DataCan 🍁

LineWise System
AE304UU0002 – Standard version
AE304UU0008 – 4-20mA version
User Manual

DataCan

Revision Date: March 7, 2019 NL

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1.0 System Description and Specifications

1.1 Overview

The LineWise software includes the Depth Panel program, Weight Indicator, CCL Meter, Pressure Indicator, LineWise Logger or Filer, and the LineWise Report program. All these programs communicate with the DataCan Services LineWise box. It was developed by Lee Specialties to communicate between various output devices including depth encoders, tension load cells, pressure transducers, and a computer system using the USB 1.0 interface. The USB interface makes the system portable. The LineWise software can be used by itself, but is a requirement when logging with the rest of the DataCan system. The Premier Logging program needs these programs to collect depth, line tension, wellhead pressure, and shooting CCL data. These programs do not need to be on the same computer as the Premier Logging program, but they do need to be able to communicate with the Premier Logging software over a network.

1.1.1 Weight Indicator Program Features

- All data recorded by this application can be graphed, exported to ASCII, or sent to the well logging system for presentation.
- Monitors line tension.
- Displays current, maximum, and differential tensions.
- Collects data from an inline tension device, electronic or hydraulic load cell.
- Primary and sub gauges can be customized to desired resolution.
- Measurement can be displayed in the following units:

  - Pounds force (lbf)
  - Newtons (N)
  - decaNewtons (daN)
  - kiloNewtons (kN)

- Alarms can be enabled to warn operators when high tensions have been reached.
- Gauge fonts and company logo image can be customized.

1.1.2 Pressure Indicator Program Features

- All data recorded by this application can be graphed, exported to ASCII, or sent to the well logging system for presentation.
- Monitors wellhead pressure.
- The primary gauge displays current, maximum, and differential pressures.
- Primary and sub-gauges can be customized to display the desired resolution.
- Multiple primary gauges can be defined by the user. Default gauge definitions include 2,000 PSI, 5,000 PSI, 10,000 PSI, and 20,000 PSI gauges. The initial primary gauge that appears is the 2,000 PSI gauge.
- Each primary gauge definition has separate unit and alarm settings.
- Measurement can be displayed in the following units:

  - Pounds per square inch (PSI)
  - Barometric (Bar)
  - kiloPascal (kPa)
  - megaPascal (MPa)

- Compatible with analog, simple digital, or quartz pressure transducers.
- Gauge fonts and company logo image can customized.

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1.1.3 CCL Meter Program Features

- All data recorded by this application can be graphed, exported to ASCII, or sent to the well logging system for presentation.
- Responds when the shooting casing collar locater (CCL) passes a collar in a well.
- Needle deflects in positive and negative directions.
- User adjustable gain.

1.1.4 Depth Panel Program Features

- All data recorded by this application can be graphed, exported to ASCII, or sent to the well logging system for presentation.
- Displays line depth, speed, a well schematic, and tool string motion.
- Primary and secondary depths are displayed simultaneously as odometer style graphics or as plain text.
- Depth can be displayed in feet (ft) or meters (m).
- Line speed can be displayed in feet per minute (ft/min), feet per hour (ft/hr), or meters per minute (m/min).
- Secondary depth can be configured to use a second (redundant) encoder.
- Well schematics can be configured to represent a tool string and its position relative to items in the well: tubing, packers, sleeves, plugs, etc.
- Tool string representation can be set to the correct length and be visualized moving up or downhole.
- Alarms can be enabled to sound when user-defined depth and/or speed values have been reached or exceeded.

1.1.5 LineWise Logger/Filer Program Features

- Records raw data continuously from other Linewise programs.
- Starts automatically when other Linewise programs are launched.

1.1.6 LineWise Report Program Features

- All data recorded by this application can be graphed, exported to ASCII, or sent to the well logging system for presentation.
- Imports and displays recorded Linewise data in a graph.
- Exports data to an ASCII file for use with other applications.
- Real time graphing.
- Custom titles, comments, and company logo.
- Graph auto-scaling.
- Y-axis can be customized to display: primary depth1, secondary depth 2, speed, tension, pressure, temperature, voltage (1-4), or frequency (1-4).
- X-axis displays elapsed or start/stop time in seconds (sec), minutes (min), hours (hr), or days (day).

1.2 System Specifications

- Laptop computer (supplied by DataCan Services Corp. or by the customer)
- USB interface and Windows based software
- 20 samples per second recording
- Multiple format depth output file, compatible with DataCan Download software
- Four analog inputs (0-5V, 4-20mA, 0-10V configurable) and 4 digital (frequency) inputs

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2.0   LineWise Report Revision 3.98

2.1 LineWise Report Interface
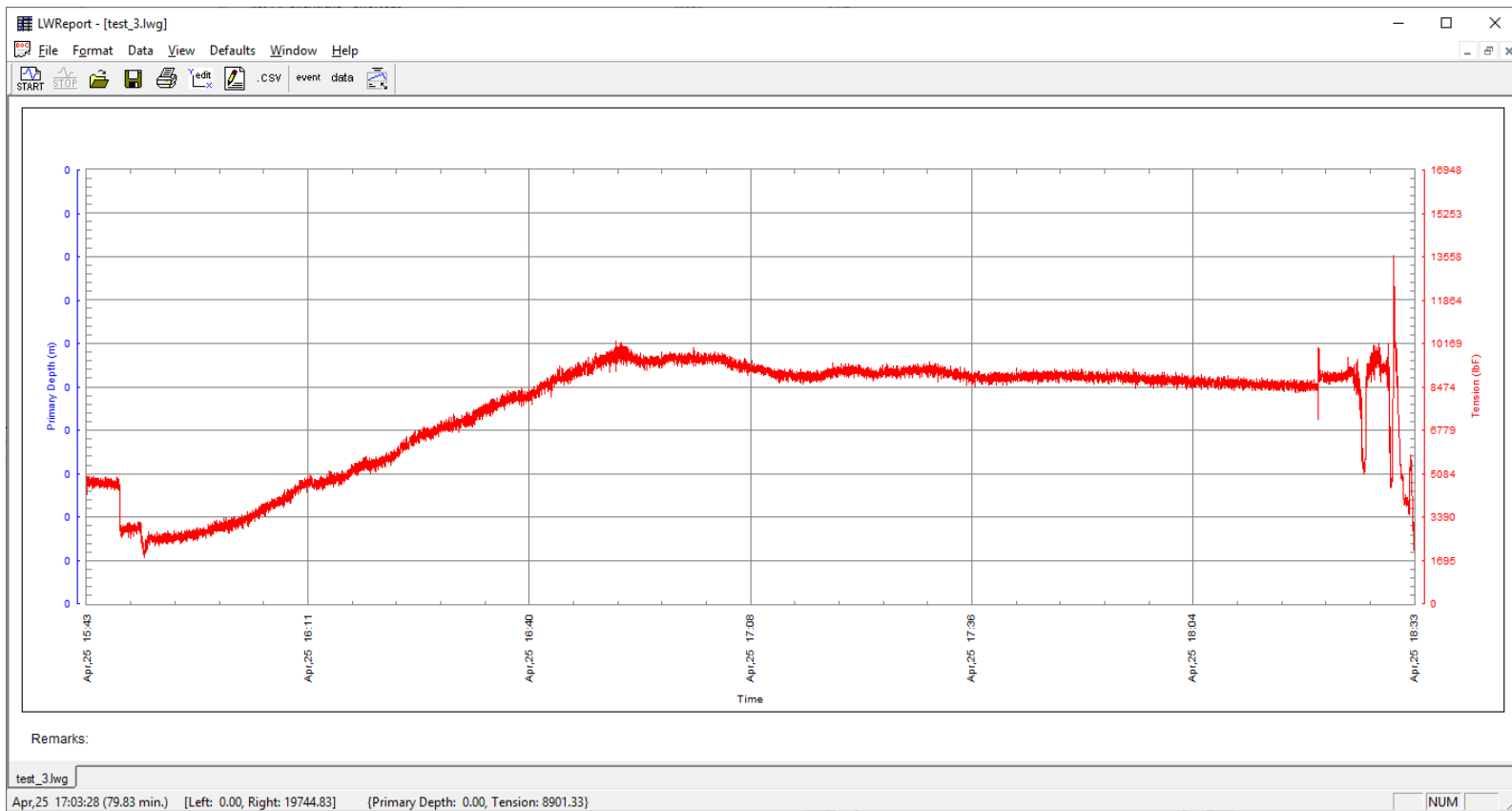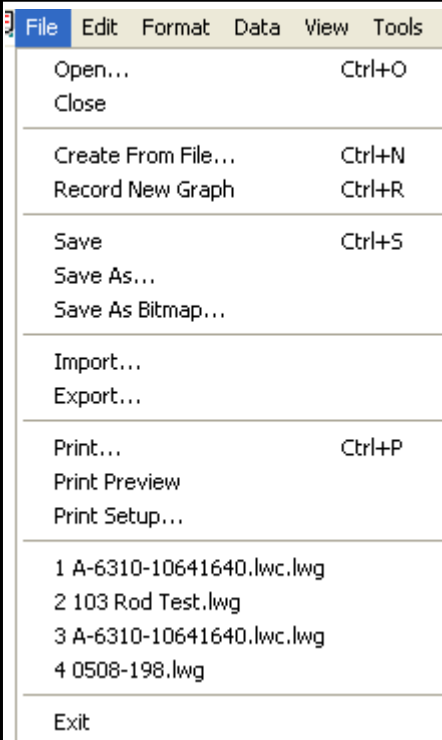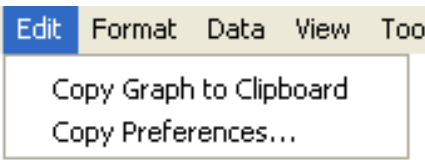
Figure 2-1: Linewise Main Interface with Sample Graph
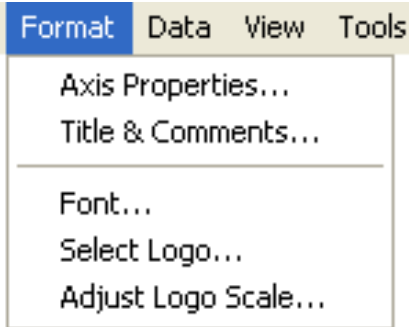
2.1.1 File Menu

Menu Interface	List Item	Description
	Open	Opens an existing file.
	Close	Closes the current file.
	Create from File	Creates a graph from a raw data file
	Record New Graph	Starts reading a new graph in real time.
	Save	Saves the current graph information.
	Save As	Saves the current graph information to a different location or with a different name.
	Import	Add data to the active graph.
	Export	Exports selected graph data to a text file.
	Print	Prints the graph to a printer or file.
	Print Preview	Shows what the graph will look like when it is printed. It includes title and comment information.
	Print Setup	Allows the user to configure print parameters.
	Recent Files	Shows the files that have been accessed recently.
	Exit	Exits the Linewise program. Prompts you to save any unsaved graphs.
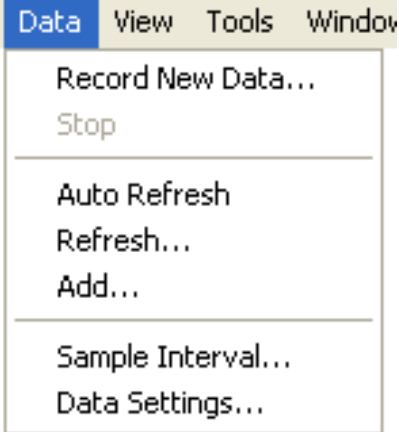
2.1.2 Edit Menu

Menu Interface	List Item	Description
	Copy Graph to Clipboard	Copies the graph information to the system clipboard to be posted into other programs.
	Copy Preferences	Defines the parameters used to copy the graph to the clipboard. Copies the OLE height and width preference information.

2.1.3 Format Menu

Menu Interface	List Item	Description
Format Data View Tools Axis Properties… Title & Comments… Font… Select Logo… Adjust Logo Scale…	Axis Properties	Accesses the Graph Axis Properties dialog box.
	Title & Comments	Accesses the Graph Tile & Comments dialog box.
	Font	Accesses the Font dialog box. Allows users to modify the fonts of the text that appear in the graph.
	Select Logo	Allows the user to select the logo image file that will appear in the upper left corner of the printed graph.
	Adjust Logo Scale	Allows the user to change the size of the logo image that appears on the printed graph.
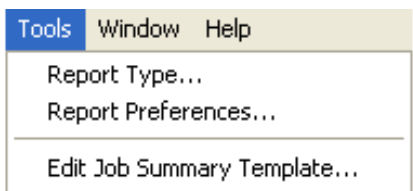
2.1.4 Data Menu

Menu Interface	List Item	Description
Data View Tools Window Record New Data… Stop Auto Refresh Refresh… Add… Sample Interval… Data Settings…	Record New Data	Log data in real time and add it to the active graph.
	Stop	Stops the program from recording data.
	Auto Refresh	Automatically refresh the data by adjusting the appropriate graph scales.
	Refresh	Refresh Linewise data from an imported file.
	Add	Add data to the active graph.
	Sample Interval	Edit the sample interval for real time logging.
	Data Settings	Edit the data type for the active graph.

2.1.5 View Menu
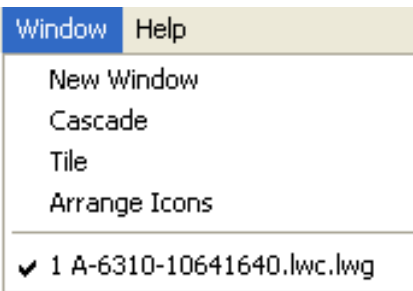
Menu Interface	List Item	Description
View Tools Window Zoom In Zoom Out Zoom Both Axis Zoom X-Axis Zoom Y-Axis Undo Zoom Redo Zooom ✔ Show Crosshairs	Zoom In	Zooms in on the active graph.
	Zoom Out	Zooms out on the active graph.
	Zoom Both Axis	Allows the user to draw a square on the area of the graph where they want to zoom.
	Zoom X-Axis	Allows the user to zoom in on a horizontal section of the graph.
	Zoom Y-Axis	Allows the user to zoom in on a vertical section on the graph.
	Undo Zoom	Reverses the last zoom action.
	Redo Zoom	Repeats the last zoom action.
	Show Crosshairs	Shows or hides the crosshairs at the cursor location on the graph.

2.1.6 Tools Menu

Menu Interface	List Item	Description
Tools Window Help Report Type... Report Preferences... Edit Job Summary Template...	Report Type	Accesses the Graph Report Type dialog box. Allows the user to set the default graph type and type trace names.
	Report Preferences	Accesses the Preferences dialog box.
	Edit Job Summary Template	Accesses the Customize Job Summary Template dialog box.

2.1.7 Window Menu

Menu Interface	List Item	Description
Window Help New Window Cascade Tile Arrange Icons ✔ 1 A-6310-10641640.lwc.lwg	New Window	Opens a new window of the current graph.
	Cascade	Arranges all active windows so that they overlap.
	Tile	Arranges all windows as non-overlapping tiles.
	Arrange Icons	Arranges icons at the bottom of the window.
	Current Window	Shows a check mark beside the current active window. Allows users to activate other open windows.

2.1.8 Tools>Report Preferences>Preferences dialog box

Preferences

Default Time Scale to : `Real Time` **1**

Traces

Data - Left Side 2

`Pressure`

☑ Include Units In Label **3**

Data - Right Side 4

`None`

☐ Include Units In Label **5**

Data Source : `Depth | Speed | Tension | Pres. | Temp.` **6**

☐ Show Legend **7**

Axis Scaling

Left Side

☑ Auto Intervals **8**

☐ Continous Update In Logging Mode **9**

☑ Calculate Data's Min/Max **10**

Right Side

☐ Auto Intervals **11**

☐ Continuous Update In Logging Mode **12**

☐ Calculate Data's Min/Max **13**

Limit # of Intervals to

Y Axis : **14** X Axis : **15**

`10` `10`

Calc. # of Y Intervals From

`Left Side` **16**

☑ Include Job Summary In the Graph Report **17**

Default Folders in the Open / Save Dialog

☑ Set Graph Folder To : **18**

`C:\Program Files\LineWise\Data\05Jul06\` Browse

☑ Set Linewise Raw Data Folder To : **19**

`C:\Program Files\LineWise\Data\05Jul07\` Browse

20 OK Cancel **21**

Table 2-1: Preferences Dialog Box Elements

Item	Description
1.	Displays the default X-axis time in Elapsed Time or Real Time format.
2.	Selects the default Trace type used for the left Y axis of the graph.
3.	Shows or hides the units on the left Y axis label.
4.	Selects the default Trace type used for the right Y axis of the graph.
5.	Shows or hides the units on the right Y axis label.
6.	Sets the data source for the graph.
7.	Shows or hides a legend of the traces on the graph.
8.	Activates or deactivates the left-side Auto Intervals function, which adjusts the intervals to make them even.
9.	Activates or deactivates the left side Continuous Update function, which works only in Real Time logging. This function updates the intervals and min/max values on the left side of the graph continuously. When active, this function also disables Auto Scale on the Graph Axis Properties dialog box on the Left Side tab.
10.	Activates or deactivates the left side Calculate Data's min/max function, which identifies the min and max values for the first trace only and uses this value to determine the min and max values on the left Y axis of the graph.
11.	Activates or deactivates the right-side Auto Intervals function, which adjust the intervals to make them even.
12.	Activates or deactivates the right side Continuous Update function, which works only in Real Time logging. This function updates the intervals and min/max values on the right side of the graph continuously. When active, this function also disables Auto Scale on the Graph Axis Properties dialog box on the Right Side tab.
13.	Activates or deactivates the right side Calculate Data's min/max function, which identifies the min and max values for the first trace only and uses this value to determine the min and max values on the right Y axis of the graph.
14.	Sets the maximum number of intervals or divisions to use for the Y axis of the graph when auto scaling.
15.	Sets the maximum number of intervals or divisions to use for the X axis of the graph when auto scaling.
16.	Controls on which side of the graph the program calculates the number of intervals or divisions, based on selected trace and limits. This is usually the left side.
17.	Shows or hides the Job Summary information on the graph report.
18.	When checked, this option will fix the default graph location. If not checked, the graph location is the last folder into which the graph was saved or opened.
19.	When checked, this option will fix the default raw data location. If not checked, the location is the last folder from which the raw data was imported.
20.	Accepts the parameters set in the Preferences dialog box.
21.	Exits the dialog box without accepting any changes.

2.1.9 Customize Job Summary Template

The customize Job Summary dialog box is used to create and apply job summary label templates to the graph report. Templates are useful when you want to capture the same information for every job. You can also define separate templates for different types of jobs. When you open the template dialog box, all fields, except the date field, are blank. You can either create a new template or open an existing template. If you set a template as a default, then the program will apply that template to all new report files. The following figure shows an example of some common labels used in a Job Summary.

Figure 2-2: Sample Customize Job Summary Template Dialog Box
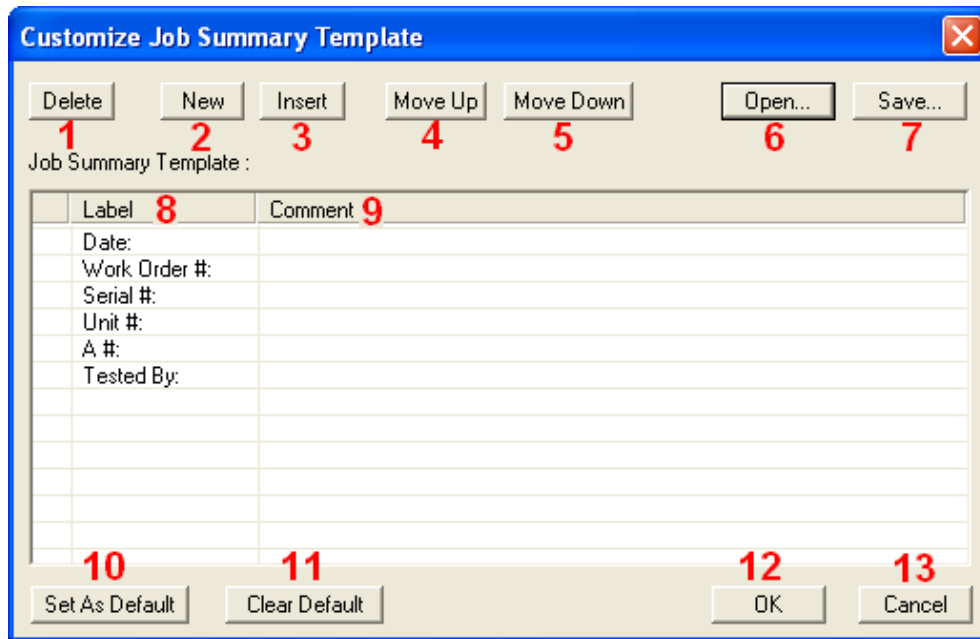
Item	Description
1.	Deletes the selected line. Click the cursor on a line to select it.
2.	Inserts a blank line at the bottom of the Label column.
3.	Inserts a blank line above where the cursor is located.
4.	Moves the selected line up one line. Click the cursor on a line to select it.
5.	Moves the selected line down one line. Click the cursor on a line to select it.
6.	Allows the user to open a pre-defined job summary template.
7.	Allows the user to save the current job summary template as a new template or overwrite an existing template. To save the information as a new template, save it with a different name.
8.	Displays the type of job data fields that will appear on the graph report.
9.	The Comment column will contain the actual job data. This information can be modified on the Title & Comments dialog box. Do not type information here unless you want it to appear for every job that uses this template.
10.	Click this button to set the current template as the default. This template will be applied to every graph file that the user opens. If you want to save a different template as the default, click the Open button, then select the required template file, then save that template as the default.

