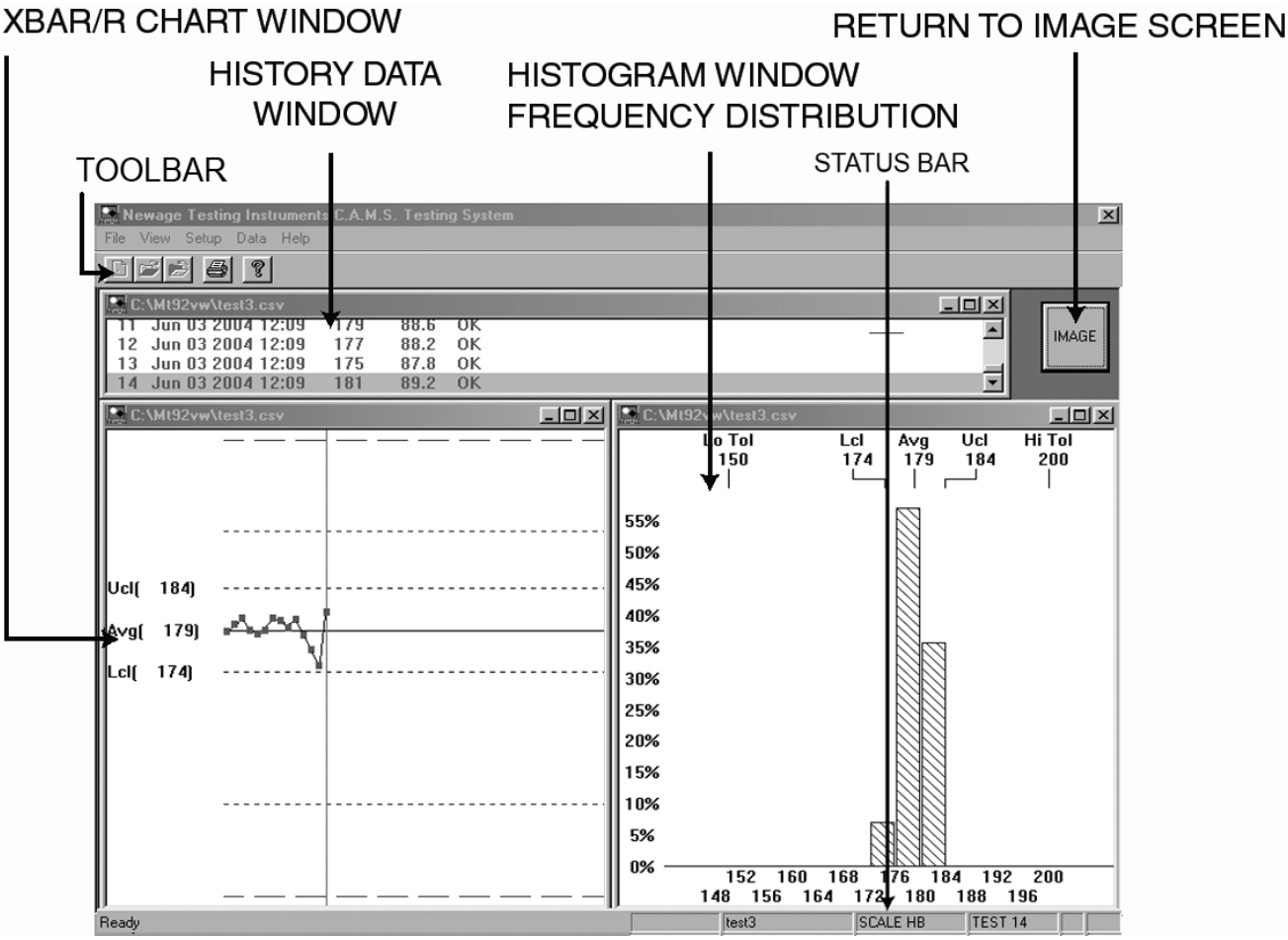
4.1 View Menu

4.1.1 Advanced Statistics Software (Optional)

With this option the View Menu consists of 7 different functions: X Bar/R Chart, Histogram, History Data, Tile, Auto Tile, Tool Bar and Status Bar. When activated, a check mark will appear in front of the function listing.

Click on View to display the available functions. Click on the individual functions to activate or deactivate them.

- X Bar/R Chart - displays the X Bar/R Chart window.
- Histogram - displays the Histogram window.
- Tile - resizes and rearranges all open windows so that they can be seen on screen at the same time.
- Auto Tile - automatically resizes and rearranges all 3 windows so that they can all be seen on screen at the same time.
- Tool Bar & Status Bar are the same as in the standard software.



4.2 Setup Menu

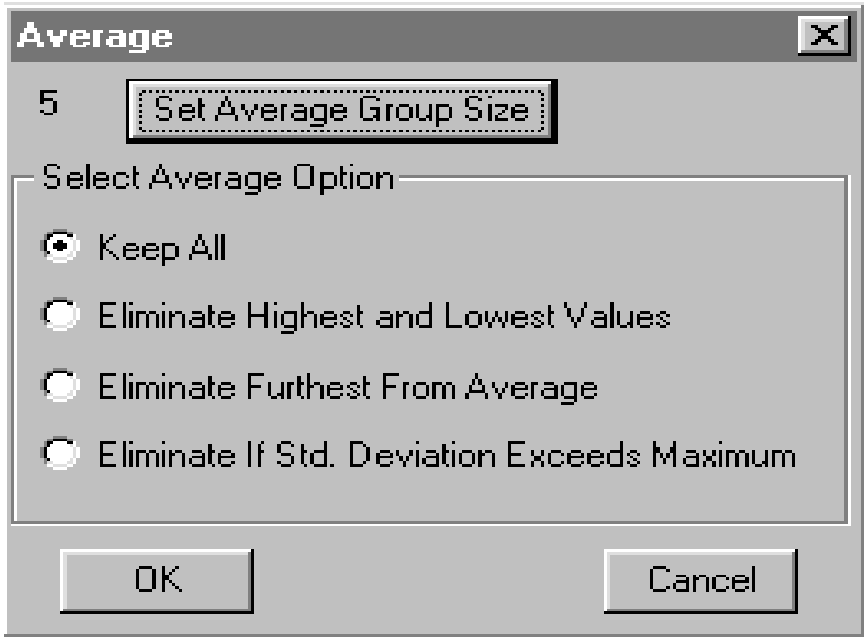
The Setup Menu consists of 4 different functions: Average, Test Setup, Tolerances, and Scale Select.

4.2.1 Average Menu (Optional)

The operator may select to record averages of multiple tests rather than the individual tests. The data file must be empty to enter or change an average group size. If there are tests already in the file, the Set Average Group Size button will not appear activated.

To operate the averaging function open a new file or clear all data out of an existing file. Select the first option from the Setup menu - Average. Press the Set Average Group Size button. An new window opens which allows the operator to enter a group size.

After the group size is entered another menu appears. This menu allows the operator to make four choices in the handling of the average



The selections are as follows:

NONE - The default setting. Returns the Average Mode to the standard mode

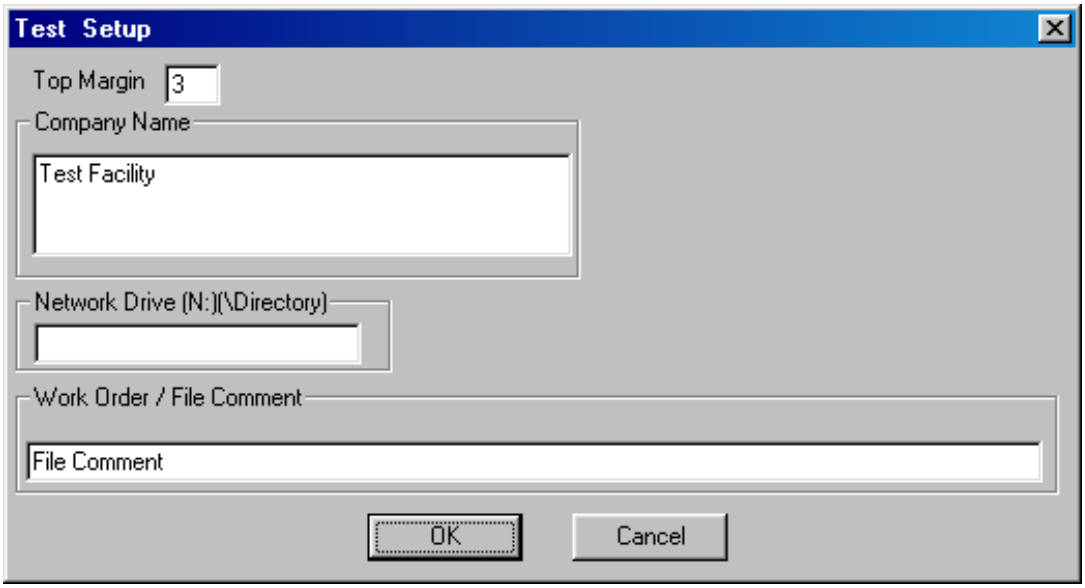
Eliminate Highest and Lowest Values - When 3 or more tests are selected to be averaged the system will remove the highest and lowest values from the group average. For example, if the average is set for 5, then 3 results will go into the average. If an average of 2 is selected the average function has no effect.