Item	Description
11.	Click this button to clear the default template. When the user opens or starts a new graph, a blank template will be applied.
12.	Accepts the information in the Job Summary Template dialog box and applies it to the current graph. Does not necessarily update the template information.
13.	Closes the dialog box without accepting any changes.

2.1.10 Graph Title & Comments

One of three styles of Graph Title & Comments dialog boxes will appear depending on settings in the Preferences and Graph Report Type dialog boxes. The Graph Title & Comments dialog box allows the user to enter title information, add job summary data (if applicable), and add comments (which appear on the bottom of the graph report).

1. Access the Graph Title & Comments dialog box in any of the following ways:
   - Start a new graph report during real-time logging.
   - From the Format menu, select Titles & Comments.
   - Double-click on the title section of the graph.
   - Click the Graph Title icon on the toolbar.

Figure 2-3: Graph Title & Comments Dialog Box WITH Job Summary Information

Item	Description
1.	Type title information for the current graph report.
2.	Remove the selected line from the Job Summary information.
3.	Adds a new line to the bottom of the Job Summary information. Double-click in the Label column to add a new label. Click once in the Comments column to add job information.

Item	Description
4.	Inserts a blank line above the line where the cursor is located.
5.	Allows the user to load a new Job Summary template.
6.	Contains the Job Summary information type as defined by the current template. Double-click in this column to change label information.
7.	Add Job Summary information as required for the current graph report. Click on the line and type the required information. Click once on information in this column to change the content.
8.	Type additional comments regarding the job.
9.	Clears the comments for the job data and text comments. Does not clear the date and time information.
10.	Accepts the current information, applies it to the current graph report, then closes the dialog box.
11.	Closes the dialog box without applying any changes.

Figure 2-4: Graph Title & Comments Dialog Boxes WITHOUT Job Summary Information

This dialog box appears if the Include Job Summary in the Graph Report check box is NOT selected on the Preferences dialog box, and if the Graph Report Type dialog box is set to Pressure.

This dialog box appears if the Include Job Summary in the Graph Report check box is NOT selected on the Preferences dialog box, and if the Graph Report Type dialog box is set to General.
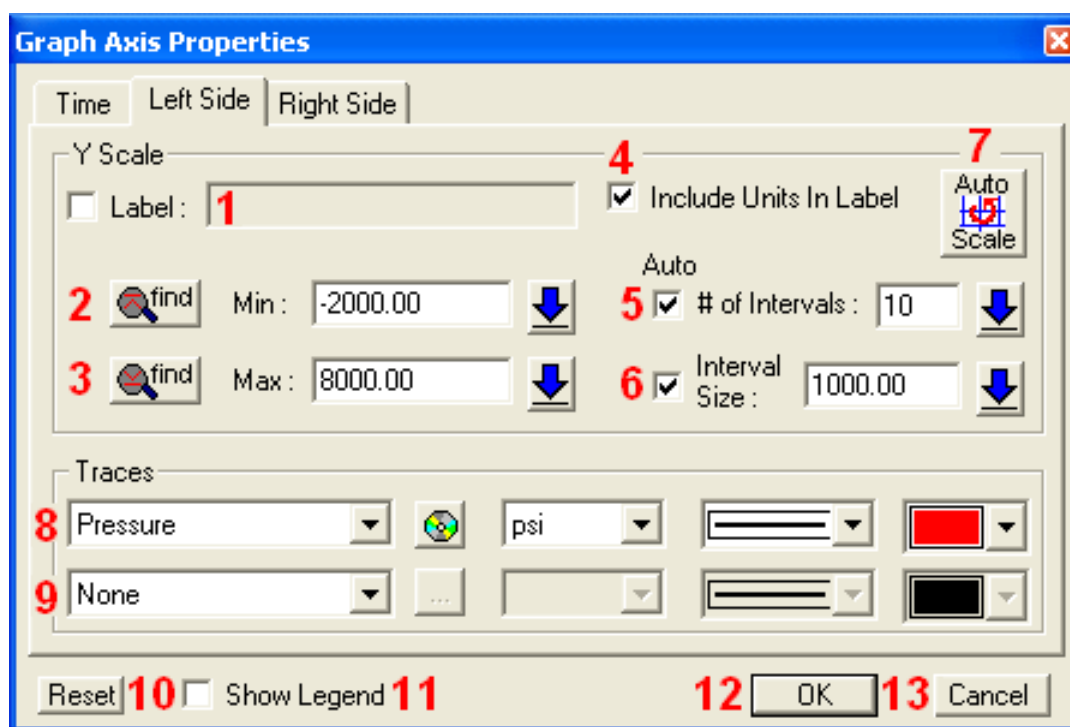
1. For these dialog boxes, click the cursor in each field and type the required information.

2. Do one of the following:
   - Click OK to accept the data you have typed.
   - Click Reset or Clear to delete the data but keep the dialog box open.
   - Click cancel to close the dialog box without changing any data in the dialog box.

2.1.11 Graph Axis Properties Dialog Box

The Graph Axis Properties dialog box is usually used to modify graph presentation *after* data is collected (there are few presentation parameters that users can change while logging data in real-time mode).

- The Left Side and Right Side tabs control the appearance of elements on the right and left Y axis of the graph report.
- The Time tab controls the appearance of elements on the X axis of the graph report.
- The Time tab and the Left Side tab are the most commonly used tabs.
- The Time tab changes depending on whether Elapsed Time or Real Time is selected.
- If you use the Right Side tab, then the number of intervals must match the Left Side tab value. If you change one, then the other one will change to match.

2.1.11.1 Graph Axis Properties - Left Side Tab

Item	Description
1.	The default label is the trace name minus the current units. Click the check box to activate the Label field. Type a new label in the field. The label will include the units if the Include Units in Label check box is checked (see item 4). If this field is blank, then the trace name is used.
2. find ⬇	Allows the user to set the minimum value that appears on the left Y axis of the graph report. • The find button retrieves the minimum point in the data. • The Min:input field allows the user to type the minimum value to appear on the graph report. • The Preset Limit button allows the user to access a list of commonly used minimum values.

Item	Description
3. find (down arrow icon)	Allows the user to set the maximum value that appears on the left Y axis of the graph report. • The find button retrieves the maximum point in the data. • The Max: input field allows the user to type the maximum value to appear on the graph report. • The Preset Limit button allows the user to access a list of commonly used maximum values.
4.	Shows and hides the units for the current traces. Hide the units if you have more than one trace on one side, and type a description in the Label field.
5. (down arrow icon)	Auto # of Intervals determines how many major horizontal divisions appear on the graph. When the function is active, the program determines the number of divisions. When the function is inactive, the user can set the number of divisions manually. The user must click the AutoScale button when the function is active. • The check box activates or deactivates the auto function for the current graph report. • The input field allows the user to define the number of intervals manually. • The Preset Limit button allows the user to access a list of commonly used interval values. NOTE: If Auto Intervals is set on the Preferences dialog box, then this dialog box will be overridden. Also, if Continuous Update is selected on the Preferences dialog box during real-time logging, the values in this dialog box will be overridden.
6. (down arrow icon)	Auto Interval Size determines the intervals for the values that appear on the Y axis. When the function is active, the program rounds the intervals to values that make the graph easier to read. When the function is inactive, the user can set the interval size manually. The user must click the AutoScale button when the function is active. • The check box activates or deactivates the auto function for the current graph report. • The input field allows the user to define the interval size manually. • The Preset Limit button allows the user to access a list of commonly used intervals.
7.	Click this button to perform the active AutoScale functions for the current graph report (see items 5 and 6). AutoScale rounds the intervals and interval size to make the graph easier to read.
8. (disc icon)	Two traces are permitted on the left side of the graph, and two on the right side of the graph (use the Right Side tab). • The first trace drop-down box determines the first trace that will appear on the graph report. The first trace is considered the 'main' trace and min/max values are calculated from the data for the main trace only. • The disc icon allows the user to set the current trace settings as presets. • The unit drop-down box lets the user choose the units for the trace. • The line style drop-down box lets the user select a line style for the trace. • The colour drop-down box lets the user select a colour for the trace.
9.	This group controls the selection and formatting for the second trace. See item 8 for more information.
10.	Presets the values to minimum and maximum data values.
11.	Select the Show Legend check box to display a legend of trace names on the graph report.
12.	Accepts the current values and applies them to the graph report, then closes the dialog box.
13.	Exits the dialog box without accepting any changes.

2.1.11.2 Graph Axis Properties-Time Tab

The Time tab lets users show time on the X axis of the graph report either as real time or as elapsed time.

Graph Axis Properties

Time | Left Side | Right Side

5

1 ● Real Time   ○ Elapsed Time

4 # of Intervals : 7

Auto Scale

2 Start

3 Stop

Interval Size **6**

☐ 2.06666   minutes

find

find

Duration **7**

14:48:00

15:04:00

✗clear   ✓calc.

05-04-04

05-04-04

Day   Hr   Min   Sec

16

Reset **8** ☐ Show Legend **9**

10 OK **11** Cancel

Graph Axis Properties

Time | Left Side | Right Side

5

1 ○ Real Time   ● Elapsed Time

4 # of Intervals : 7

Auto Scale

2 From

3 To

Interval Size **6**

☐ 2.06666   minutes

find

find

Duration **7**

0

14.466666

✗clear   ✓calc.

Display Time In :   minutes

Day   Hr   Min   Sec

16

Reset **8** ☐ Show Legend **9**

10 OK **11** Cancel

| Item	Description
1.	Real Time/Elapsed Time radio buttons: • Real Time displays the time data on the X axis from the actual start time and date to the actual end time and date. • Elapsed Time displays the time data on the X axis starting from zero to the end of the time data.
2. find find	This group of buttons and fields lets the user set the beginning time value for the graph report. Real Time mode options: • Click the find button to find the actual start time and date. • Use the up and down arrows on the time field to select a start time manually. • Use the drop-down box to select a start date. This is useful if tests span a multi-day period. Elapsed Time mode options: • Click the find button to find the start time. • Type a start value in the input field. This value is usually zero for elapsed time. • Below the From section, use the Display Time In drop-down list to set what units the time will appear in on the graph report.
3. find find	This group of buttons and fields lets the user set the stop or end time that appears on the graph report. This group of controls is disabled if the Interval Size check box is activated. Real Time mode options: • Click the find button to find the actual stop time and date. • Use the up and down arrows on the time field to select a stop time manually. • Use the drop-down box to select a stop date. This is useful if tests span a multi-day period. Elapsed Time mode options: • Click the find button to find the actual stop time. • Type a value for the end time.
4.	• The # of intervals field lets the user define the number of major time intervals (shown as vertical lines) that will appear on the graph report. The value in this field can change if the AutoScale function is used. See item 5.
5.	This button activates the AutoScale function for the X axis of the graph report. • AutoScale will not work if Continuous Update is selected on the Preferences dialog box during real-time logging. • AutoScale rounds the number of intervals to a whole number that is less than the Limit # of Intervals to value on the Preferences dialog box. • AutoScale rounds the end time to a whole number that is greater than the last time point.
6.	When active, the Interval Size function lets the user define the interval size and then calculates the end time and duration values for the graph. When it is not active, it allows the user to set the end time and duration manually.
7. calc. clear	The Duration section acts as a calculator that rounds the time intervals. It is available only if the Interval Size check box is NOT active. • The calc button enables the calculation of the duration of the graph for Real Time or Elapsed Time. • The clear button clears the duration calculation. • The Day, Hr, Min, and Sec fields allow user to define the duration of time shown on the X axis.

Item	Description
8.	The Reset button resets the data in the dialog box to the original start and end values in the test data.
9.	Shows or hides the legend for the traces on the graph.
10.	Accepts the current values and applies them to the graph, then closes the dialog box.
11.	Closes the dialog box without accepting any changes.

2.2 Common Procedures and Tasks

2.2.1 Real-Time Pressure Test

1. On the computer screen, double-click the LW Report icon to launch the program.
   NOTE: The main LW Report screen appears.
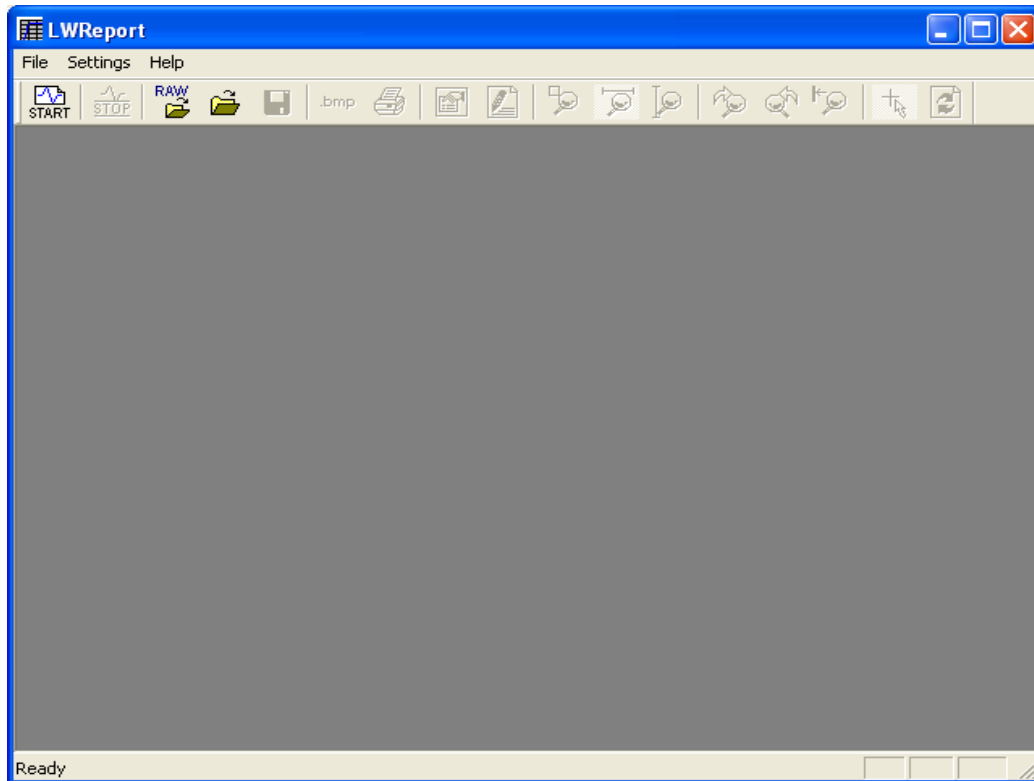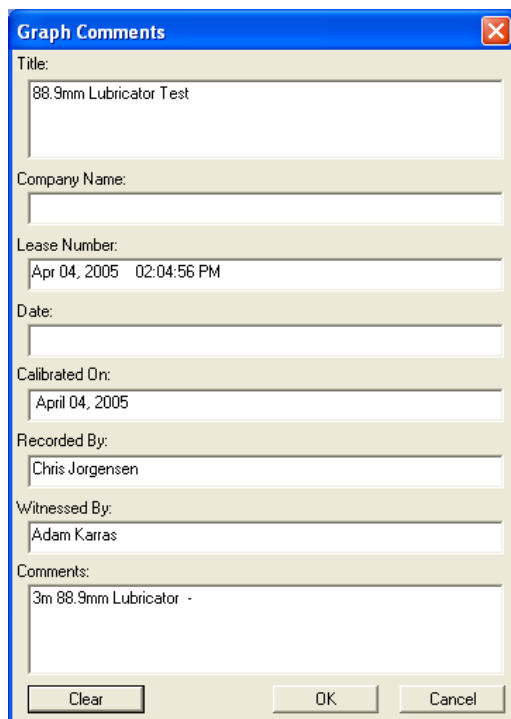
2. Click the START icon.
   NOTE: The program begins logging and one of the following Graph Title and Comments dialog box appears.

This dialog box appears if the Include Job Summary in the Graph Report check box is selected on the Preferences dialog box.

This dialog box appears if the Include Job Summary in the Graph Report check box is NOT selected on the Preferences dialog box, and if the Graph Report Type dialog box is set to Pressure.

This dialog box appears if the Include Job Summary in the Graph Report check box is NOT selected on the Preferences dialog box, and if the Graph Report Type dialog box is set to General.

3. In the Title field, type a title for the current test.

4. In the Job Summary section (if applicable), type the information required for the current test.
   NOTE: You can also add and delete lines, or load a new Graph Title and Comments template (see 2.1.10 Graph Title & Comments on page 10).

5. In the Comments field, type any comments required.
   NOTE: You can add comments to this field later, if required.

6. Click the OK button to accept the content.
   NOTE: This returns you to the main LW Report screen where the Real-Time graph log is visible.

7. When the logging job is complete, click the STOP icon.

8. Select File>Save, or click the Save icon.
    NOTE: The Save Linewise Graph Report dialog box appears.
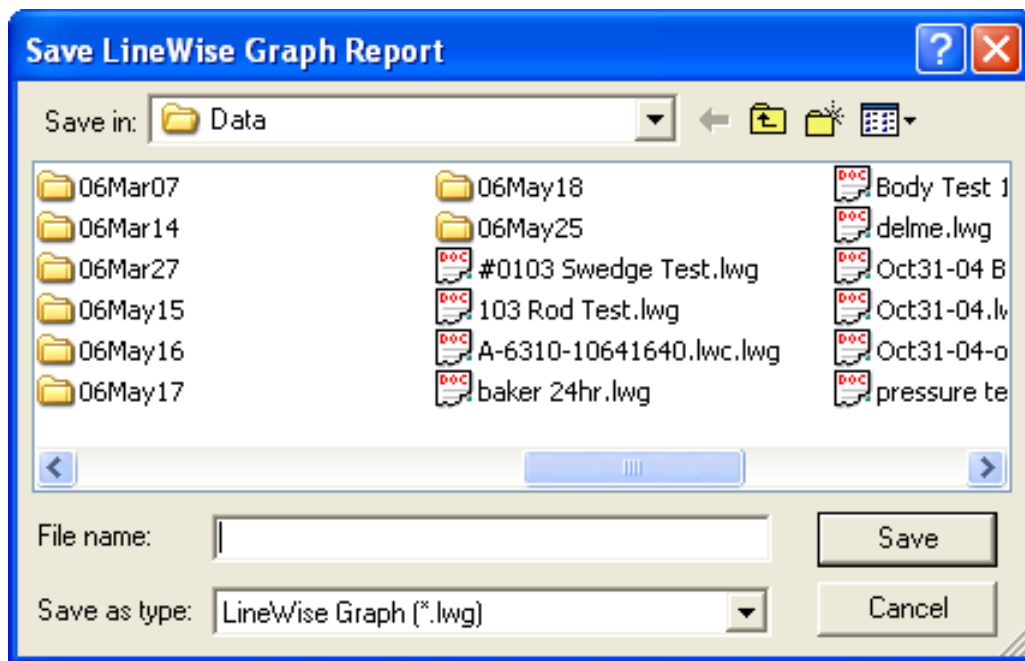
9. Select the folder where you want to save the log file.
    NOTE: If you set a default location in the Preferences dialog box, then the program will automatically prompt you to save the file in that location. If you did not set a default location, then the program will prompt you to save the file in the same folder the previous graph was saved.

Tips for Saving Files

- The default location for saving files is:
    C:\Program Files\Linewise\Data
- To make log files easier to find, organize them into folders within the Linewise/Data folder. Name the folders logically. For example, you could use the year/month, customer name, well ID, or job number. Choose a folder naming convention that will work best for your projects.
- To create a new folder, click the Create New Folder icon on the Save dialog box. A new folder appears with the name New Folder. Type a new name for the folder.
- To move up one folder level, click the Up On Level icon on the Save dialog box.
- To rename a folder, click on the folder name, press the F2 key, then type a new name. You can also right-click and select Rename from the menu.
- To save a log file to a specific folder, double-click on the folder name to open the folder, type a name for the log file in the File Name field, then click the Save button.