Eliminate furthest from the average - Once the testing is completed the system calculates the average and removes the one test that is furthest from that average. If an average of 2 is selected the average function has no effect.

Eliminate the furthest from maximum standard deviation - The operator is prompted to enter a maximum standard deviation value. When the testing is done the value farthest from the standard deviation allowable is removed. If all the values fall within the standard deviation then none are removed.

4.2.2 Test Setup

The Test Setup is used to enter the company name, a margin at the top of the page and Comments which will appear on the printouts. The Network Drive Option allows the operator to automatically copy the current data files to an additional location. The data copy function occurs every time the file is closed



4.2.3 Tolerances

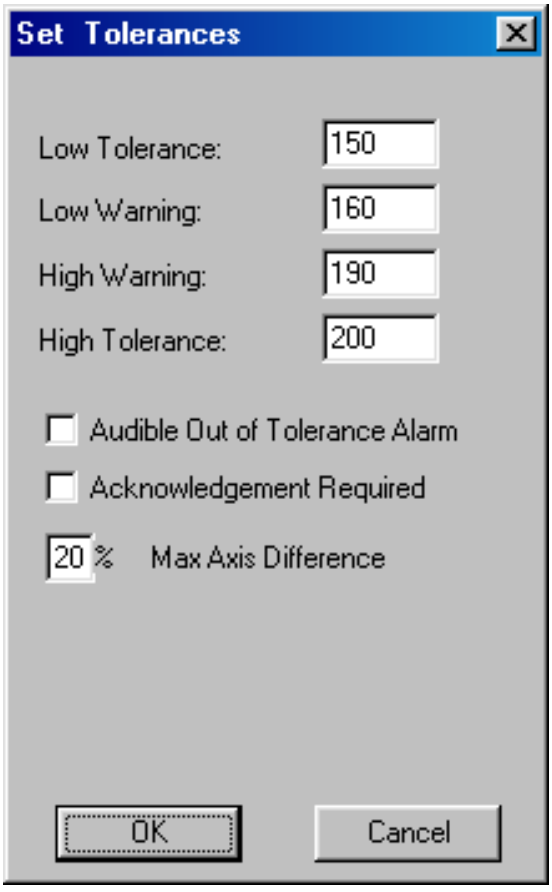
The tolerance selection is for changing tolerances in an existing file. Its operation is exactly the same as the initial file setup. (Refer to the File Open section.)

NOTE: Entering zero values for both will deactivate the Tolerance function. All readings will then be assigned an "OK" status. Also, once a file has been set up with tolerance settings, changing the tolerances will affect the statistical calculations for all the test results that have been entered to that point.

The audible alarm checkbox will prompt the operator audibly when a test is out of tolerance.

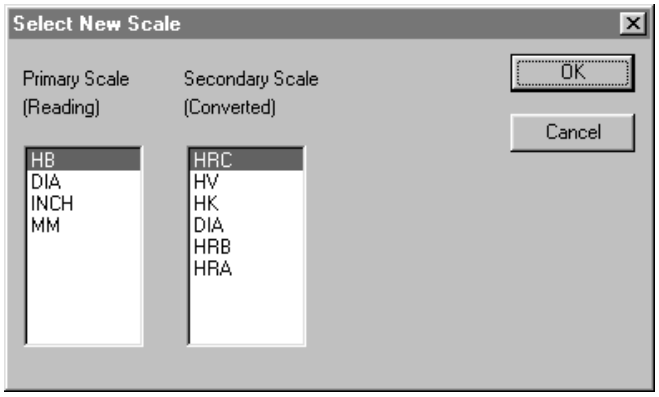
When the Acknowledgment Required box is checked the operator will have to acknowledge every time an out-of-tolerance result is produced. The operator can also enter the default error-checking value to limit the relative size of the two axes on the Vickers scale.

The Max Axis Difference value controls the allowable difference in measurement (in %) between the X and Y axis measurements. For example, if the test impression is out of round due to testing along the side of a cylinder, the operator may control the maximum out of roundness that is acceptable.



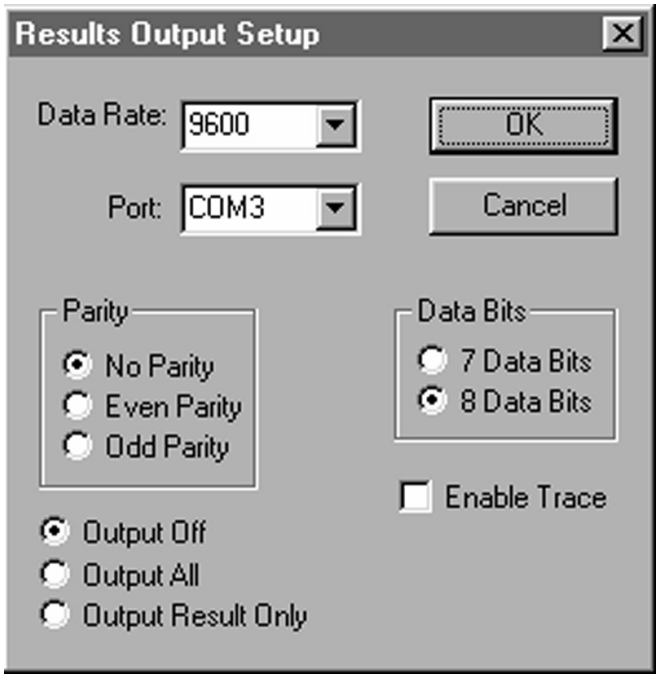
4.2.4 Scale Select

This is used to select new Primary and/or Converted Scale designations. The function is the same as was described under the "File Open" section



The scale can only be changed when setting up a new file, or if the data has all been cleared out of the data file. Once data has begun being collected, you cannot change the scale designation for the current open file. If you attempt to do so, a dialog box will appear prompting you to close the current file. To change the scale clear all data from file (See data menu.)

4.2.5 Communications Setup

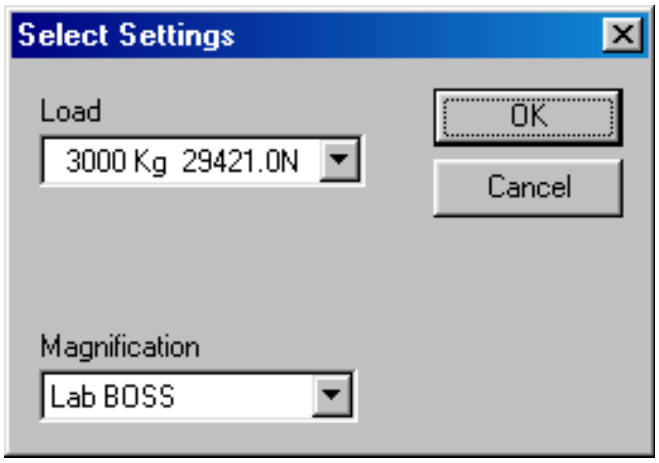


Communications Setup is used to set the parameters of the Serial out-put. At the end of each test (when the result is accepted), the information can be sent through the serial port to a separate computer. The data string selections are Parity, Data Bits, Data Rate (Baud) and Port.

Check boxes are provided for the type of output; if the entire string of the history data is to be sent to the serial port (the same string as it appears in the data line) then select "Output All"; if the "Output Result Only" box is checked, only the actual value accepted is transmitted. If "Output Off" is selected then no data is sent.

If the "Enable Trace" box is checked, the data seen at the lower left part of the toolbar in the main window (File name, Scale, Test number) is added to the test result in the serial output.

4.2.6 Select Settings



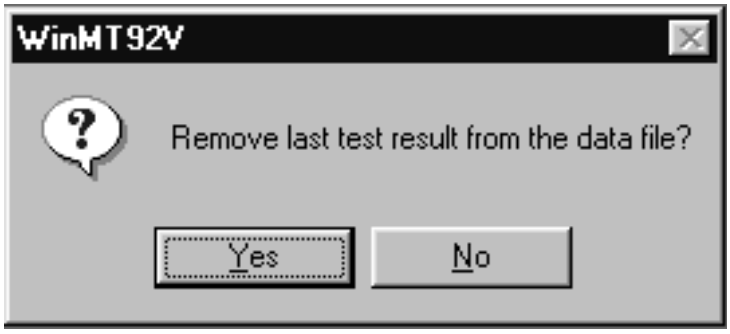
This allows the operator to choose the Load and Magnification as described in new file setup

4.3 Data Menu

The Data Menu consists of 4 different functions: Clear Last Test, Clear Test #, Clear All Tests, Statistics, and Part Information.

4.3.1 Clear Last Test

This function is used to clear the last test result from memory. It is the way in which you can delete an erroneous reading caused by machine or operator error and not affect the statistical calculations.
This is the same as the UNDO-button

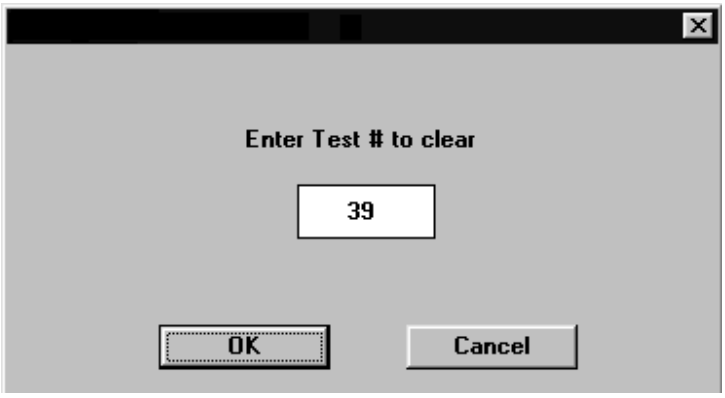


1) Select Clear Last Test from the Data Menu. A dialog box will appear asking you if you are sure that you want to clear the last test taken.