2.2.2 Adjust the Graph Axis Properties

The Graph Axis Properties dialog box lets you modify the appearance of the graph report during real-time logging (limited), or afterward. See also "2.1.11 Graph Axis Properties Dialog Box" on page 12.

2.2.2.1 Access the Graph Axis Properties Dialog Box

There are three ways to access the Graph Axis Properties dialog box:
- Double-click on the main graph view.
- Click the Graph's Axis Properties icon in the toolbar.
- From the Format menu, select Axis Properties.

Graph Axis Properties

Time | Left Side | Right Side

Y Scale

☐ Label : [   ] ☑ Include Units In Label Auto Scale

Auto

🔍find Min : [-2000.00] ⬇ ☑ # of Intervals : [10] ⬇

🔍find Max : [8000.00] ⬇ ☑ Interval Size : [1000.00] ⬇

Traces

Pressure ▼ 🌐 psi ▼ ▬▬▬ ▼ 🟥 ▼

None ▼ ... ▼ ▬▬▬ ▼ ⬛ ▼

Reset ☐ Show Legend OK Cancel

Graph Axis Properties

Time | Left Side | Right Side

○ Real Time ⦿ Elapsed Time # of Intervals : [7] Auto 🕐 Scale

Interval Size

☐ [2.06666] [minutes ▼]

From | To

🔍find 🔍find

[0] [14.466666]

Duration

✗clear ✓calc.

Day	Hr	Min	Sec
[ ]	[ ]	[16]	[ ]

Display Time In : [minutes ▼]

Reset ☐ Show Legend OK Cancel

2.2.2.2 Use AutoScale for Data on the Left Y Axis

This procedure assumes that a graph report is open. When you use the AutoScale function on the data on the left Y axis, the program will round the Min and Max values and determine what number of intervals and interval size will best display the trace data. LW Report uses the Min and Max values of the first trace to determine the range of data shown by the graph report. If there are other traces on the graph that you want to appear, you might have to set the Min and Max values manually to ensure the graph shows all traces in full.

> NOTE: At this time, AutoScale works only on the left Y axis. On the right Y axis, set the scale manually.

1. Ensure the Auto # of Intervals check box is selected.

2. Ensure the Auto Interval Size check box is selected.

3. Click the AutoScale button.

4. Click the OK button.

2.2.2.3 Manually Scale Data on the Left Y Axis

This procedure assumes that a graph report is open.

1. Manually type a value in the Min field.

2. Manually type a value in the Max field.

3. To manually control the number of intervals that appear, deselect the Auto # of Intervals check box, then type the number of intervals you want in the field.

4. To manually control the value of the interval, deselect the Interval Size check box, then type the interval value in the field.

5. Click the OK button to apply the changes to the graph report.

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2.2.2.4 Use AutoScale for Data on the X Axis

The AutoScale feature on the Time tab of the Axis Properties dialog box is available only if the Interval Size check box is NOT selected. This procedure assumes that a graph report is open.

1. Click on either the Real Time or the Elapsed Time radio button as required.

2. Ensure that the Interval Size check box is NOT selected.

3. Click the AutoScale button.

4. Click the OK button to accept the AutoScale changes and close the dialog box.

X Axis BEFORE AutoScale is Applied.
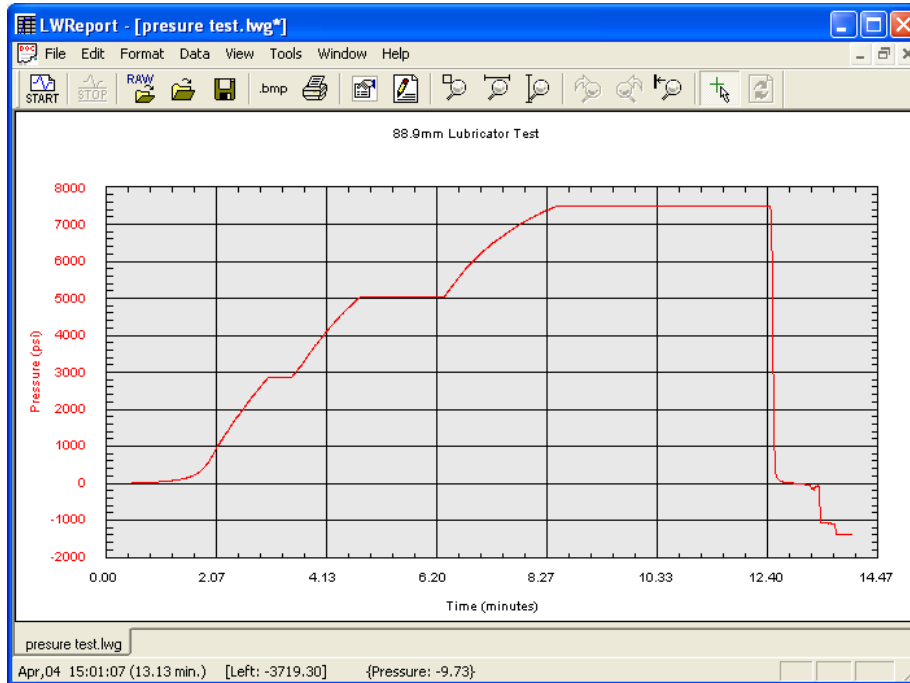
X Axis AFTER AutoScale is Applied.
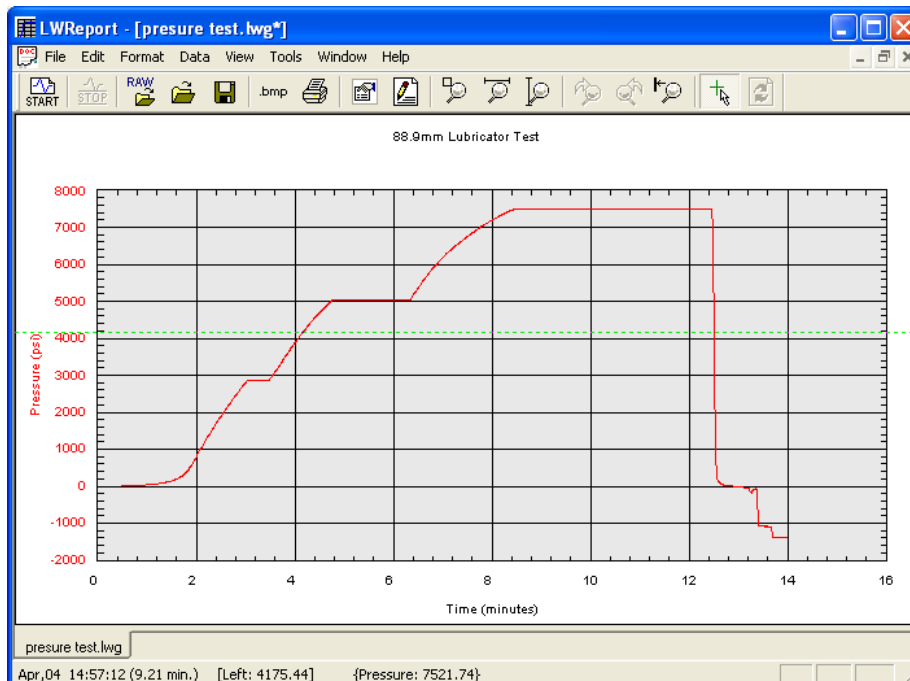
2.2.2.5 Manually Scale Data on the X Axis

This procedure assumes that a graph report is open.

1. Manually set the Start Time that you want to appear on the graph report.
   NOTE: For Real Time reports, you currently cannot manually change this value.

2. Manually set the Stop time that you want to appear on the graph report.
   NOTE: For Real Time reports, you currently cannot manually change this value.
   NOTE: If the Interval Size check box is selected, you will not be able to manually set the stop time or date.

3. To manually control the number of intervals, type a value in the # of Intervals field.

4. To manually control the size of the intervals, select the Interval Size check box and type the interval value that you want in the field.

5. Click the OK button to apply the changes to the graph report.

2.2.3 Graph Zoom Controls

Zoom controls allow you to zoom in on a portion of a graph report either during real-time logging or afterward. While you can access the Zoom controls from the View menu (see 2.1.5 View Menu on page 5), you can also use the following icons on the toolbar.

2.2.3.1 Zoom Both Axis

This zoom control allows you to draw a square around the area on the graph that you want to view more closely.

1. Click the icon in the toolbar.

2. Position the cursor above and to the left of the area where you want to zoom.

3. Click and hold the left mouse button.

4. Drag the cursor down and to the right to create a box around the area you want to view.

5. Release the mouse button.

When you release the mouse button, the program refreshes the graph to show the section you selected.

2.2.3.2 Zoom X Axis

This zoom control allows you to zoom in on a section of the X axis to view a specific time interval.

1. Click the icon in the toolbar.

2. Position the cursor at the first time point on the X axis.

3. Click and hold the left mouse button.

4. Drag the cursor to the second time point on the X axis.

5. Release the mouse button.

When you release the mouse button, the program refreshes the graph to show the section you selected.

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2.2.3.3 Zoom Y Axis

This zoom control allows you to zoom in on a section of the Y axis to view the graph between selected min and max points.

1. Click the icon in the toolbar.

2. Position the cursor at the min value point on the Y axis.

3. Click and hold the left mouse button.

4. Drag the cursor to the max value point on the Y axis.

5. Release the mouse button.

When you release the mouse button, the program refreshes the graph to show the section you selected.

2.2.3.4 Redo Zoom

The program remembers all the zoom views that you create for an open graph in the order in which you create them. This zoom control allows you to move forward to the next zoom view in the sequence.

2.2.3.5 Undo Zoom

The program remembers all the zoom views that you create for an open graph in the order in which you create them. This zoom control allows you to move backwards from the current zoom view in the sequence.

2.2.3.6 Reset Zoom

The program remembers all the zoom views that you create for an active graph in the order in which you create them. This zoom control allows you to return to the original view that existed when you opened the graph.

2.2.4 Refresh Data (Auto)

Use the Refresh Data (Auto) icon to refresh the screen. It will auto scale if the auto scale is setup as the default in the Report Preferences dialog box.

When you zoom in on the graph while the graph is collecting data in real time it will stop auto scaling. To restart the auto scaling click the Refresh Data (Auto) icon.

3.0   Pressure Indicator

3.1 Pressure Indicator Interface

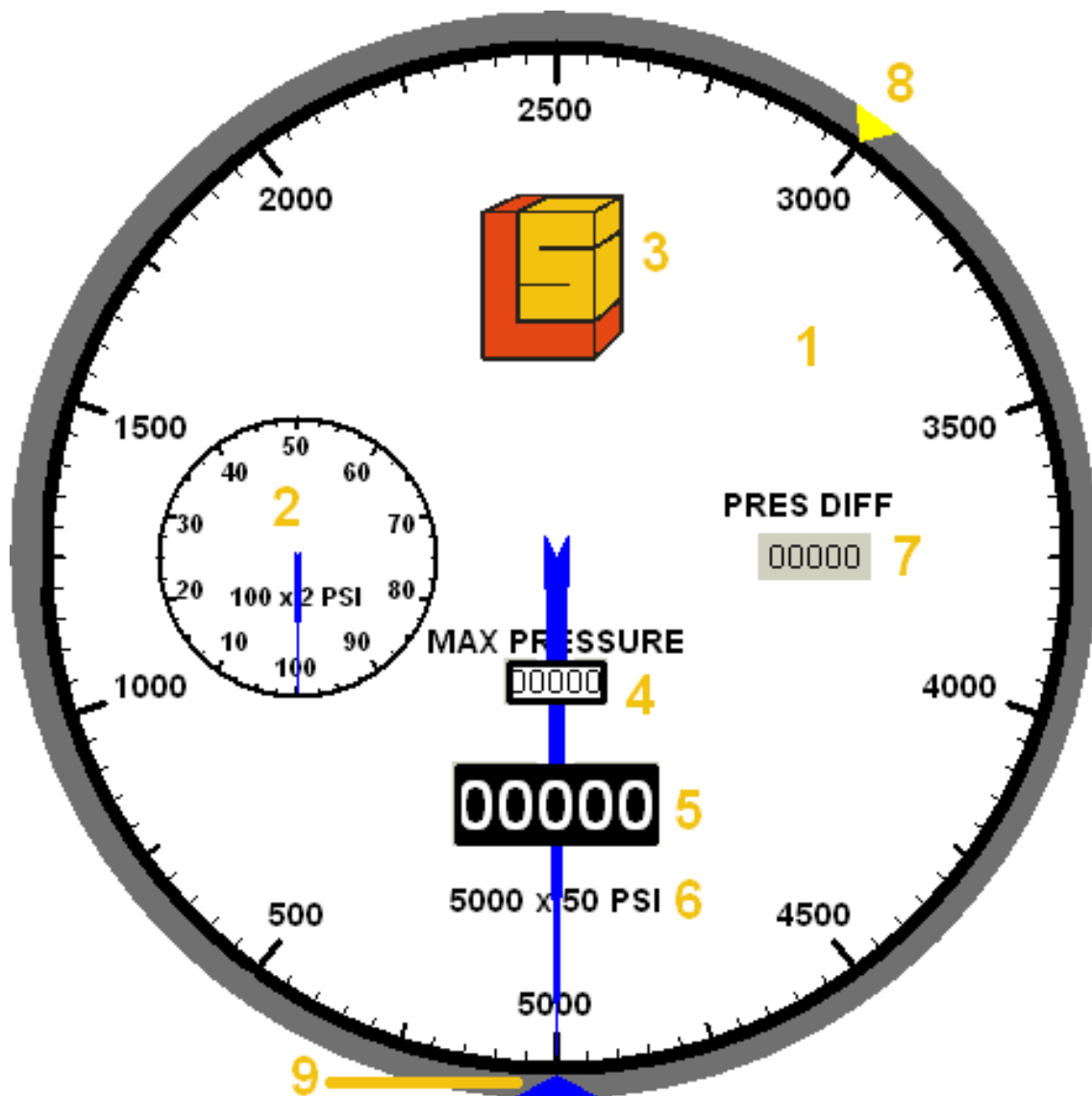Figure 3-1: Pressure Indicator Main Interface Elements

Table 3-1: Primary Gauge Interface Element Descriptions

Item	Label	Description
1.	Primary Gauge	The primary gauge is the main interface that users see. It displays the current pressure data. The program comes with the following pre-defined gauges: 2,000 PSI, 5,000 PSI, 10,000 PSI, and 20,000 PSI. The 2,000 PSI gauge appears upon initial program use, but users can select, edit, add, and delete primary gauges as required (see "3.7 Work with Primary Gauges" on page 37).
2.	Sub-Gauge	The sub-gauge that appears in the left-hand side of the primary gauge is about 1/8th the size of the primary gauge. It is usually used to show smaller units of measurement than the primary gauge (see "3.8 Work with the Sub-Gauge" on page 47).
3.	Company Logo	Users can replace the default logo with their own company logo (see "3.6.1 Select a New Logo Image" on page 36).
4.	Max Pressure	The maximum pressure, labeled MAX PRESSURE, appears in a white odometer style box with a black border. This is the largest pressure value recorded by the Pressure Indicator program. The maximum pressure value can be reset to zero by selecting Reset Maximum from the primary gauge menu (see "3.1.1 Primary Gauge Menu" on page 27).
5.	Current Pressure	The current pressure value appears in a black odometer-style box in the bottom center of the primary gauge.
6.	Scale Factor	The scale factor appears in the format X*Y, where X is the upper limit of the gauge and Y is the incremental value for each tick mark drawn on the gauge. The gauge units appear directly after the scale factor. On installation of the program, the units default to pounds per square inch (PSI), but can be changed to kiloPascal (kPa), Barometric (Bar), or megaPascal (mPa).
7.	Pressure Differential	The PRES DIFF odometer-style box on the right-hand side of the primary gauge displays the difference between the current pressure detected and a marker set by the user (see "3.4 Set the Pressure Differential" on page 35).
8.	Alarm Marker	Users can set an alarm marker on the primary gauge that will trigger an alarm sound when the current pressure reaches the alarm value. When the maximum pressure alarm is active, a yellow triangle appears on the outside edge of the primary gauge at the set alarm value (see "3.3 Set the Maximum Pressure Alarm" on page 34).
9.	Maximum Marker	Provides a graphical reference of the maximum pressure recorded by the Pressure Indicator program. The marker is a blue triangle that appears along the perimeter of the primary gauge.

3.1.1 Primary Gauge Menu

Right-click on the primary gauge to access the primary gauge menu.
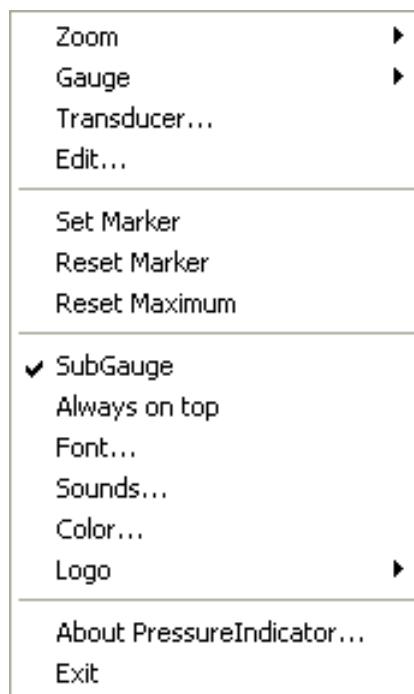
Figure 3-2: Primary Gauge Menu Items

Table 3-2: Primary Gauge Menu Item Descriptions

Menu Item	Description
Zoom	Allows the user to change the size of the primary gauge on the screen. Keyboard shortcuts appear in the sub menu. • 100% set the primary gauge size to X pixels * X pixels. • Zoom Out makes the primary gauge appear smaller. • Zoom In makes the primary gauge appear larger.
Gauge	Allows the user to access the Gauge sub menu. • Edit allows the user to access the primary gauge properties dialog box. • The sub menu shows which gauge is currently selected, and which gauges are available.
Transducer	Allows the user to access the Transducer Selection dialog box. In this dialog box, the user can do the following: • Select the required transducer type. • Select a specific transducer definition • Define a new transducer type. • Calibrate the transducer • Set advanced transducer properties (See "3.2 Calibrate the Pressure Indicator" on page 28 for more information about the functions available from this dialog box)
Edit	Allows the user to access the primary gauge Properties dialog box.
Set Marker	Allows the user to set the pressure marker to the current pressure.
Reset Marker	Allows the user to reset the PRESSURE DIFF field on the primary gauge to zero.

Table 3-2: Primary Gauge Menu Item Descriptions

| Menu Item	Description
Reset Maximum	Allows the user to reset the MAX PRESSURE field on the primary gauge to zero
Sub-Gauge	Allows the user to show or hide the sub-gauge that appears on the left-hand side of the primary gauge.
Always on Top	Allows the user to set the primary gauge so that it appears in front of all other programs running at the same time.
Font	Allows the user to control the font size, style, weight and colour for the primary gauge and sub-gauge.
Sounds	Allows the user to set sound settings. Part of the Microsoft Windows operating system.
Colour	Allows the user to set the background colour for the primary gauge.
Logo	Allows the user to scale the existing logo or select a new one.
About Pressure Indicator	Displays the program copyright and version information.
Exit	Allows the user to exit the program.

3.2 Calibrate the Pressure Indicator

A two-point calibration is used to calibrate the Pressure Indicator. The following parameters need to be defined.

3.2.1 Select the Transducer Type

1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. From the primary gauge menu, select Transducer.
   NOTE: The transducer Selection dialog box appears.
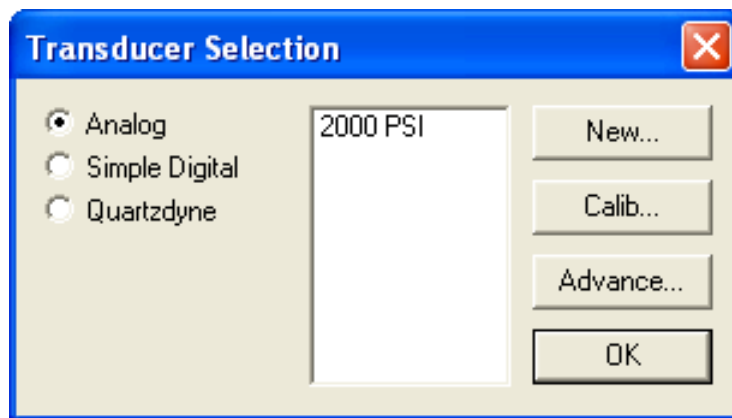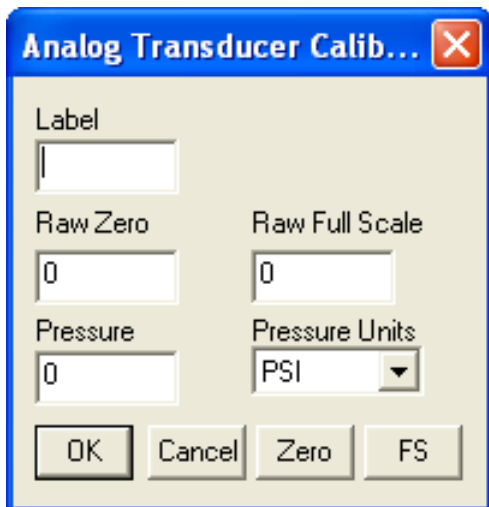
3. Select an existing connection type, or define a new connection type (see "3.2.2 Define a New Transducer" on page 29).
   NOTE: The choices are Analog, Simple Digital, or Quartzdyne.