2) Select the Yes button to delete the last test.

4.3.2 Clear Test Number

This function is used to clear any of the test results in the current file from memory.

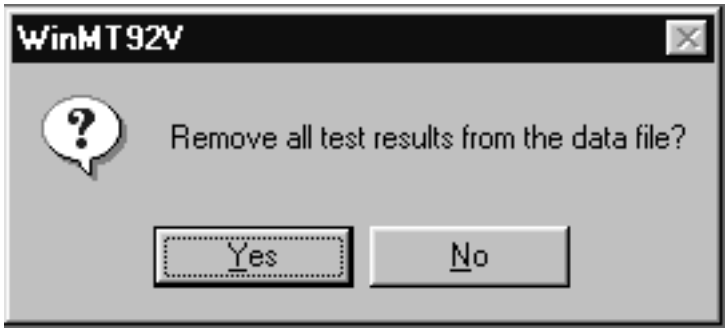


1) Select Clear Test # from the Data Menu. A dialog box will appear asking the operator to enter the test number.

2) Enter the number to be deleted. After the number is entered the operator is prompted to verify that it is the proper number.

4.3.3 Clear All Tests

This function is used to clear all of the test results in the current file from memory.

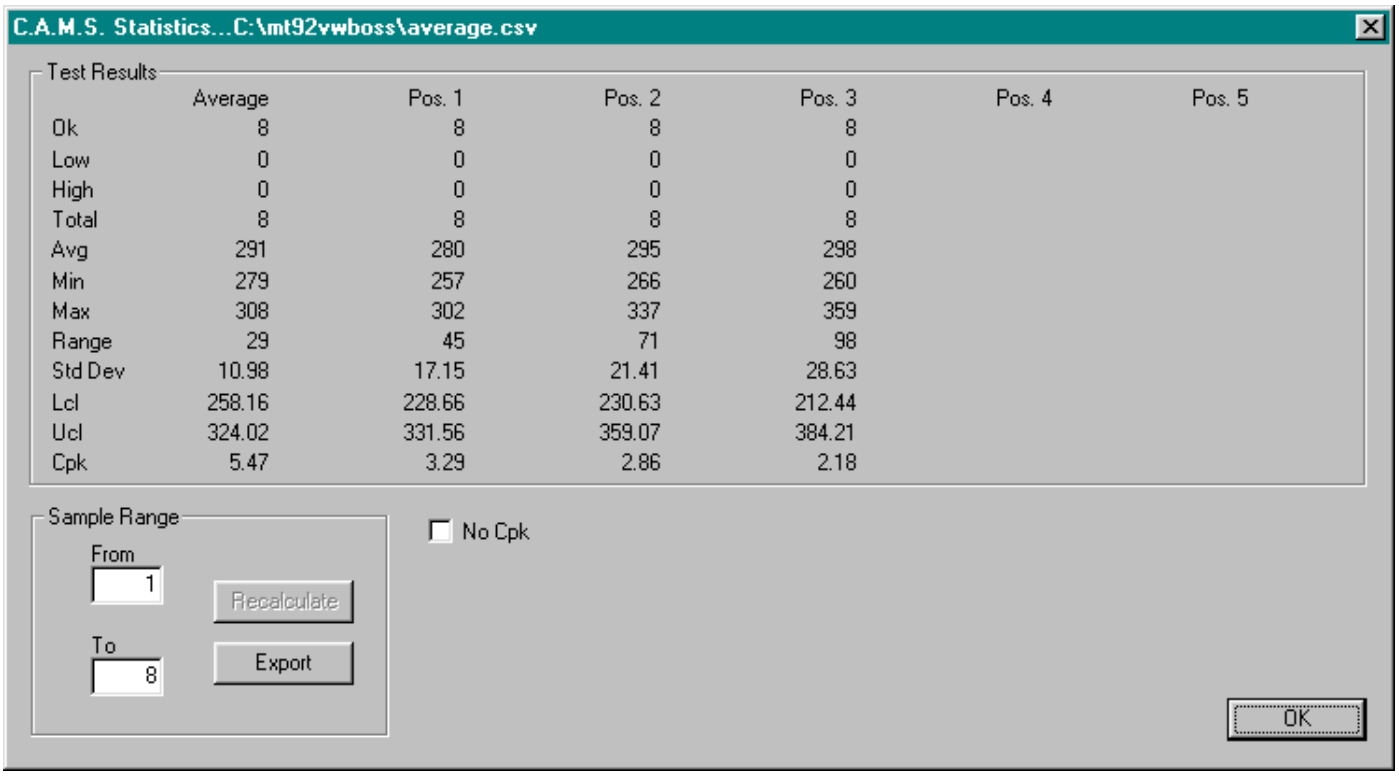


1) Select Clear All Tests from the Data Menu. A dialog box will appear asking you if you are sure that you want to clear all tests in the current file.

2) Select the Yes button to delete all tests.

4.3.4 Statistics

This function provides an on screen listing of statistics . The operator can select a range of results and the statistics will automatically change to reflect the selected range. "No Cpk" will eliminate this value from the reported information. Any selected range of data can be exported to a comma delimited .csv file. If averaging has been implemented under the setup menu, the averaged values and the set of individual values (up to 5) for each average appear in the statistics.



	Average	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5
Ok	8	8	8	8		
Low	0	0	0	0		
High	0	0	0	0		
Total	8	8	8	8		
Avg	291	280	295	298		
Min	279	257	266	260		
Max	308	302	337	359		
Range	29	45	71	98		
Std Dev	10.98	17.15	21.41	28.63		
Lcl	258.16	228.66	230.63	212.44		
Ucl	324.02	331.56	359.07	384.21		
Cpk	5.47	3.29	2.86	2.18		

4.3.5 Part Information

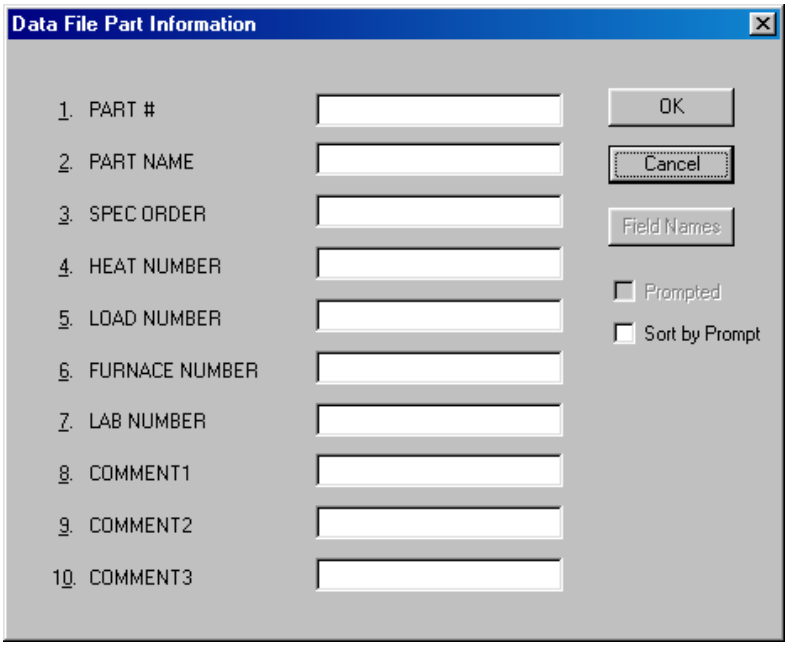
This function is used to enter part information in each file that will appear on the reports.

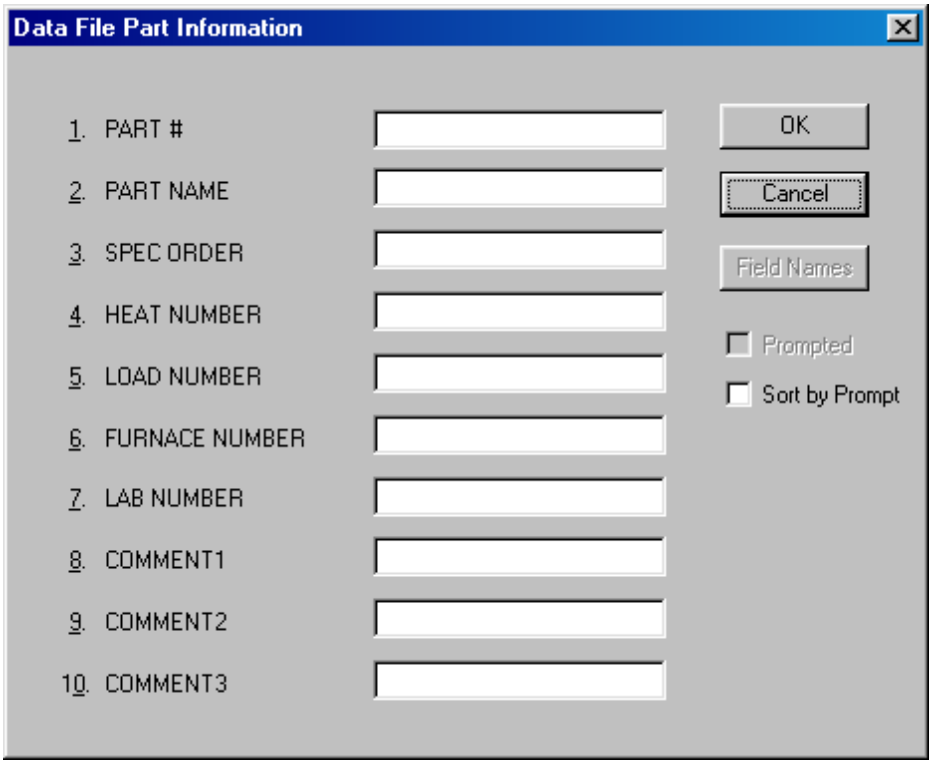
Select Part Information from the Data Menu. A dialog box will appear where the operator can enter descriptive information.