3.2.2 Define a New Transducer
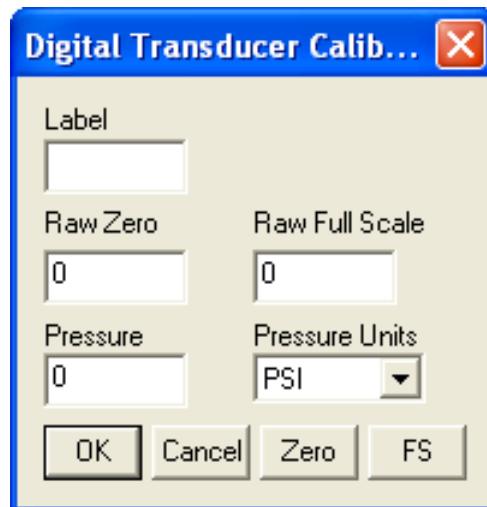
3.2.2.1 Analog or Simple Digital Transducers

1. On the Transducer Selection dialog box, click the New button.
   NOTE: The Transducer Calib dialog box appears.

2. In the Label field, type a name for the new calibration.
   NOTE: This name will appear in the Transducer sub menu

3. Continue to the calibration procedures (see "3.2.3 Calibrate the Transducer (Analog and Digital)" on page 30).

CAUTION!
The transducer must be calibrated to ensure correct measurements.

3.2.2.2 Quartzdyne Transducers

If you are using Quartzdyne transducers, all configurations are done from a file specific to that transducer.

1. On the Transducer Selection dialog box, click the Folder button.
   NOTE: The Browse for Folder dialog box appears.
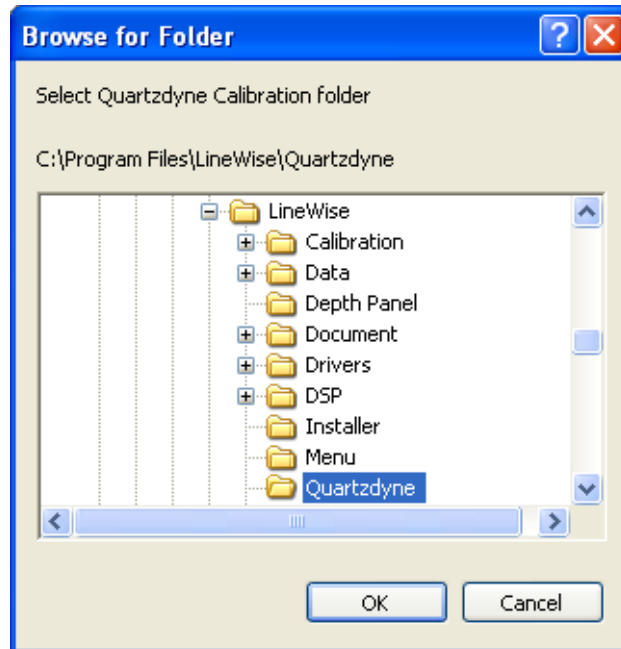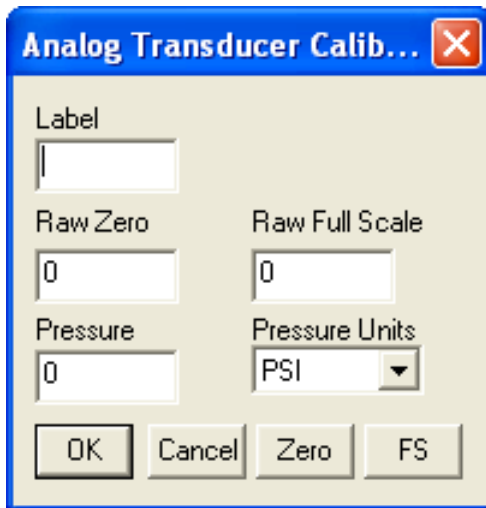
2. Select the required configuration file.

3. Click the OK button to accept the selection and return to the Transducer Selection dialog box.

3.2.3 Calibrate the Transducer (Analog and Digital)

3.2.3.1 How to Perform a Zero Calibration

1. Ensure that no pressure is being applied to the transducer.

2. On the Transducer Selection dialog box, click the Calib. button.
   NOTE: The Transducer Calib. dialog box appears.

3. Click the Zero button.
   NOTE: A progress dialog box will appear for 10 seconds.

NOTE: The program averages the samples taken over that period of time. The results appear in the Raw Zero field in the Transducer Calib. dialog box. The number reads volts for an analog calibration and Hertz (frequency) for a digital calibration.
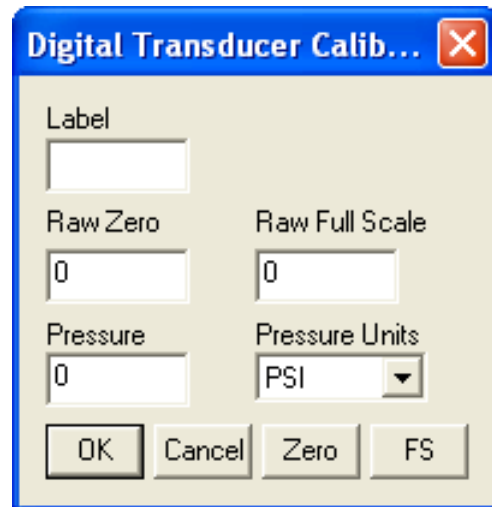
3.2.3.2 How to Perform a Full-Scale Calibration

1. Ensure the maximum pressure is being applied to the transducer.

2. On the Transducer Selection dialog box, click the Calib. button.
    NOTE: The Transducer Calib. dialog box appears.

3. Click the F5 button.
    NOTE: A progress dialog box will appear again for 10 seconds.

NOTE: The program averages the samples taken over that period of time. The
results appear in the Raw Full Scale field in the Transducer Calib. dialog box.

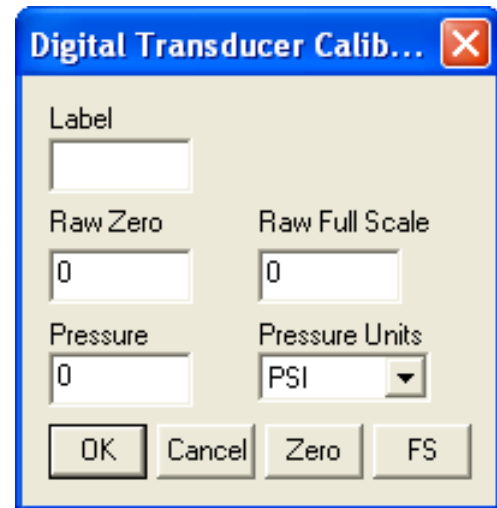4. In the Pressure Units drop-down list, select the units used for maximum pressure in
    the full-scale calibration.

5. In the Pressure field, enter the maximum pressure value obtained in the full-scale
    calibration.
    NOTE: This is the value that appears in the Raw Full Scale field.

    NOTE: This is the maximum *transducer* pressure, not the maximum *line* pressure.
    For example: if a Martin Decker gauge is used to calibrate the Pressure Indicator,
    multiply the Martin Decker's maximum pressure by the constant 1.414. Since the
    sheave angle is at 90 degrees, the load cell pressure is greater than the
    line pressure read by the Martin Decker gauge. Set the maximum
    pressure to 2828 PSI if the Martin Decker Gauge is 2000 PSI.
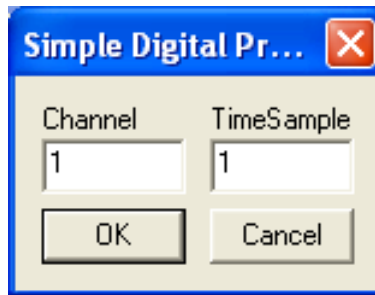
    NOTE: The units selected in the Pressure Units fields are not necessarily the
    same units displayed on the Pressure Indicator (see "3.7.5 Define the Primary
    Gauge Units" on page 43).

3.2.4 Set the Advanced Transducer Features
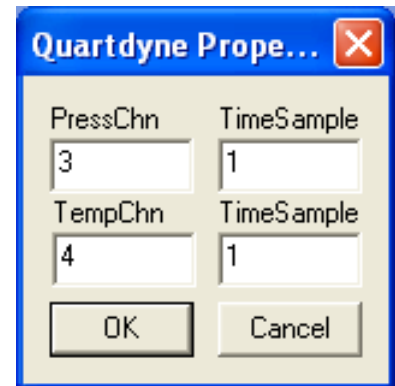
1. On the Transducer Selection dialog box, click the Advance button.
   NOTE: Different dialog boxes will appear depending on which transducer is chosen.

Analog Properties

Channel Damping
1   4

OK   Cancel

Simple Digital Pr...

Channel TimeSample
1   1

OK   Cancel

Quartdyne Prope...

PressChn TimeSample
3   1

TempChn   TimeSample
4   1

OK   Cancel

2. Set the advanced property values for the transducer.

    a. Analog:
    • Enter the channel number.
    • Enter the number of data samples to time average in the Damping box. The pressure indicator samples at 20 times per second (20 Hz). Setting the damping factor to 10 creates a time sample of 0.5 seconds. Divide the damping factor by the sample rate to get the time sample.

    b. Digital:
    • Enter the channel number.
    • Select the time sample.

    c. Quartzdyne: The following information is supplied by the file selected in "3.2.2.2 Quartzdyne Transducers" on page 29.
    • PressChn
    • TimeSample
    • TempChn
    • TimeSample

3. Click the OK button to accept the changes.

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3.3 Set the Maximum Pressure Alarm

When the maximum pressure alarm is active, a yellow triangle appears on the outside edge of the primary gauge at the set alarm value. An alarm will sound when the current pressure reaches the alarm value.

1. Right-click on the primary gauge to access the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, because this will bring up the sub-gauge menu.

2. On the primary gauge menu, select Gauge, then select edit.
   NOTE: The Available Gauges dialog box appears.

3. Select the gauge for which you want to set the alarm.

4. Click the Edit button.
   NOTE: The Properties dialog box appears for the selected gauge.
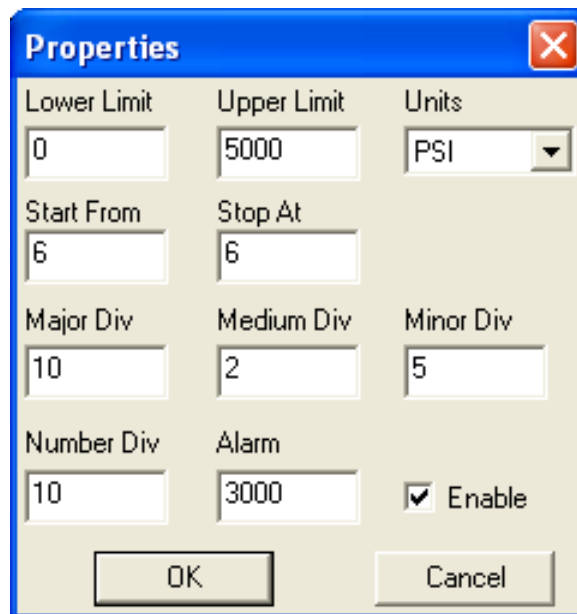
5. In the Alarm field, type the pressure value for the alarm.

6. Click the Enable check box to activate the alarm.

7. Click OK to accept the changes and return to the Available Gauges dialog box.

> ⚠ **CAUTION!**
> **You have to set and enable the alarms for each gauge definition separately. Alarms are disabled by default.**

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3.4 Set the Pressure Differential

A pressure difference can be automatically calculated by setting the pressure marker. The pressure marker is the pressure that is remembered by the Pressure Indicator when the marker is set. The difference between the current pressure and the pressure marker is then displayed in the PRES DIFF field on the primary gauge.

3.4.1 Method 1

1. Press the SPACEBAR on the keyboard to set the pressure marker to the current pressure.

2. Press the SPACEBAR again to change the pressure marker. The previous marker is not saved.

3.4.2 Method 2

1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. From the primary gauge menu, select Set Marker

To remove the pressure difference from the primary gauge display, select Reset Marker from the primary gauge menu.

3.5 Change the Display Fonts

The Fonts dialog box changes all the fonts that appear on the gauge except for the current pressure and maximum pressure fonts, which appear in odometer-style boxes.

1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. From the primary gauge menu, select Fonts.
    NOTE: The Font dialog box appears.

3. Modify the font family, font styles, or font colours as desired.

4. Click on OK to accept changes.

3.6 Change the Logo Image

3.6.1 Add a New Logo Image

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. On the primary gauge menu, select Logo, and then click Select.
   NOTE: The Open dialog box appears.
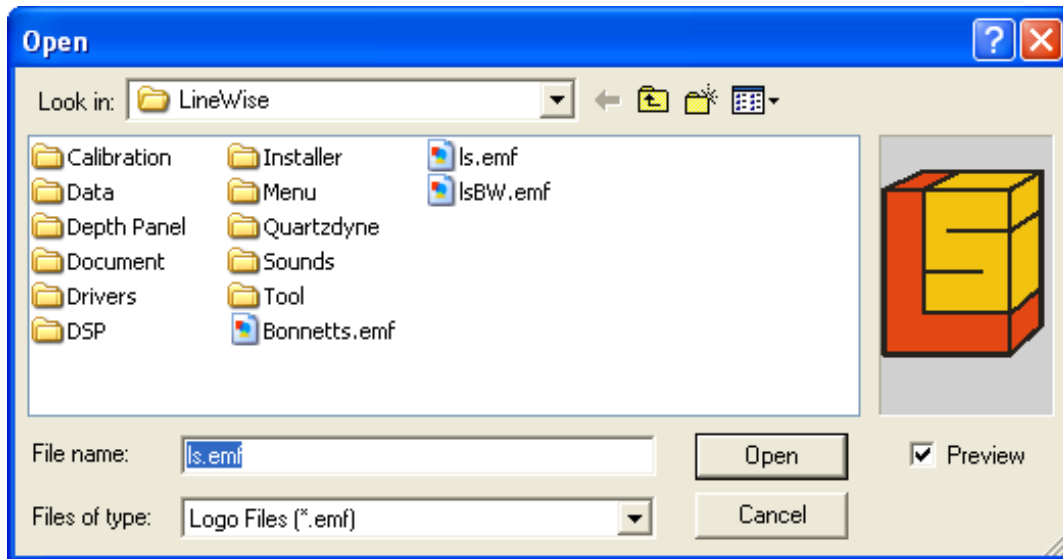
3. Choose the logo file required.
   NOTE: The file format must be the graphics format *enhanced meta-file (*.emf)*

3.6.2 Change the Size of the Existing Logo Image

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. On the primary gauge menu, select Logo, and then click Scale.
   NOTE: the Logo Scale dialog box appears.

3. Adjust the size of the logo as required.
   NOTE: The default size is set to 0.5.

3.7 Work with Primary Gauges

Use the following procedures to select, add, delete, and modify gauges.

3.7.1 Select an Existing Primary Gauge Definition

3.7.1.1 Method 1

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

```
Zoom                    ▶
Gauge                   ▶    Edit...
Transducer...
Edit...                      2000 PSI
                           ✔ 5000 PSI
Set Marker                   10000 PSI
Reset Marker                 20000 PSI
Reset Maximum

✔ SubGauge
Always on top
Font...
Sounds...
Color...
Logo                    ▶

About PressureIndicator...
Exit
```
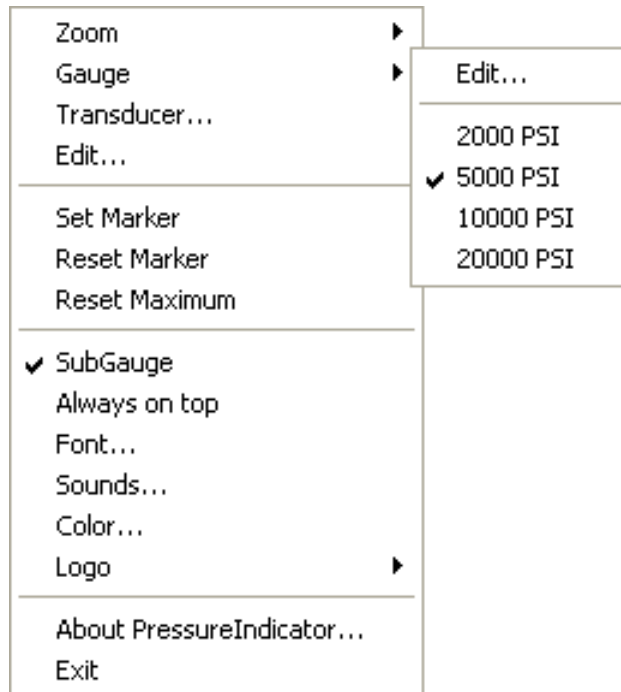
3. Select the required gauge definition from the Gauge sub menu.
   NOTE: The primary gauge changes to the selected gauge definition.

3.7.1.2 Method 2

1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
    NOTE: The Gauge sub menu appears.

3. Select Edit from the sub menu.
    NOTE: The Available Gauges dialog box appears.

4. In the Available Gauges dialog box, select a gauge definition from the list box.

5. Click the Close button to exit the Available Gauges dialog box.
    NOTE: A dialog box appears that asks "Do you want to make X the current gauge?"

6. Click the Yes button.
    NOTE: The selected gauge appears and a check mark appears beside the gauge name in the Gauge sub menu.

3.7.2 Add a Primary Gauge Definition

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

3. Select Edit from the sub menu.
   NOTE: The Available Gauges dialog box appears.

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4. In the Available Gauges dialog box, click the Add button.
     NOTE: The primary gauge Properties dialog box appears.

5. Define the gauge parameters as required (see "3.7.5 Define the Primary Gauge Units" on page 43).
     NOTE: The value that you enter into the Upper Limit field will become the name of the new gauge. The selected unit will appear beside the name.
6. Click the OK button to accept the new primary gauge definition.

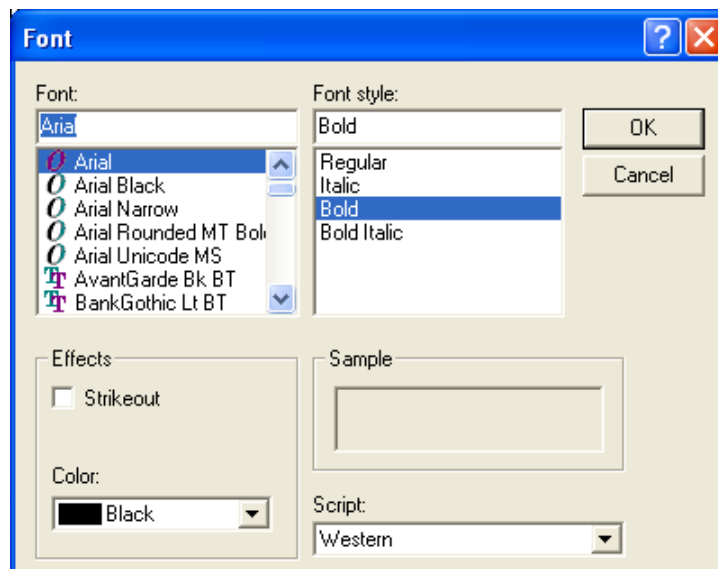### 3.7.3 Delete a Primary Gauge Definition

1. Right-click on the primary gauge to display the primary gauge menu.
       NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
       NOTE: The Gauge sub menu appears.
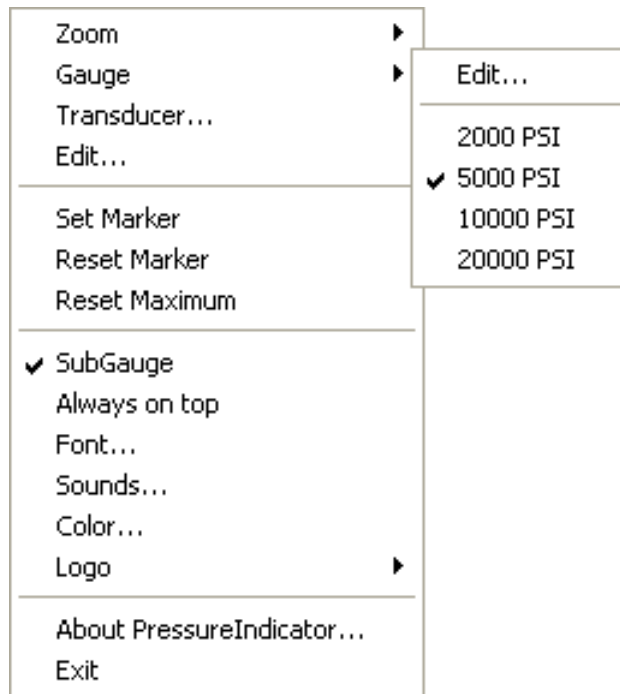
3. Select Edit from the Gauge sub menu.
       NOTE: The Available Gauges dialog box appears.