Clicking on the checkbox for “Prompted” will cause this window to appear . . . . . after each test so the operator can enter relevant data. This function pertains only to single point testing - not traverses

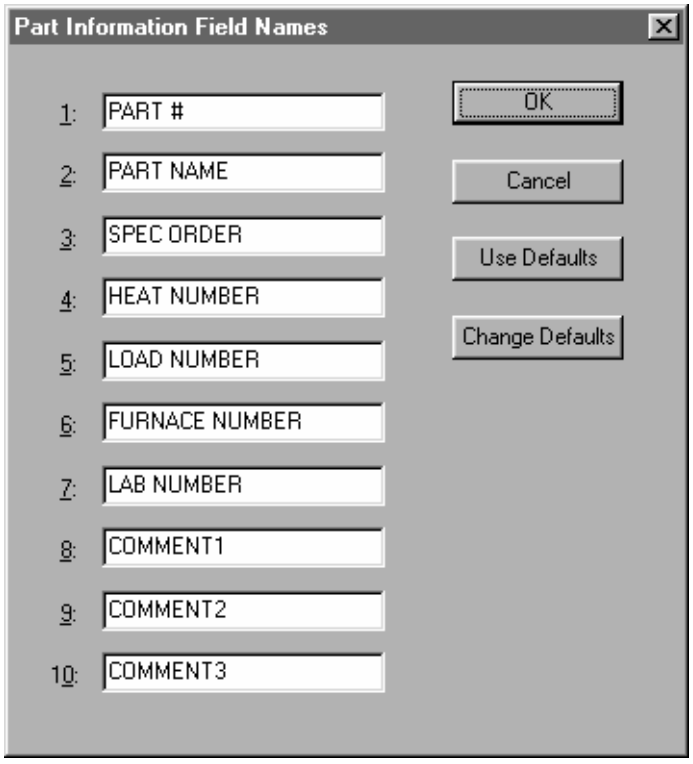
To change the field descriptions press the Field Names button.

Highlight a fields with the cursor and type a new name.





Select OK to exit. To return to the original field description select the Use Defaults-button. To make changes permanent for this file press the Change Defaults-button.



APPENDIX A: TROUBLESHOOTING, REPAIRS

FOR MANY VARIOUS FUNCTIONAL PROBLEMS

- Make certain that the screen saver is turned off. Turn off screen saver and reboot system to correct problems. (Depending on the exact nature of screen saver, a wide variety of specific problems can results)

NO PICTURE OR POOR CLARITY (B.O.S.S. UNIT)

- Make certain that system components are plugged in, properly connected and turned on.
- Hold the scan head without moving during measurement
- Check all fuses and connections on each of the different components.
- If there is a pink screen, try a different number of colors, 256, 16 bit, 24 bit, etc.
- Directx 8.1 must be installed

INACCURATE TEST RESULTS ON TEST BLOCK

- Perform a calibration to the electronics. This must be done whenever a test head is returned from repair or when installing a loaner scan head.

PROGRAM WILL NOT PROCEED

-Make certain that system components are plugged in, properly connected and turned on.

CHECKS TO MAKE BEFORE CALLING THE FACTORY

If you run into problems:
1) Reboot the computer
2) Check the calibration of the scan head to the computer
3) Consult the Windows Manual for troubleshooting information
4) Contact Newage Testing Instruments, Inc. Technical Customer Service at: Tel: 215-355-6900; Fax: 215-354-1803

REPAIRS AND SHIPPING INSTRUCTIONS

If your system or just the B.O.S.S. scan head needs repairs, it must be packed in a sturdy box using bubble wrap or equivalent for padding. It is important that the components be well protected from damage and that the box be doubleweight or double boxed to prevent penetration during shipping. Include a statement of the desired service or a description of the nature of the problem with the unit. Address the package to Service Department. The package should be insured for the value of the instrument. Newage will call with an estimate for repairs. Note our address information changed in 1/2000:

Newage Testing Instruments,
820 Pennsylvania Blvd., Feasterville PA 19053, USA

If the scan head alone is returned to us we are unable to provide a calibration but will provide a certificate of operation. This is because the scan head must be calibrated in conjunction with the computer it is to be used with. After a test head is returned or when a loaner unit is used, it must be first calibrated with the computer prior to use.