4. In the Available Gauges dialog box, select a gauge name in the list box.

5. Press the DELETE key on the keyboard.
       NOTE: A dialog box appears that asks "Do you want to delete the gauge?"

6. Click the Yes button to delete the gauge definition.
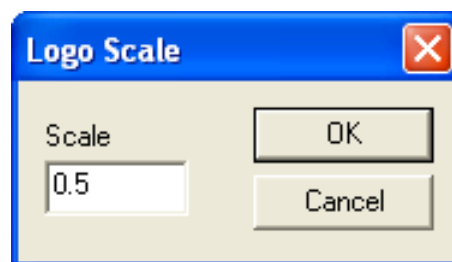
3.7.4 Edit a Primary Gauge Definition

1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
    NOTE: The Gauge sub menu appears.

Zoom	▶	
Gauge	▶	Edit...
Transducer...		
Edit...		2000 PSI
		✔ 5000 PSI
Set Marker		10000 PSI
Reset Marker		20000 PSI
Reset Maximum		
✔ SubGauge		
Always on top		
Font...		
Sounds...		
Color...		
Logo	▶	
About PressureIndicator...		
Exit		

3. Select Edit from the Gauge sub menu.
    NOTE: The Available Gauges dialog box appears.

Available Gauges

2000 PSI
5000 PSI
10000 PSI
20000 PSI

Add...
Edit...
Close

4. In the Available Gauges dialog box, select a gauge name in the list box.

5. Click the Edit button.
    NOTE: The primary gauge Properties dialog box appears.

6. Change the gauge properties as required (see "3.7.5 Define the Primary Gauge Units" on page 43).

7. Click the OK button to accept the changes.

3.7.5 Define the Primary Gauge Units

The position of numbers, position of tick marks, scale, units, and alarms can be changed in the gauges Properties dialog box.
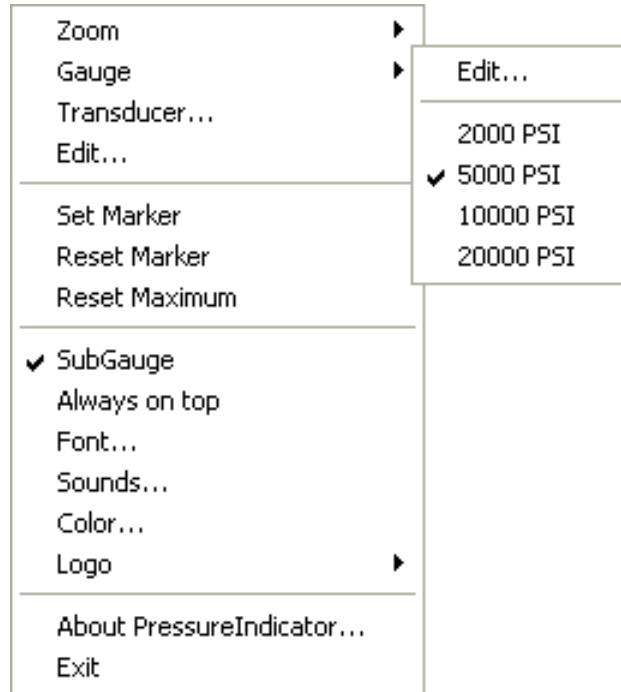
1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
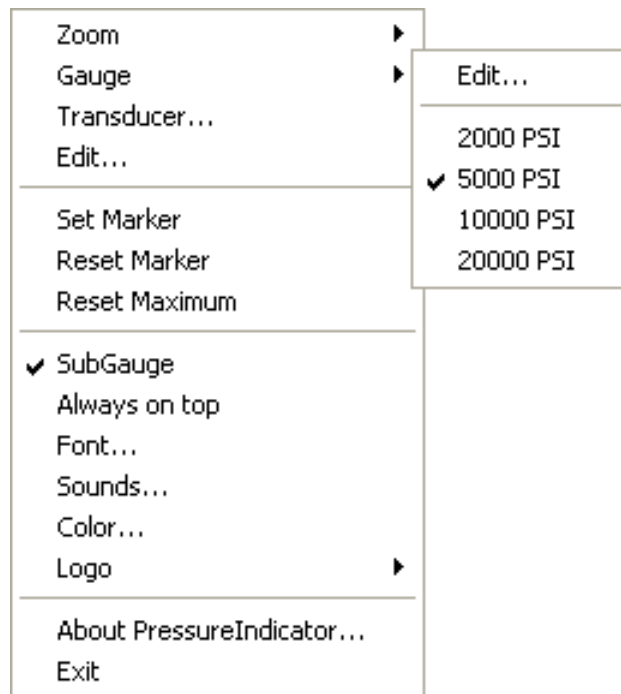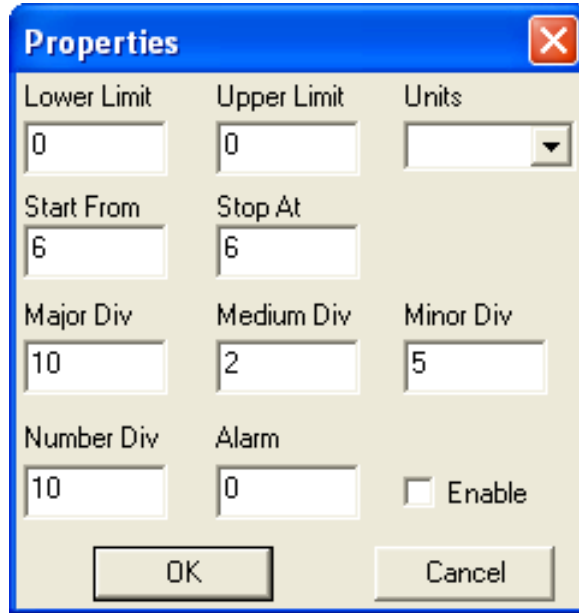   NOTE: The Gauge sub menu appears.

3. Select Edit from the Gauge sub menu.
    NOTE: The Available Gauges dialog box appears.

Available Gauges

- 2000 PSI
- **5000 PSI**
- 10000 PSI
- 20000 PSI

Add...

Edit...

Close
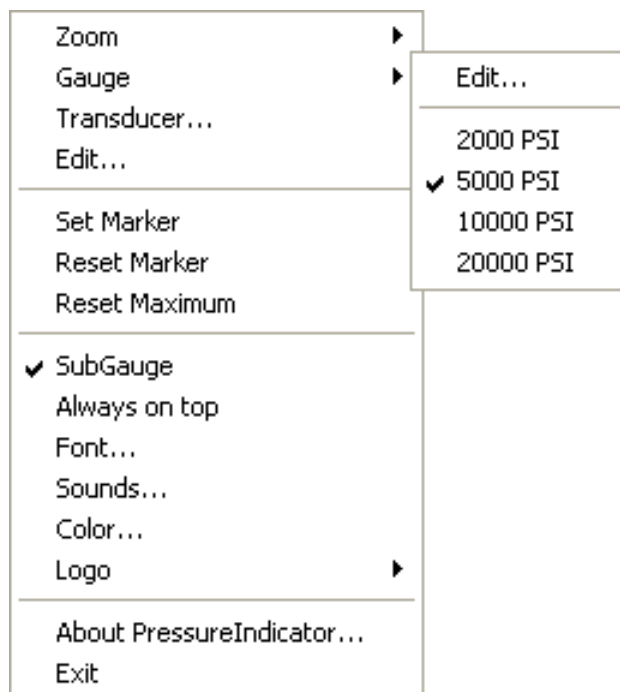
4. In the Available Gauges dialog box, do ONE of the following:
   - Select an existing gauge, then click the Edit button
   - Click the Add button to create a new primary gauge definition.
   NOTE: The Properties dialog box appears.

5. In the Units field, select the units to appear in the gauge. Options are:
   - Pounds force (PSI)
   - kiloPascal (kPa)
   - Barometric (Bar)
   - megaPascal (MPa)

Properties

Lower Limit	Upper Limit	Units
0	5000	PSI

PSI
kPa
Bar
Mpa

Start From	Stop At	
6	6	

Major Div	Medium Div	Minor Div
10	2	5

Number Div	Alarm	
10		☐ Enable

OK   Cancel

6. In the Lower Limit and Upper Limit fields, type the minimum and maximum pressure values for the gauge.

7. Enter values in the Start From and Stop At fields to set the orientation for the gauge.
    NOTE: The Start From field and Stop At field describe where on the gauges display the Lower Limit value starts and the Upper Limit value stops. The values are any number from 0 to 12, and they represent the numbers on the face of a clock. For example, 1 represents the one o'clock position, 3 represents the three o'clock position, and 9 represents the nine o'clock position. Both 0 and 12 represent the twelve o'clock position. If the position wanted is between the five and the six o'clock position, enter the value 5.5. In between the twelve o'clock and the one o'clock position enter a value of 0.5. The defaults are set to 6 o'clock.

8. In the Major Div. field, enter the total number of major divisions that you want to appear on the gauge.
   NOTE: The major divisions are indicated by the large marks around the perimeter of the gauge. The default value is 10.

9. In the Medium Div. field, enter the number of medium divisions that you want to appear on the gauge for every major division on the gauge.
   NOTE: The medium divisions are indicated by the medium-sized marks around the perimeter of the gauge. The default value is 2.

10. In the Minor Div field, enter the number of minor divisions that you want to appear on the gauge for every medium division on the gauge.
    NOTE: The minor divisions are indicated by the small marks around the perimeter of the gauge. The default value is 5.

11. In the Number div box, enter how many number values you want to appear on the gauge.
    NOTE: The default value is 10. Normally this value will be the same as the Major Div setting.

12. Click the OK button to accept the definition.

3.7.6 Change the Size of the Primary Gauge

3.7.6.1 Method 1

1. Move the mouse pointer to the outer edge of the primary gauge.

2. When the mouse pointer changes to the resize pointer, click and hold the left mouse button down.
   - Drag the mouse inwards to make the gauge smaller.
   - Drag the mouse outwards to make the gauge larger.

3. Release the left mouse button to set the gauge to the new size.

3.7.6.2 Method 2

1. Right-click on the primary gauge to display the primary gauge menu.
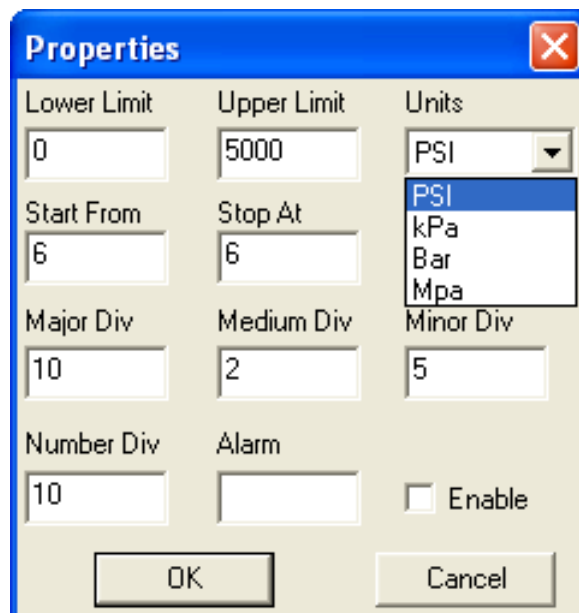   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Zoom from the primary gauge sub menu.
   NOTE: The Zoom sub menu appears.
   - Select 100% to make the gauge half the size of the screen.
   - Select Zoom Out to make the gauge smaller.
   - Select Zoom In to make the gauge larger.
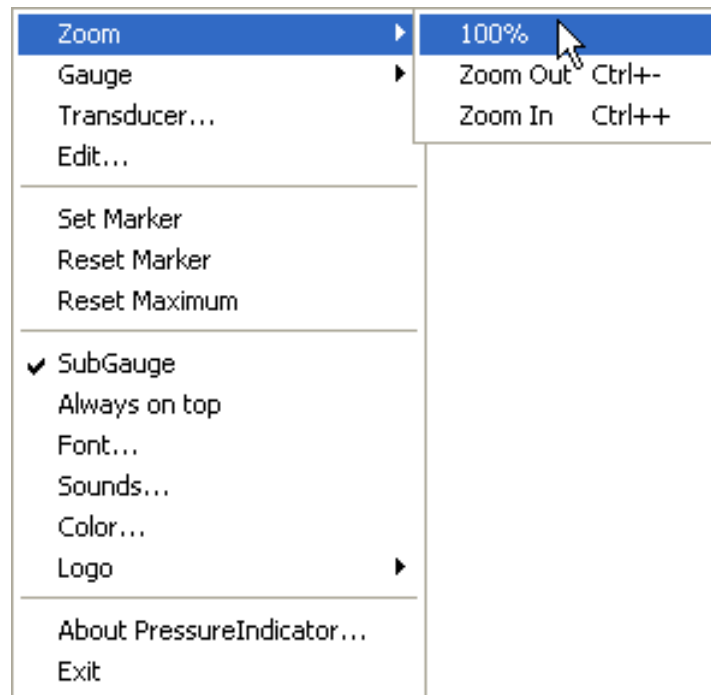
3.8 Work with the Sub-Gauge

The sub-gauge that appears in the left-hand side of the primary gauge is about 1/8th the size of the primary gauge. Only one sub-gauge can be defined at a time, so any previous sub-gauge settings are overwritten.

3.8.1 Define the Sub-Gauge Units

1. Right-click on the sub-gauge to display the sub-gauge menu.

Edit...

2. Select Edit.
   NOTE: The sub-gauge Properties dialog box appears:

3. Define the sub-gauge units in the same manor as the primary gauge (see "3.7.5 Define the Primary Gauge Units" on page 43).
   NOTE: Only one sub-gauge can be defined at a time, so any previous sub-gauge settings are lost.

4. Click OK to accept the changes.
   NOTE: To hide the sub-gauge, right-click on the primary gauge and click sub-gauge.

3.8.2 Show or Hide the Sub-Gauge

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right click on the sub-gauge, this will bring up the sub-gauge menu.

2. O the primary gauge menu, select SubGauge.
   NOTE: A check mark beside SubGauge indicates a "show" condition.

4.0 Weight Indicator

4.1 Weight Indicator Interface

Figure 4-1: Weight Indicator Main Interface Elements
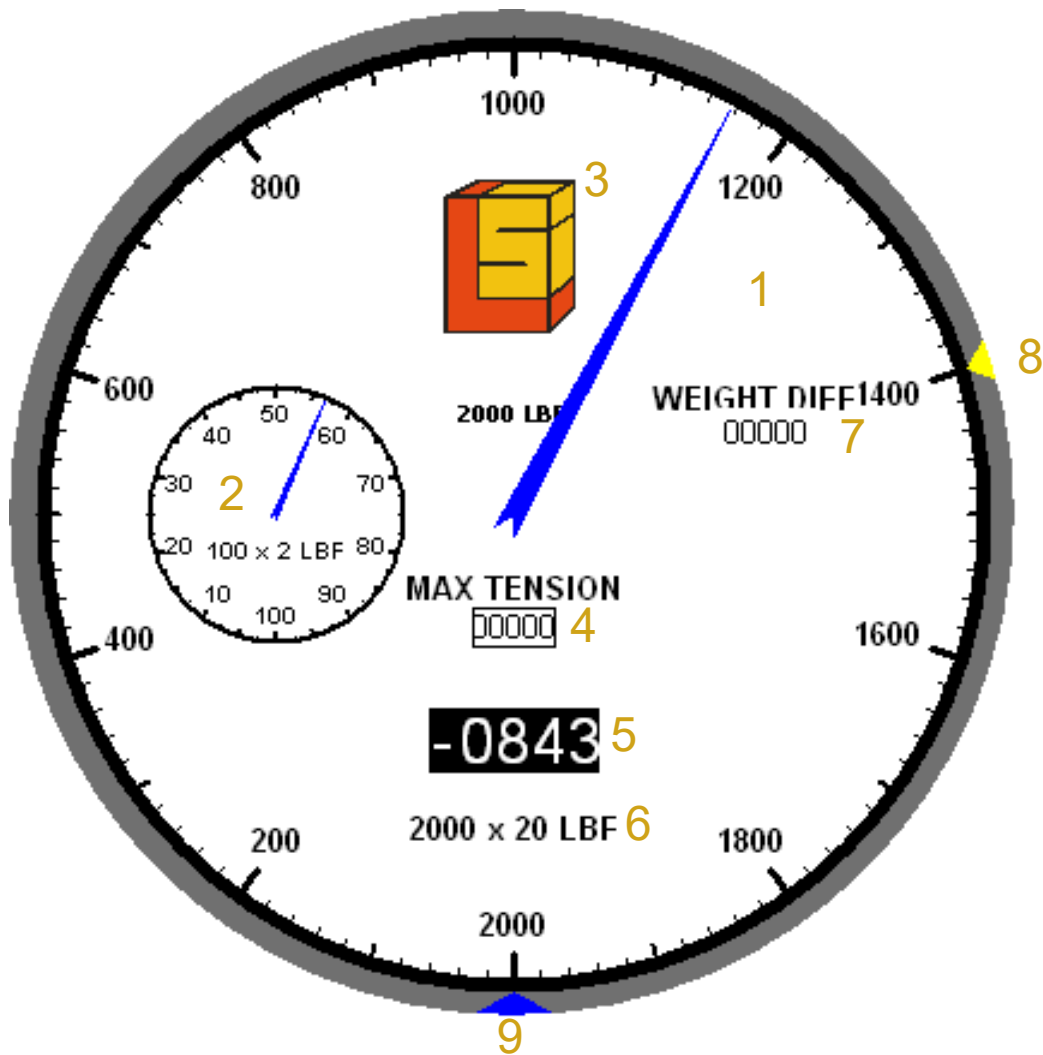
Table 4-1: Primary Gauge Interface Element Descriptions

Item	Label	Description
1.	Primary Gauge	The primary gauge is the main interface that users see. It displays the current tension/weight data. The program comes with the following pre-defined gauges: 1,000 LBF, 2,000 LBF, and 10,000 LBF. The 2,000 LBF gauge appears upon initial program use, but users can select, edit, add, and delete primary gauges as required (see "4.8 Work with Primary Gauges" on page 60).
2.	Sub-Gauge	The sub-gauge that appears in the left-hand side of the primary gauge is about 1/8th the size of the primary gauge. It is usually used to show smaller units of measurement than the primary gauge (see "4.9 Work with the Sub-Gauge" on page 71).
3.	Company Logo	Users can replace the default logo with their own company logo (see "4.7.1 Select a New Logo Image" on page 60).
4.	Max Tension	The maximum weight, labeled MAX TENSION, appears in a white odometer style box with a black border. This is the largest tension value recorded by the Weight Indicator program. The maximum tension value can be reset to zero by selecting Reset Maximum from the primary gauge menu (see "4.1.1 Primary Gauge Menu" on page 51).
5.	Current Tension	The current weight value appears in a black odometer-style box in the bottom center of the primary gauge.
6.	Scale Factor	The scale factor appears in the format X*Y, where X is the upper limit of the gauge and Y is the incremental value for each tick mark drawn on the gauge. The gauge units appear directly after the scale factor. On installation of the program, the units default to pounds force (LBF), but can be changed to Newton (N), decaNewton (daN), kiloNewton (kN), or megaNewton (MN).
7.	Weight Differential	The WEIGHT DIFF odometer-style box on the right-hand side of the primary gauge displays the difference between the current weight detected and a marker set by the user (see "4.4 Set the Tension Differential" on page 58).
8.	Alarm Marker	Users can set an alarm marker on the primary gauge that will trigger an alarm sound when the current tension reaches the alarm value. When the maximum tension alarm is active, a yellow triangle appears on the outside edge of the primary gauge at the set alarm value (see "4.3 Set the Maximum Tension Alarm" on page 57).
9.	Maximum Marker	Provides a graphical reference of the maximum weight recorded by the Weight Indicator program. The marker is a blue triangle that appears along the perimeter of the primary gauge.

4.1.1 Primary Gauge Menu

Right-click on the primary gauge to access the primary gauge menu.

Figure 4-2: Primary Gauge Menu Items

Table 4-2: Primary Gauge Menu Item Descriptions

Menu Item	Description
Zoom	Allows the user to change the size of the primary gauge on the screen. Keyboard shortcuts appear in the sub menu. • 100% set the primary gauge size to X pixels * X pixels. • Zoom Out makes the primary gauge appear smaller. • Zoom In makes the primary gauge appear larger.
Gauge	Allows the user to access the Gauge sub menu. • Edit allows the user to access the primary gauge properties dialog box. • The sub menu shows which gauge is currently selected, and which gauges are available.
Edit	Allows the user to access the primary gauge Properties dialog box.
Load cell	Allows the user to access the Transducer Selection dialog box. In this dialog box, the user can do the following: • Select the required transducer type. • Select a specific transducer definition • Define a new transducer type. • Calibrate the transducer • Set advanced transducer properties (See "4.2 Calibrate the Load Cell" on page 52 for more information about the functions available from this dialog box)
Set Marker	Allows the user to set the weight marker to the current weight.

Table 4-2: Primary Gauge Menu Item Descriptions

Menu Item	Description
Reset Marker	Allows the user to reset the WEIGHT DIFF field on the primary gauge to zero.
Reset Maximum	Allows the user to reset the MAX TENSION field on the primary gauge to zero
Sub-Gauge	Allows the user to show or hide the sub-gauge that appears on the left-hand side of the primary gauge.
Always on Top	Allows the user to set the primary gauge so that it appears in front of all other programs running at the same time.
Font	Allows the user to control the font size, style, weight and colour for the primary gauge and sub-gauge.
Sounds	Allows the user to set sound settings. Part of the Microsoft Windows operating system.
Logo	Allows the user to scale the existing logo or select a new one.
Winch Control Options	Allows the user to set the min/max shutdown tension.
About Pressure Indicator	Displays the program copyright and version information.
Exit	Allows the user to exit the program.

4.2 Calibrate the Load Cell

A two-point calibration is used to calibrate the load cell. The following parameters need to be defined.

4.2.1 Select the Load Cell Type

1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. From the primary gauge menu, select Load Cell.
   NOTE: The transducer Selection dialog box appears.
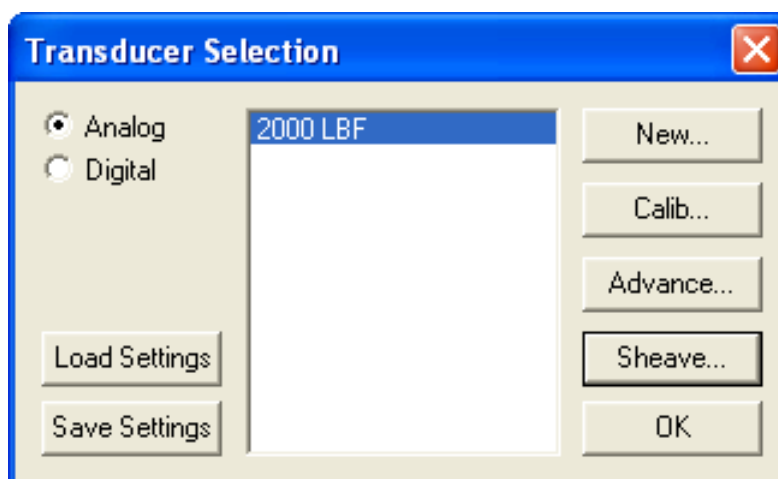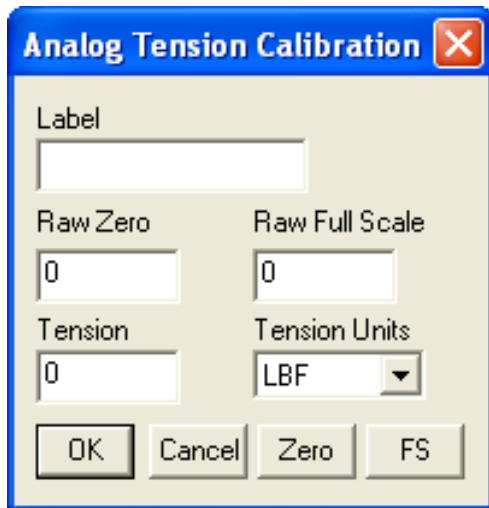
3. Select an existing connection type, or define a new connection type (see "4.2.2 Define a New Transducer" on page 53).
    NOTE: The choices are Analog or Digital.

4.2.2 Define a New Transducer

1. On the Transducer Selection dialog box, click the New button.
    NOTE: The Tension Calibration dialog box appears.

2. In the Label field, type a name for the new calibration.
    NOTE: This name will appear in the Transducer sub menu.

3. Continue to the calibration procedures (See "4.2.3 Calibrate the Load Cell" on page 53).
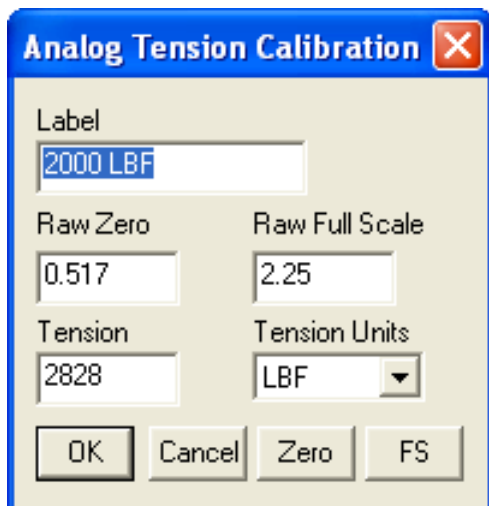
> **CAUTION!**
> **The transducer must be calibrated to ensure correct measurements.**

4.2.3 Calibrate the Load Call

4.2.3.1
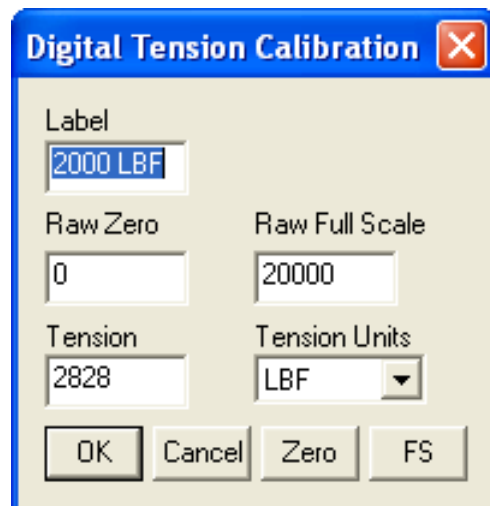
1. Ensure the no weight is being applied to the load cell.

2. On the Transducer Selection dialog box, click the Calib button.
    NOTE: The Tension Calibration dialog box appears.

3. Click the Zero button.
>   NOTE: A progress dialog box will appear for 10 seconds.

Calibrating Lower Limit

[Cancel]

>   NOTE: The program averages the samples taken over that period of time. The results appear in the Raw Zero field in the Tension Calibration dialog box.
>   The number reads the volts for an analog calibration and Hertz (frequency) for a digital calibration.

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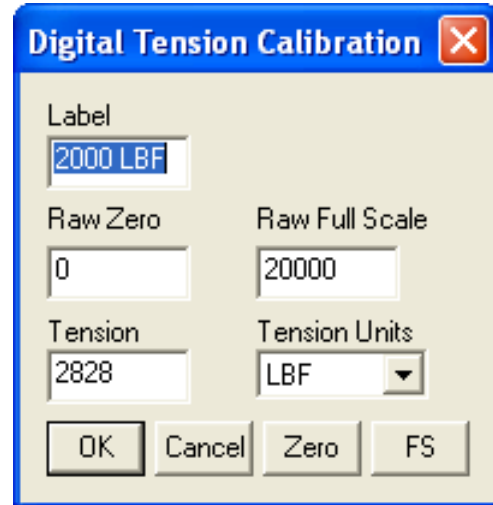
4.2.3.2 How to Perform a Full-Scale Calibration

1. Ensure the maximum weight is being applied to the transducer.

2. On the Transducer Selection dialog box, click the Calib button.
   NOTE: The Tension Calibration dialog box appears.

3. Click the F5 button.
   NOTE: A progress dialog box will appear again for 10 seconds.

NOTE: The program averages the samples taken over that period of time. The results appear in the Raw Full Scale field in the Tension Calibration dialog box.

4. In the Tension Units drop-down list, select the units used for maximum tension in the full-scale calibration.

5. In the Tension field, enter the maximum tension value obtained in the full-scale calibration.
   NOTE: This is the value that appears in the Raw Full Scale field.

   NOTE: The units selected in the Tension Units field are not necessarily the same units displayed on the Weight Indicator (see "4.8.5 Define the Primary Gauge Units" on page 67).

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4.2.4 Set the Advanced Load Cell Features

1. On the Transducer Selection dialog box, click the Advanced button.
    NOTE: Different dialog boxes will appear depending on which transducer is chosen.
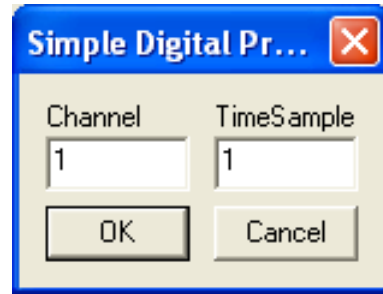
2. Set the advanced property values for the transducer.
    a. Analog:
    -   Enter the Channel number.
    -   Enter the Number of data samples to time average in the Damping box. The Weight Indicator samples at 20 times per second (20 Hz). Setting the damping factor to 10 creates a time sample of 0.5 seconds. Divide the damping factor by the sample rate to get the time sample.

    b. Digital:
    -   Enter the Channel number.
    -   Enter the Time Sample value.
3. Click the OK button to accept the changes.

4.3 Set the Maximum Tension Alarm

When the maximum tension alarm is active, a yellow triangle appears on the outside edge of the primary gauge at the set alarm value. An alarm will sounds when the current tension reaches the alarm value.

1. Right-click on the primary gauge. The primary gauge menu appears.
      NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. From the primary gauge menu, select Gauge, then select Edit.
      NOTE: The Available Gauges dialog box appears.

3. Select the gauge for which you want to set the alarm.

4. Click the Edit button.
      NOTE: The Properties dialog box appears for the selected gauge.

5. In the Alarm field, type the tension value for the alarm.

6. Click the Enable check box to activate the alarm.

7. Click OK to accept the changes and return to the Available Gauges dialog box.

CAUTION!
You have to set and enable the alarms for each gauge definition separately. Alarms are disabled by default.

4.4 Set the Tension Differential

A tension difference can be automatically calculated by setting the tension marker. The tension marker is the tension that is remembered by the Weight Indicator when the marker is set. The difference between the current tension and the tension marker is then displayed in the WEIGHT DIFF field on the primary gauge.

4.4.1 Method 1

1. Press the SPACEBAR on the keyboard to set the tension marker to the current tension.

2. Press the SPACEBAR again to change the tension marker. The previous marker is not saved.

4.4.2 Method 2

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. From the primary gauge menu, select Set Marker.

To remove the tension difference from the primary gauge display, select Reset Marker from the primary gauge menu.

4.5 Set Min and Max Shutdown Tension

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. On the primary gauge menu, select Winch Control Options.
   NOTE: The winch control options sub menu appears.

3. Select Set Min & Max Shut Down Tension.
   NOTE: The min/max line tension Dialog box appears.

4. Type a minimum line tension value in the Minimum field.

5. Type a maximum line tension value in the Maximum field.

6. Type a value in the Set Slider Range field.

7. Click the OK button to accept the values and exit the dialog box.

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4.6 Change the Display Font

The Fonts dialog box changes all the fonts that appear on the gauge except for the current tension and maximum tension fonts, which appear in odometer-style boxes.

1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. On the primary gauge menu, select Fonts.
    NOTE: The Font dialog box appears.
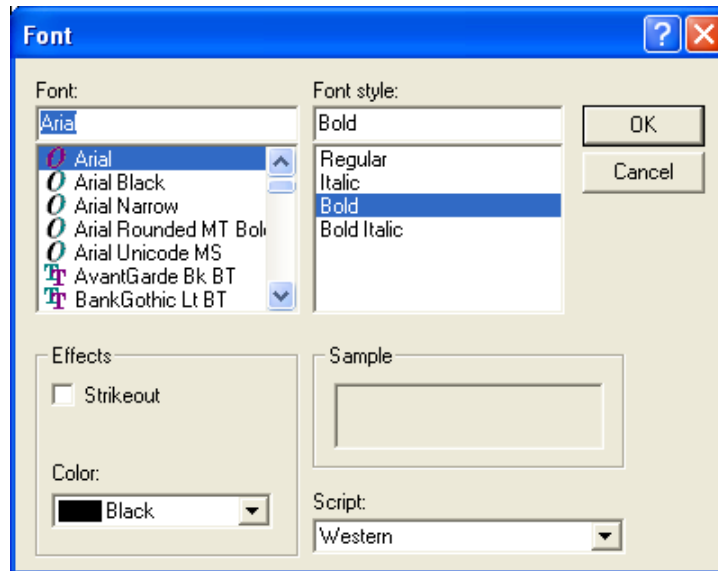
3. Modify the font family, font styles, or font colours as desired.

4. Click OK to accept changes.

4.7 Change the Logo Image

4.7.1 Select a New Logo Image

1. Right-click on the primary gauge. The primary gauge menu appears.
    NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. From the primary gauge menu, select Logo, and then click Select.
    NOTE: The Open dialog box appears.
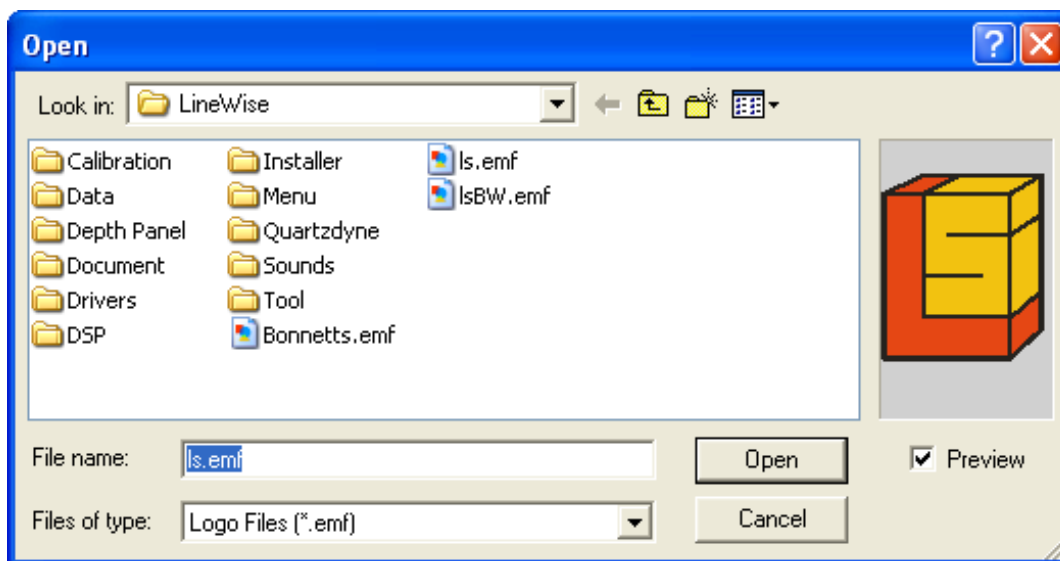
3. Choose the logo file required.
    NOTE: The file format must be the graphics format *enhanced meta-file (*.emf)*.

4.7.2 Change the Size of the Existing Logo Image

1. Right-click on the primary gauge. The primary gauge menu appears.
    NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. From the primary gauge menu, select Logo, and then click Scale.
    NOTE: The Logo Scale dialog box appears.
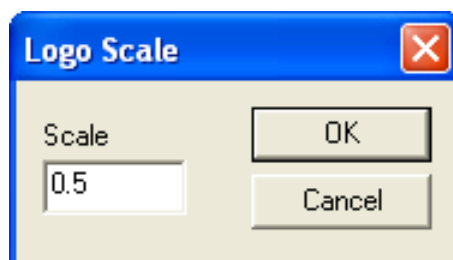
3. Adjust the size of the logo as required.
    NOTE: The default size is set to 0.5.

4.8 Work with Primary Gauges

Use the following procedures to select, add, delete, and modify gauges.

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4.8.1 Select an Existing Primary Gauge Definition

4.8.1.1 Method 1

1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

Zoom	▶	
Gauge	▶	Edit...
Edit...		
Loadcell...		1000 LBF
		✔ 2000 LBF
Set Marker		5000 LBF
Reset Marker		10000 LBF
Reset Maximum		
Sheave Angle...		
✔ SubGauge		
Always on top		
Font...		
Sounds...		
Logo	▶	
Winch Control Options	▶	
About WeightIndicator...		
Exit		
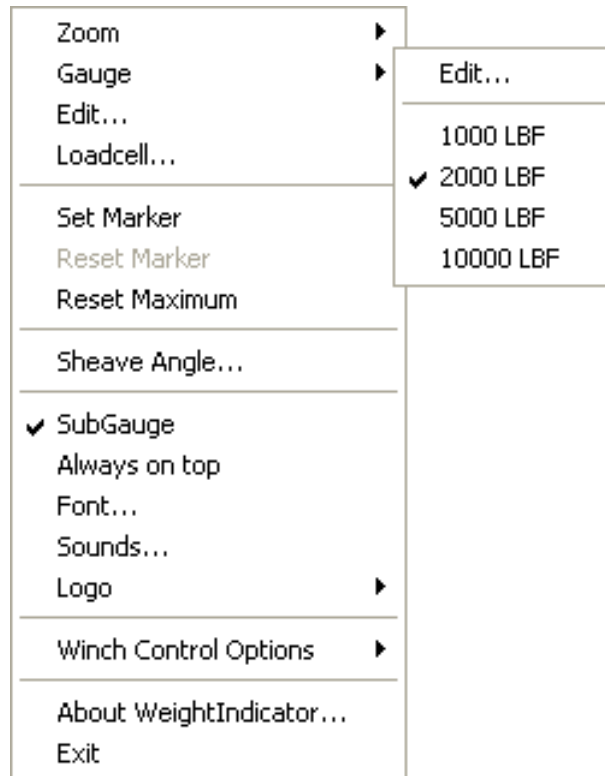
3. Select the required gauge definition from the Gauge sub menu.
   NOTE: The primary gauge changes to the selected gauge definition.

4.8.1.2 Method 2

1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

3. Select Edit from the sub menu.
   NOTE: The Available Gauge dialog box appears.

4. In the Available Gauges dialog box, select a gauge definition from the list box.

5. Click the Close button to exit the Available Gauges dialog box.
   NOTE: A dialog box appears that asks "Do you want to make X the current gauge?"

6. Click the Yes button.
   NOTE: The selected gauge appears and a check mark appears beside the gauge name in the Gauge sub menu.

4.8.2 Add a Primary Gauge Definition

1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

3. Select Edit from the sub menu.
   NOTE: The Available Gauge dialog box appears.

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4. In the Available Gauges dialog box, click the Add button.
    NOTE: The primary gauge Properties dialog box appears.

5. Define the gauge parameters as required (see "4.8.5 Define the Primary Gauge Units" on page 67).
    NOTE: The value that you enter into the Upper Limit field will become the name of the new gauge. The selected unit will appear beside the name.

6. Click the OK button to accept the new primary gauge definition.

4.8.3 Delete a Primary Gauge Definition

1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

3. Select Edit from the sub menu.
   NOTE: The Available Gauge dialog box appears.

4. In the Available Gauges dialog box, select a gauge definition from the list box.

5. Click the Close button to exit the Available Gauges dialog box.
   NOTE: A dialog box appears that asks "Do you want to make X the current gauge?"