APPENDIX B: FILE LAYOUT

filefmt.doc

FILE FORMAT, Version 2.0

Line 1:

```
char FileSignature Version [14];
char Comma;
char RecordCount[5];        // count of records in the file
char Comma;
char RecordLength[3];       // length of fixed-length records
char Comma;
char ExtraHeaderLength[3];  // length of additional header written
char    Comma;
char    AvgCnt[2];
char    Comma;
char    ConvertScale[5];
char    Comma;
char    LoadTime[2];
char    Comma;
char    Flags[5]

// Report view mode
char    Comma;
char    Header2Len[3]

// length of header2
char    Comma;
char    ExtraFieldDefLen[3];
char    Comma;
char    MaxStdDev[7];
char    Comma;
char    Objective[5];       // objective 10x... 100x
char    Comma;
char    Load[7];            // Load in grams or kg.
char    Comma;
char    Ball[4];            // Ball diameter or PIN type
char    CrLf1[2];
```

Line 2:

```
char    Scale[5];
char    Comma;
char    Label1[7];          // "LO:"
char    Comma;
char    LoTol[7];
char    Comma;
char    Label2[7];          // "LW:"
char    Comma;
char    LoWarn[7];
char    Comma;
char    Label3[7];          // "HW:"
char    Comma;
char    HiWarn[7];
char    Comma;
char    Label4[7];          // "Hl:"
char    Comma;
char    HiTol[7];
char    CrLf2[2];
```

Line 3:

```
char    FileComment/Work Order[80];
char    CrLf3[2];
```

Lines 4 - 13:

```
char    FieldName[15];
char    Comma;
char    FieldInfo[20];
char    CrLf2[2];
```

Line 14:

** Data ** // header line

Lines 15+:

```
char    SeqNum[6];
char    Comma;
char    Date[10]; // "mm/dd/yy"
char    Comma;
char    Time[7]; // "hh:mm"
char    Comma;
char    ConvertValue[7];// eg. Dia for HB or HRC for HV
char    Comma;
char    Value[7];  // Average if in average mode
```

If the test is an average mode test then the following additional fields are on each line.

```
char    Comma;
char    Min[7];
char    Comma;
char    Max[7];
char    Comma;
char    StdDev[7];
char    Comma;    // will be n comma value pairs
char    IndividualValues[7];// separated by commas
```

APPENDIX C: B.O.S.S. TETHER OPTION

Read the tether manufacturer directions to set up the tether.
To install the BOSS scan head on the tether, unscrew the nut holding the cable to the scan head. Attach the clip from the cable over the cord between the scan head and the nut (See photo #1 below). Push the clip up against the scan head and reattach the nut to full tightness (See photo #2 below).

Attach the tether coil clip to the tether arm. Follow manufacturer directions for any tether adjustments.

Model appearance may differ than shown

Other tether options are available as well

APPENDIX W: LIMITED WARRANTY

ONE YEAR LIMITED WARRANTY

Should Newage Testing Instruments, Inc. equipment require service, we will repair or replace, at our option, any part or product which upon examination by a NewAge Industries service technician, shows to be defective in material or workmanship.

This warranty is extended to the original purchaser only, for a period of one year (12 months) from owners date of purchase. Excluded from this warranty are any parts that are to be replaced as part of normal product operation, such as but not limited to indenters, test blocks,
indenter shrouds, and Etching Pen writing points.

This warranty IS NOT VALID IF THE INSTRUMENT HAS BEEN MODIFIED, MISUSED OR DAMAGED in any way, except by a factory-authorized Newage Testing Instruments representative. Where required, products should be set up and training provided by a factory-authorized representative. Damage caused by improper set up, disassembly, or service by any person other than an authorized Newage Testing Instruments' service technician is not covered under this warranty.

Please read the operation manual supplied with the instrument prior to operation. This warranty applies only to instruments sold by Newage Testing Instruments, Inc. and its authorized distributors.

Newage Testing Instruments, Inc. is not responsible in any way for losses, damage, or other forms of consequential damage resulting from equipment failure
or improper use.

IMPORTANT: Register your instrument with the Newage Testing Instruments, Inc. service department by filling out and returning the enclosed warranty registration card.

Pub code: OM-USB Lab BOSS & BOSS HD
Issue: July 2014

Newage® hardness testing

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