6. Click the Yes button to delete the gauge definition.

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4.8.4 Edit a Primary Gauge Definition

1. Right-click on the primary gauge. The primary gauge menu appears.
    NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

2. Select Gauge from the primary gauge menu.
   NOTE: The Gauge sub menu appears.

Zoom	▶	
Gauge	▶	Edit...
Edit...		
Loadcell...		1000 LBF
		✔ 2000 LBF
Set Marker		5000 LBF
Reset Marker		10000 LBF
Reset Maximum		
Sheave Angle...		
✔ SubGauge		
Always on top		
Font...		
Sounds...		
Logo	▶	
Winch Control Options	▶	
About WeightIndicator...		
Exit		

3. Select Edit from the sub menu.
    NOTE: The Available Gauge dialog box appears.

Available Gauges

1000 LBF	Add...
2000 LBF	
5000 LBF	Edit...
10000 LBF	
	Close

4. In the Available Gauges dialog box, select a gauge definition from the list box.

5. Click the Edit button.
   NOTE: The primary gauge Properties dialog box appears.

6. Define the gauge parameters as required (see "4.8.5 Define the Primary Gauge Units" on page 67).

7. Click the OK button to accept the changes.

4.8.5 Define the Primary Gauge Units

The position of numbers, position of tick marks, scale, units, and alarms can be changed in the gauges Properties dialog box.
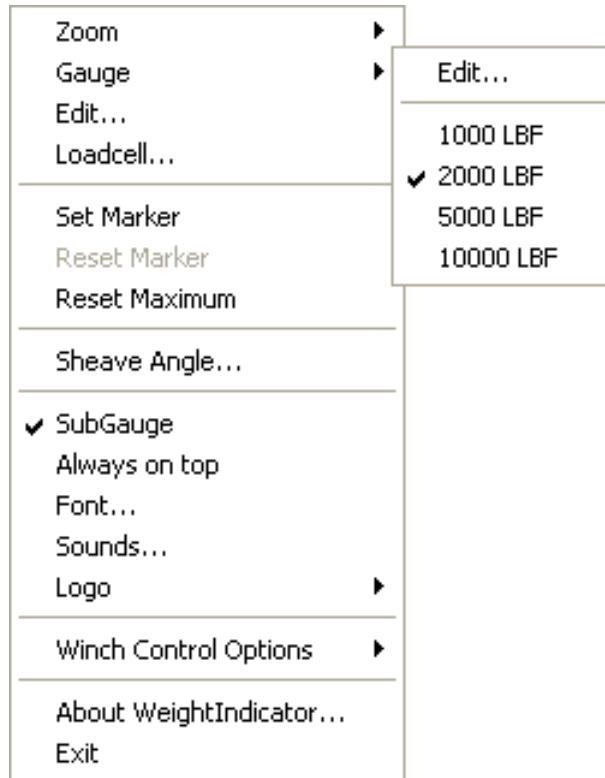
1. Right-click on the primary gauge. The primary gauge menu appears.
   NOTE: Do not right-click on the sub-gauge, as this will activate the sub-gauge menu.

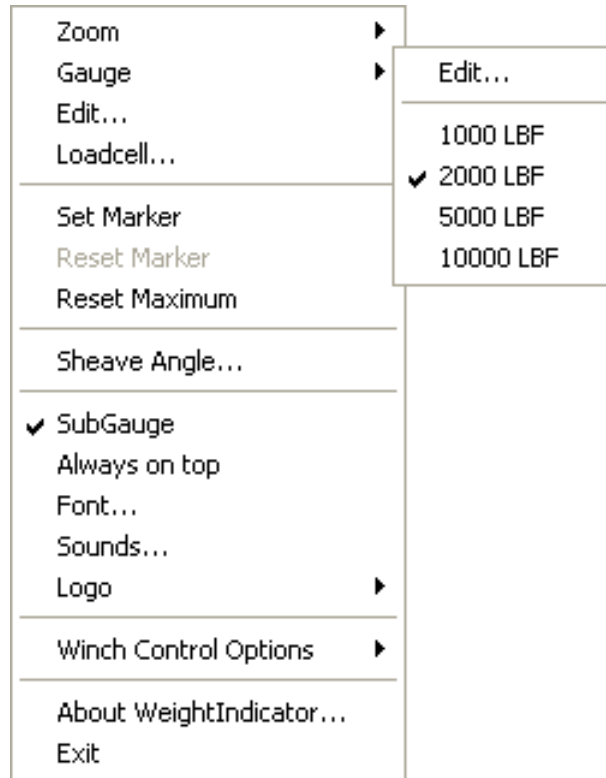2. On the primary gauge menu, select Gauge.
   NOTE: The Gauge sub menu appears.
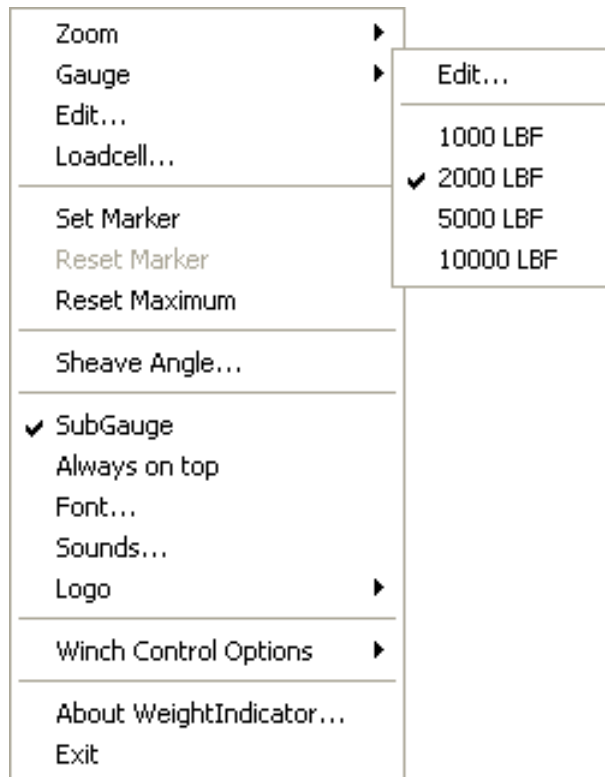
Zoom	▶	
Gauge	▶	Edit...
Edit...		
Loadcell...		1000 LBF
		✔ 2000 LBF
Set Marker		5000 LBF
Reset Marker		10000 LBF
Reset Maximum		
Sheave Angle...		
✔ SubGauge		
Always on top		
Font...		
Sounds...		
Logo	▶	
Winch Control Options	▶	
About WeightIndicator...		
Exit		

3. Select Edit from the sub menu.
   NOTE: The Available Gauge dialog box appears.

Available Gauges

1000 LBF	Add...
2000 LBF	
5000 LBF	Edit...
10000 LBF	
	Close

4. On the Available Gauges dialog box, do ONE of the following:
   • Select an existing gauge, then click the Edit button.
   • Click the Add button to create a new primary gauge definition.
   NOTE: The Properties dialog box appears.

Units

LBF	▼
N	
daN	
kN	
MN	

5. In the Units field, select the units to appear in the gauge. Options are:
   • Pounds force (LBF)
   • Newton (N)
   • decaNewton (daN)
   • kiloNewton (kN)
   • megaNewton (MN)

6. In the Lower Limit and Upper Limit fields, type the minimum and maximum tension values for the gauge.

7. Enter values in the Start From and Stop At fields to set the orientation for the gauge.
   NOTE: The Start From field and Stop At field describe where on the gauges display the Lower Limit value starts and the Upper Limit value stops. The values are any number from 0 to 12 and they represent the numbers on the face of a clock. For example, 1 represents the one o'clock position, 3 represents the three o'clock position, and 9 represents the nine o'clock position. Both 0 and 12 represent the twelve o'clock position. If the position wanted is between the five and six o'clock position, enter the value 5.5. In between the twelve o'clock and one o'clock position, enter a value of 0.5. The defaults are set to 6 o'clock.

8. In the Major Div field, enter the total number of major divisions that you want to appear on the gauge.
   NOTE: The major divisions are indicated by the large marks around the perimeter of the gauge. The default value is 10.

9. In the Medium Div field, enter the number of medium divisions that you want to appear on the gauge for every major division on the gauge.
   NOTE: The medium divisions are indicated by the medium-sized marks around the perimeter of the gauge. The default value is 2.

10. In the Minor Div field, enter the number of minor divisions that you want to appear on the gauge for every medium division on the gauge.
    NOTE: The minor divisions are indicated by the small marks around the perimeter of the gauge. The default value is 5.

11. In the Number Div box, enter how many number values you want to appear on the gauge.
    NOTE: The default value is 10. Normally this value will be the same as the Major Div setting.

12. Click the OK button to accept the definition.
    NOTE: The medium divisions are indicated

4.8.6 Change the Size of the Primary Gauge

4.8.6.1 Method 1

1. Move the mouse pointer to the outer edge of the primary gauge.

2. When the mouse pointer changes to the resize pointer, click and hold the left mouse button down.
   - Drag the mouse inwards to make the gauge smaller.
   - Drag the mouse outwards to make the gauge larger.

3. Release the left mouse button to set the gauge to the new size.

4.8.6.2 Method 2

1. Right-click on the primary gauge to display the primary gauge menu.
   NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu.

2. Select Zoom from the primary gauge sub menu.
   NOTE: The Zoom sub menu appears.

   - Select 100% to make the gauge half the size of the screen.
   - Select Zoom Out to make the gauge smaller.
   - Select Zoom In to make the gauge larger.

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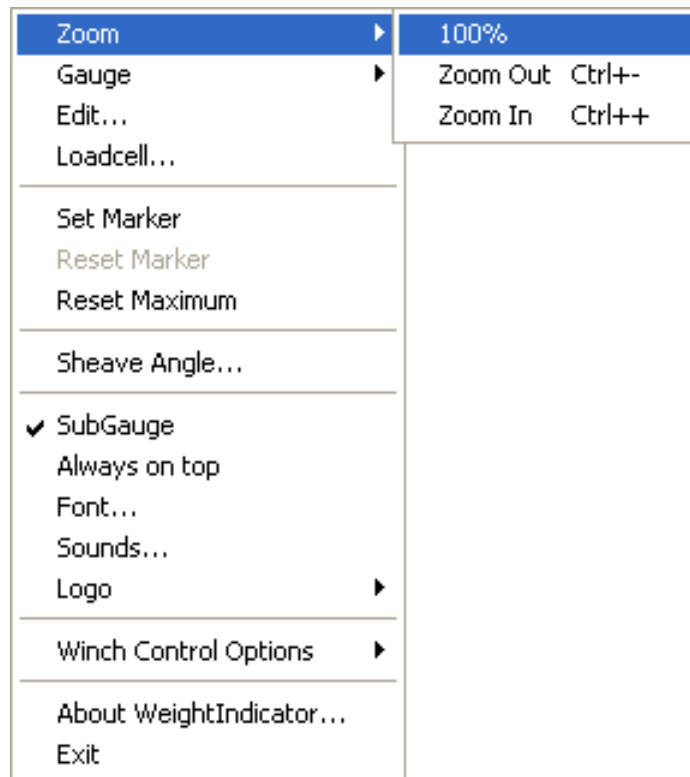
4.9 Work with the Sub-Gauge

The sub-gauge that appears in the left-hand side of the primary gauge is about 1/8th the size of the primary gauge. Only one sub-gauge can be defined at a time, so any previous sub-gauge settings are overwritten.

4.9.1 Define the Sub-Gauge Units

1. Right-click on the sub-gauge to display the sub-gauge menu.

> Edit...

2. Select Edit.
    NOTE: The sub-gauge Properties dialog box appears.

3. Define the sub-gauge units in the same manor as the primary gauge (see "4.8.5 Define the Primary Gauge Units" on page 67).

7. Click OK to accept the changes.
    NOTE: To hide the sub-gauge, right-click on the primary gauge and click sub-gauge.

4.9.2 Show or Hide the Sub-Gauge

1. Right-click on the primary gauge to display the primary gauge menu.
    NOTE: Do not right-click on the sub-gauge, this will bring up the sub-gauge menu/

2. On the primary gauge menu, select Sub-gauge.
    NOTE: A check mark beside Sub-gauge indicates a "show" condition.

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5.0   Depth Panel

The Depth Panel application displays line depth and speed, a visual schematic of the wellbore, and tool string motion.

5.1 Depth Panel Interface

5.1.1 Main Interface Elements

Figure 5-1: Simple Depth Panel Interface

Table 5-1: Depth Panel Interface Descriptions

Item	Label	Description
1.	Depth Display Pane	Three odometer-style boxes display primary depth, secondary depth, and speed. The depth boxes can display units in m or ft. and they can track depth independently. The boxes will change to red if depth should go negative. The speed can display units in m/min, ft/min, or ft/hr. Speed is calculated from depth; a positive speed means the depth is increasing (running in the hole) and a negative speed means the depth is decreasing (running out of the hole).

Table 5-1: Depth Panel Interface Descriptions

Item	Label	Description
2.	Well Schematic	The well schematic pane displays a simple well diagram and shows objects located near the primary depth. The diagram includes objects such as perforations, radioactive collars, packers, nipples, casing, tubing, etc. Labels appear beside the objects in the depth track pane. A dark grey square with a line attached to it in the center of the diagram represents the tool string. The dotted line drawn through the tool string indicates the primary depth.
3.	Depth Track	The depth track contains two major elements: • a column of numbers that represent depth. • direction indicator arrows that point in the current direction of travel (only appear when depth is changing).
4.	Menu Bar	Contains program menus (see "5.1.3 Menu Descriptions" on page 75).
5.	Toolbar	See "5.1.2 Toolbar" on page 74
6.	Line Stretch Compensated Depth	This value is calculated from values entered on the Line tab of the Settings dialog box.
7.	True Vertical Depth	This value shows the true vertical depth. The true vertical depth is calculated from data on the TVD tab of the Settings dialog box.
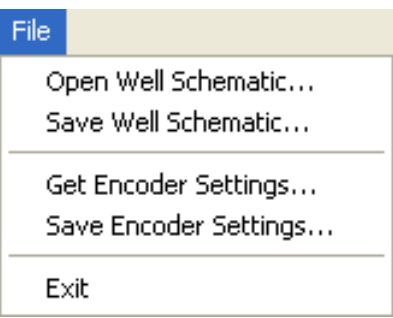
5.1.2 Toolbar
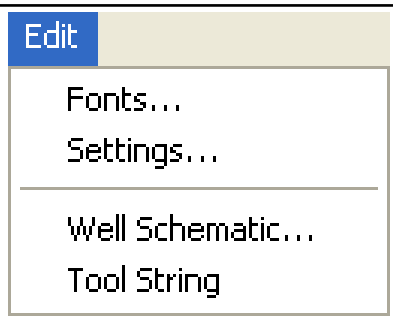
Item	Label	Description
1.	Reset Primary Depth	Changes the primary depth value end units (see "5.8.1 Change Primary Depth" on page 87).
2.	Tracking	Click this check box to force the secondary depth to change with the primary depth. For example, if the primary depth is first set to 100 meters and the secondary depth is set to 120 meters, then the primary depth is changed to 200 meters; the program will automatically change the secondary depth to 220 meters. The offset between the primary and secondary depth is maintained.
3.	Reset Secondary Depth	Changes the secondary depth value. Is only available if the Tracking check box is not selected.
4.	View Schematic Length	Determines how much of the well diagram appears in the well schematic pane.
5.	Help Icon	Accesses help files.
6.	Speed Alarm Icon	Shows if the speed alarm is active (pressed), inactive (not pressed), or disabled (grey). The alarm is set on the Alarm tab of the Settings dialog box (see "5.4.1 Speed Alarm" on page 85).
7.	Depth Alarm Icon	Shows if the depth alarm is active (pressed), inactive (not pressed), or disabled (grey). The alarm is set on the Alarm tab of the Settings dialog box (see "5.4.2 Depth Alarm" on page 85).

5.1.3 Menu Descriptions
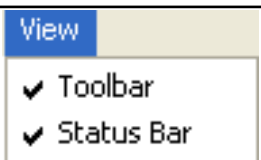
5.1.3.1 File Menu

Menu Interface	List Item	Description
	Open Well Schematic	Opens an existing well schematic.
	Save Well Schematic	Saves the current well schematic.
	Get Encoder Settings	Opens a per-existing encoder settings file.
	Save Encoder Settings	Saves the current encoder settings.
	Exit	Exits the Depth Panel Program.
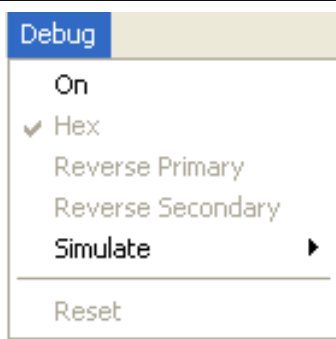
5.1.3.2 Edit Menu

Menu Interface	List Item	Description
	Fonts	Accesses the Font dialog box. Allows you to change the primary depth, secondary depth, and speed fonts.
	Settings	Accesses the Settings dialog box (see "5.1.4 Settings Dialog Box" on page 76).
	Well Schematic	Accesses the Well Schematic dialog box.
	Tool String	Accesses the Tool String dialog box.
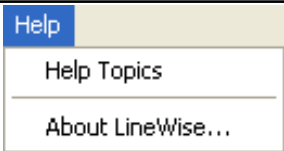
5.1.3.3 View Menu

Menu Interface	List Item	Description
	Toolbar	Turns the toolbar on (checked) or off.
	Status Bar	Turns the status bar on (checked) or off.

5.1.3.4 Debug Menu

Menu Interface	List Item	Description
	On	Turns the debug program on and enables access to other features
	Hex	Used to display the counter value to help with troubleshooting depth related issues.
	Reverse Primary	Used to simulate depth. Reverses the direction on the primary depth odometer.
	Reverse Secondary	Used to simulate depth. Reverses the measurements on the secondary odometer.
	Reset	Resets the troubleshooting test.
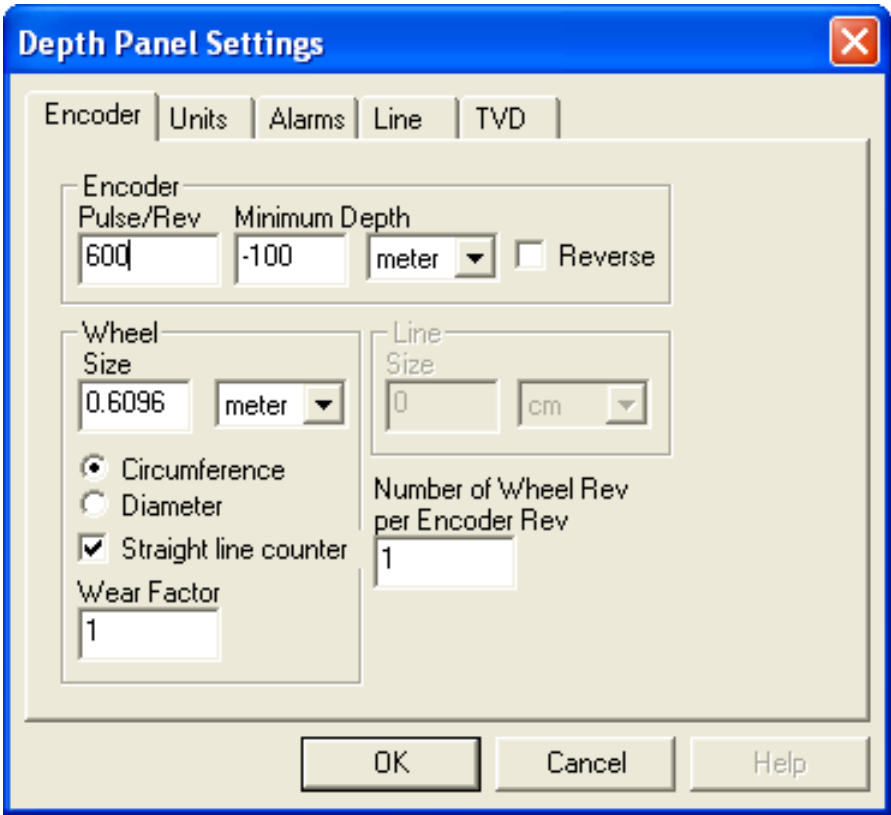
5.1.3.5 Help Menu

Menu Interface	List Item	Description
Help Help Topics About LineWise…	Help Topics	Menu of answers to common questions.
	About Linewise	Shows Linewise version

5.1.4 Settings Dialog Box

Much of the information used by the program to calculate depth is defined in the Settings dialog box.

Figure 5-2: Settings Dialog Box, Encoder Tab

Interface Element		Description
Encoder	Pulse/Rev Field	Enter the number of encoder pulses per revolution.
	Minimum Depth Field and Units Drop-Down List	Set the minimum depth to the lowest depth the Depth Panel will display. The default minimum depth is -100 meters.
	Reverse Check box	Select this check box if the depth is counting in the opposite direction from what it should. This will depend on which side of the measuring wheel the encoder is mounted.

Interface Element		Description
Wheel	Size Field and Units Drop-Down List	Enter the wheel size and the required unit (in m or ft).
	Circumference and Diameter Radio Buttons	Select the connect button to match the value entered in the Size field.
	Straight Line Counter Check box	Select the Straight line counter check box if the line diameter has already been accounted for. De-select the Straight line counter check box if the line diameter needs to be calculated, then type the line diameter in the Line Size box. Select the appropriate units (in mm, cm, or in).
	Wear Factor Field	By default, the wear factor is set to 1 (no wear). Over time, the measuring wheel will wear, which will create inaccuracies in the depth measurement. Change the wear factor to a value less than 1 (eg. 0.998) to compensate for the smaller wheel size.
Line	Size Field and Units Drop-Down List	This field is available only if the Straight line counter check box is not selected. Type the line diameter value in the field and select the appropriate units (in mm, cm, or in).
Number of Wheel Rev per Encoder Rev Field		Enter the gear ratio, or the number of measuring wheel rotations per encoder revolution.

Figure 5-3: Settings Dialog Box, Units Tab

Interface Element	Description
Depth Drop-Down List	Sets the units of display for depth (in m or ft).
Speed Drop-Down List	Sets the display units for speed (in m/min, ft/hr, ft/min).
Decimal Field	Sets how many decimal places appear on the odometer. Default value is 1.
When you change the display units on this dialog box, the following items are also changed on the main screen: primary depth, secondary depth, speed, well schematic, depth track, and true vertical depth.	

Figure 5-4: Settings Dialog Box, Alarms Tab

Interface Element	Description
Over Speed Field and Drop-Down List	Enter the speed at which the speed alarm will be activated. The speed alarm displays a message when the current speed exceeds this value. Ensure the units are correct (m/min, ft/min, or ft/hr).
Enable Speed Alarm Check box	Select this check box to enable the speed alarm. There must be a speed value in the Over Speed field before the alarm will activate.
Enable Depth Alarm Check box	Select this check box to enable the depth alarm. There must be at least one depth value in the depth list before the alarm will activate.
Depth Field and Drop-Down List	Enter a depth value at which you want to activate the depth alarm. You can enter more than one depth value. An alarm will sound when the primary depth reaches any of the alarms listed in the depth value list.

Interface Element	Description
Depth Value List	Displays the depth values at which the depth alarm will be activated. There can be more than one value.
>>	Click the Add Value button to add a depth value.
<<	Click the Remove Value button to delete a depth value.

Figure 5-5: Settings Dialog Box, Line Tab
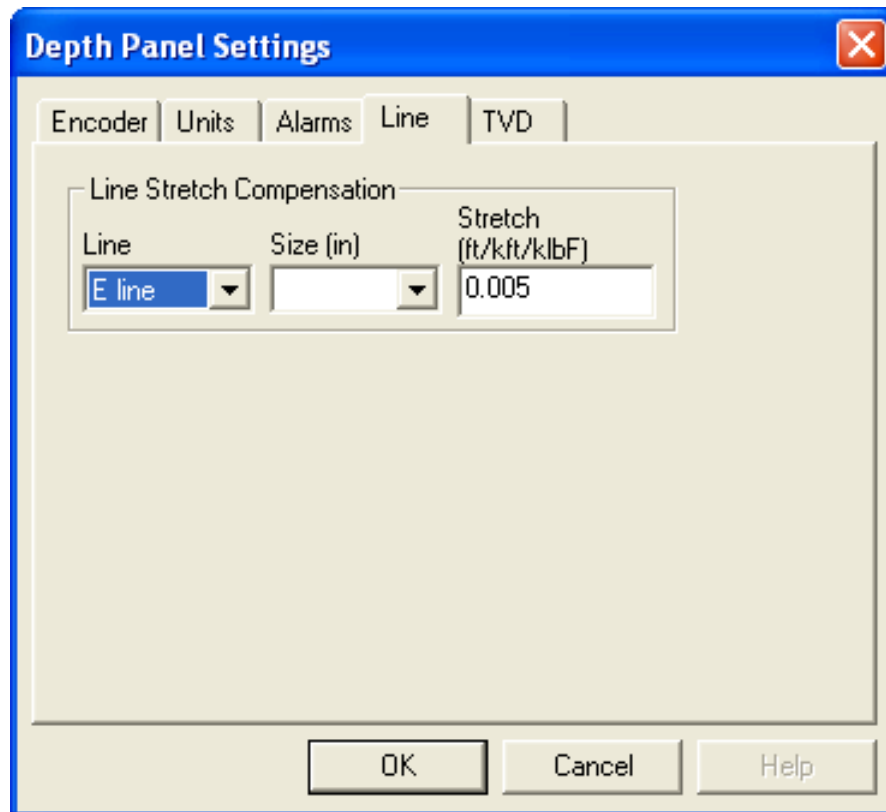
Interface Element	Description
Line Drop-Down List	Select E Line or Slickline. The values in the Size drop-down list will change depending on which option is selected here.
Size Drop-Down List	Contains line size values. Select the required value.
Stretch Field	Type in the stretch factor for the type and size of line selected.
The Line Size is required only if the counter wheel does not take the line size into account.	

Figure 5-6: Settings Dialog Box, TVD (True Vertical Depth) Tab
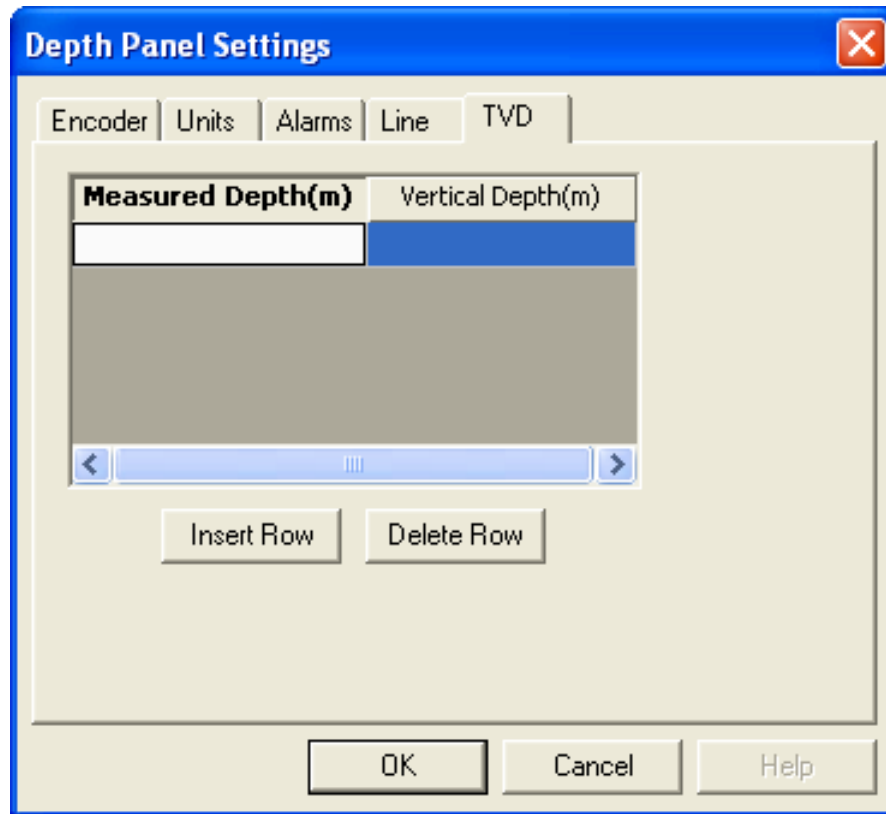
Interface Element	Description
Measured Depth Column	Contains the measured depth values with which the program calculates True Vertical Depth (TVD).
Vertical Depth Column	Contains the corresponding vertical depth value for the measured depth value.
Insert Row Button	Click to insert a row above the current row.
Delete Row Button	Click to delete the selected row.
True vertical depth is located on the status bar next to the text TVD. TVD is calculated on a linear curve from the values stored in the TVD table. The table includes a list of measured depths and their corresponding vertical depths.	

5.1.5 Well Schematic Dialog Box

The well schematic is a diagram that displays objects located around the primary depth. The objects are added or removed in the Well Schematic dialog box.

Figure 5-7: Sample Well Schematic Dialog Box
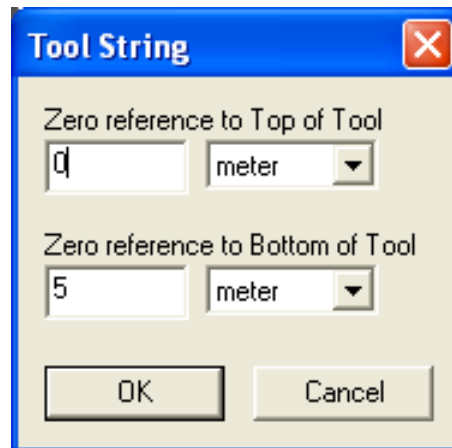
Interface Element	Description
Item Column	Contains a description for the item in the well schematic. Double-click in the cell to access the drop-down list of item names.
Depth Column	Contains the start depth at which the item is positioned. Double-click in the cell to enter or change the value.
Length Column	Contains the length value for items. Double-click in the cell to enter or change the value.
Insert Row Button	Click this button to add another row above the current selected row.
Delete Row Button	Click this button to delete the current selected row.

5.1.6 Tool String Dialog Box

The length of the tool string displayed in the well schematic is composed of two measurements: the zero reference point to the top of the tool, and the zero reference point to the bottom of the tool. The zero reference point for the schematic is the location on the tool where the user zeros the depth. This is where the primary depth is referenced to on the tool string. For example, the zero reference point could be referenced to the Casing Collar Locater (CCL), or to the bottom of the tool depending on the user's preferences. The tool string is the dark grey square in the center of the well schematic. The dotted line drawn through the tool string is the zero reference point (primary depth).

Figure 5-8: Sample Tool String Dialog Box

Interface Element	Description
Zero Reference to Top of Tool	Type a value in the field and select the required units from the drop-down list.
Zero Reference to Bottom of Tool	Type the length of the tool string, relative to the Top of Tool value.

5.1.7 Fonts Dialog Box

The Fonts dialog box changes only the primary depth, secondary depth, and speed fonts.

Figure 5-9: Sample Fonts Dialog Box

Interface Element	Description
Font List	Contains a list of the available fonts. Click on a font name to select it.
Font Style	Contains a list of styles that can be applied to the selected font. Click a style name to select it.
Effects>Strikeout Check box	When selected, this option allows a line through all text with the selected font.
Effects>Odometer Check box	When selected, the primary depth, secondary depth, and speed values appear in odometer-style boxes on the main screen. ENSURE THIS CHECK BOX IS SELECTED.
The size attribute is not shown because the program automatically calculated the font size based on the size of the main Depth Panel screen. The odometer style box is available only in black and white, so the Colour drop-down list is disabled. If depth should go negative, the odometer box is changed to red.	

5.2 Calibrate Depth

5.2.1 Encoder

1. Select Edit>Settings, and then click the Encoder tab.

2. In the Pulse/Rev field, enter the number of encoder pulses per revolution.

3. Select the Reverse check box ONLY IF the depth is counting in the opposite direction from what it should.
    NOTE: This will depend on which side of the measuring wheel the encoder is mounted.

4. Set the Minimum Depth value to the lowest depth the Depth Panel will display.
    NOTE: The default minimum depth is -100 meters.

5.2.2 Counter

1. Select Edit>Settings, and then click the Encoder tab.

2. In the Size field, enter the circumference or diameter of the measuring wheel.

3. Select the Circumference or Diameter radio button as required.

4. Enter a value in the Wear Factor field if required.
    NOTE: By default, the wear factor is set to 1 (no wear). Over time, the measuring wheel will wear, which will create inaccuracies in the depth measurement. If required, change the wear factor to a value less than 1 (eg. 0.998) to compensate for the smaller wheel size.

5. Select or clear the Straight line counter check box as required.
    *   Select the Straight line counter check box if the line diameter has already been accounted for.
    *   Clear the Straight line counter check box if the line diameter must be calculated. Enter the line diameter in the line size field and select the required units.

6. In the Number of Wheel Rev per Encoder Rev, enter the gear ratio.
    NOTE: The gear ratio is the number of measuring wheel revolutions per encoder revolutions.

7. Click the OK button to accept the changes.

5.3 Change the Display Units

1. Select Edit>Settings, and then click the Units tab.

2. In the Depth drop-down list, select meters or feet.

3. In the Speed drop-down list, select m/min, ft/min, or ft/hr

4. In the Decimal field, type how many decimal places you want to appear on the odometer display on the main screen.

5. Click the OK button to accept the changes.

5.4 Alarms

5.4.1 Speed Alarm

1. Select Edit>Settings, and then click the Alarms tab.

2. In the Over Speed field, type the speed value at which you want to trigger an alarm.

3. Select the Enable Speed Alarm check box to activate the alarm.
    NOTE: There must be a value in the Over Speed field before you can activate the alarm.

4. Click the OK button.

5.4.2 Depth Alarm

1. Select Edit>Settings, and then click the Alarms tab.

2. In the Depth field, type a value at which you want to trigger the alarm.

3. Click the "add value" button to add the depth value to the list pane.
    NOTE: You can add more than one depth value.

4. To delete a depth value, select the appropriate value(s) from the list, then click the "remove value" button.

5. Select the Enable Depth Alarm check box to activate the alarm.
    NOTE: There must be at least one depth value in the list pane before you can activate the alarm.

6. Click the OK button.

5.5 True Vertical Depth (TVD)

1. Select Edit>Settings, and then click the TVD tab.

2. Add, delete, or edit values as required:
    • To add a value, click in a cell and type the required value.
    • To delete a value, click in the cell and press the Delete button on your keyboard.
    • To edit an entry, click in the row or cell that needs to be changed and type the new value.

3. Add or delete rows as required:
    • To add a row, click on one of the existing rows and click the Insert Row button.
    • To delete a row, select the appropriate row(s), and click the Delete Row button.

4. Click OK to accept the changes.

5.6 Well Schematic

5.6.1 Change Well Schematic Length

1. On the main toolbar, click inside the View field.

2. Enter a length value in meters or feet.
   NOTE: Append (m) or (f) to select a different unit than the current depth unit if required.

3. Press ENTER to update the well schematic.

5.6.2 Add or Edit Well Schematic Objects

1. Select Edit>Well Schematic.

2. To edit an entry, click in the row or cell that needs to be updated and enter the required information.

3. To add a new row, click on an existing row and click the Insert Row button.

4. To delete a row, select the appropriate row(s), and click the Delete Row button.

5. Click the OK button.

5.6.3 Save Well Schematic

1. Select File>Save Well Schematic.

2. Enter the name in the File name field.
   NOTE: The extension (*.wsm) will be added to the end of the file name. If you save the file to a different folder or directory, the program will remember where you saved the file.

3. Click the Save button.

5.6.4 Open Well Schematic

1. Select File>Open Well Schematic.

2. Select the well schematic name (*.wsm) that you want to open.

3. Select the Open button to restore the well schematic.
   NOTE: The file name appears in the title bar.

5.7 Change Tool String Length

1. Select Edit>Tool String.

2. In the Zero Reference to Top of Tool field, enter the length (A), which is the zero reference point (eg. CCL) to the top of the tool string (eg. rope socket).

3. In the Zero Reference to Bottom of Tool field, enter the length (B), the zero reference point (eg. CCL) to the bottom of the tool string (eg. spinner).
   NOTE: The two measurements together equals the length of the tool string.

4. Click the OK button.

5.8 Reset Depth

5.8.1 Change Primary Depth

1. On the main toolbar, click inside the Primary field.

2. Type the new depth value.
   NOTE: Add meter (m), or feet (ft) to select a different unit than the current depth unit if required.

3. Press ENTER to update the primary depth.

5.8.2 Change Secondary Depth

NOTE: You can change the secondary depth value only if the Tracking check box is   not selected.

1. On the main toolbar, click inside the Secondary field.

2. Type the new depth value.

3. Press ENTER to update the secondary depth.

5.9 Tracking

5.9.1 Enable Tracking

1. On the main toolbar, select the Tracking check box.

5.9.1 Disable Tracking

1. On the main toolbar, clear the Tracking check box.

5.10 Change the Display Fonts

1. Select Edit>Fonts.

2. Select the required font type and style.

3. Ensure the Odometer check box is selected.

4. Click the OK button..

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5.11 Troubleshooting

Symptom	Possible Cause	Possible Solution
The odometer boxes have disappeared from the main screen.	The Odometer check box on the Fonts dialog box is not selected.	Select Edit>Font. Select the Odometer check box. Click the OK button
The speed alarm will not enable (the icon on the toolbar is grey).	There is no value in the Over Speed field on the settings dialog box.	Select Edit>Settings, then click the Alarms tab. Enter a speed value in the Over Speed field. Select the Enable Speed Alarm check box. Click the OK button.
The depth alarm will not enable (the icon on the toolbar is grey).	There is no value in the depth list on the Settings dialog box.	Select Edit>Settings, then click the Alarms tab. Enter a depth value in the Depth field. Click the "add value" button. Select the Enable Depth Alarm check box. Click the OK button.

Parts of the Linewise

Part	Function
Serial Plate	Shows unit part number, serial number, and port labels.
Mounting Bracket	Mounting point to attach the Linewise unit to an acquisition rack, etc
Power LED Indicator	Lights up to indicate that the unit is on.
Sampling LED Indicator	Lights up to indicate that the unit is currently operating (taking samples).
USB Port	Connects the Linewise unit to a computer. This provides power to the Linewise box, and transmits data to the computer.
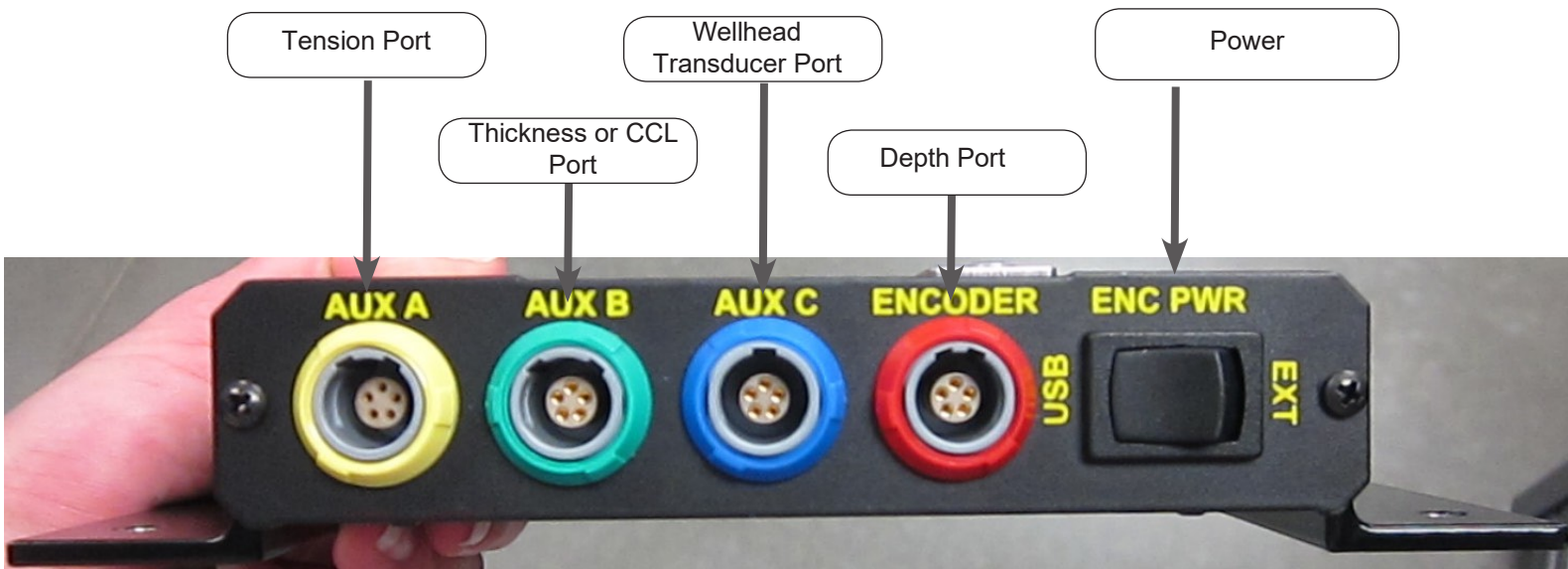
Part	Function
Tension Port	5 pin redel connection location for in-line or hydraulic tension measurements.
Thickness or CCL Port	5 pin redel connection for line thickness or CCL with the shooting panel.
Wellhead Transducer Port	5 pin redel connection for measurements taken with a wellhead transducer.
Depth Port	5 pin redel connection for depth measurements.
Power Switch	Place holder only. The power switch is no longer used to turn the unit on/off.