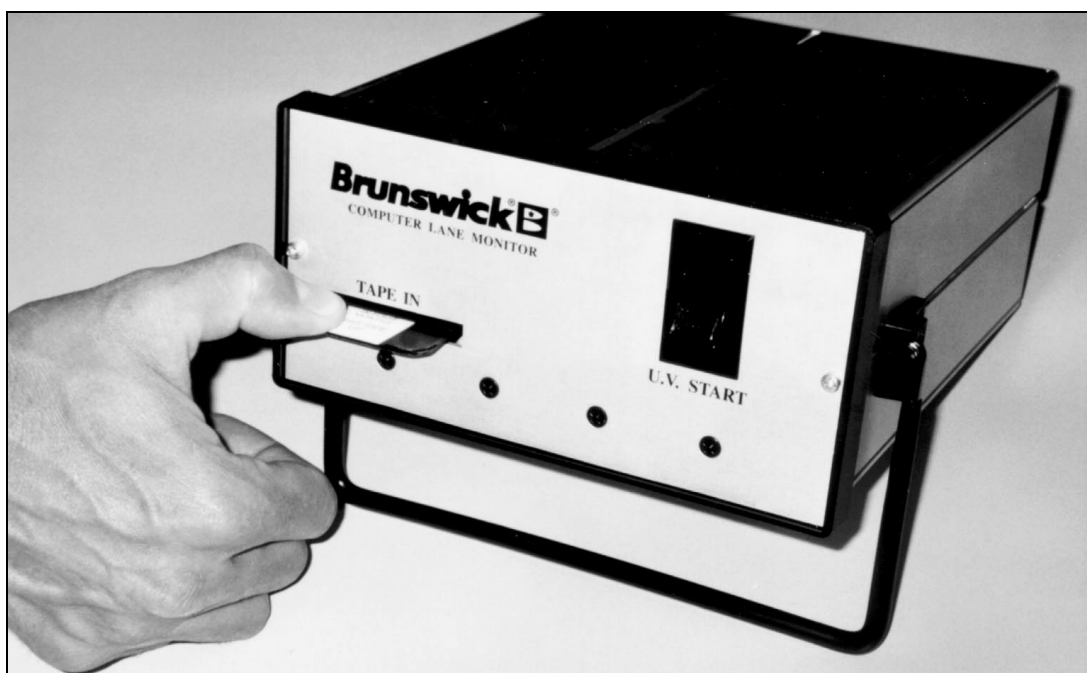




Computer Lane Monitor™ for Windows™



User Guide Supplement

BRUNSWICK SERVICE PARTS & SUPPLIES • MUSKEGON, MICHIGAN

© 1995, Brunswick Bowling and Billiards Corporation, 525 W. Laketon Avenue, P.O. Box 329, Muskegon, Michigan 49443

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COMPUTER LANE MONITOR FOR WINDOWS USER GUIDE SUPPLEMENT

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Introduction

This Computer Lane Monitor for Windows User Guide is intended to teach you how to use the Computer Lane Monitor for Windows program. Much of this guide assumes you have a thorough understanding of how to use your lane optical reader and recorder.

If you are not already familiar with the lane optical reader and recorder, refer to the main Operator Manual part number 61-900017-000 pages 1 to 13. Pages 31 through 42 of the same manual covers the troubleshooting and service of the lane optical reader and recorder.

The Computer Lane Monitor for Windows program requires Windows 3.1 or higher, including Windows 95, an IBM compatible, 386 or higher computer with a minimum of 4 Megabytes of RAM and a VGA color or monochrome monitor to control the optical reader and display the information. Since the software also stores the tape files in a database for quick retrieval, a hard drive is also required. The software program must be installed onto the computer before the initial operation of the Computer Lane Monitor.

The Computer Lane Monitor for Windows program, along with an optical reader, allows you to read and record the amount of oil present on a lane surface from a tape sample. You can use this program to perform several tasks:

- Read tapes
- Store tape readings
- View stored tape data in several graphical formats and print them

Windows Basics

This guide does not teach you how to use Microsoft Windows. This guide assumes you know how to use basic Windows components—dialog boxes, check boxes, buttons, the mouse and pointer, and the cursor. These things are common to all Windows programs. Please refer to your Windows documentation or the Help menu that is available from Window's Program Manager for help using Windows. If you are not familiar with basic Computer Lane Monitor components, refer to the main Operator Manual part number 61-900017-000 which explains the DOS version of the Computer Lane Monitor program.

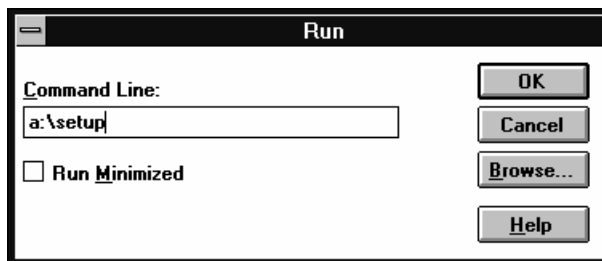
Installation of Computer Lane Monitor for Windows Software

Complete the following steps to install the Computer Lane Monitor for Windows program.

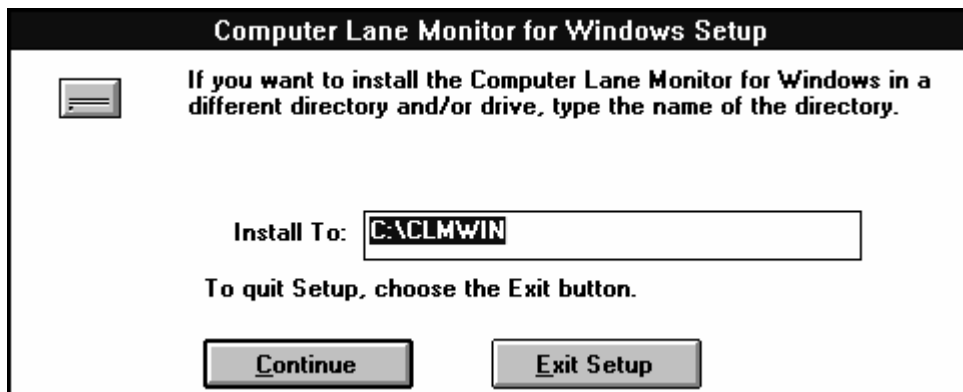
Note: It is suggested that a copy of the original installation diskettes be made and kept in a safe location.

Installing Computer Lane Monitor for Windows

1. Start Windows.
2. Insert Computer Lane Monitor for Windows disk 1 in drive A or B.
3. From the File menu on the Program Manager window, select Run. The Run dialog box is displayed.



4. In the Command Line field, type **a:\setup** or **b:\setup**, and click OK. The Computer Lane Monitor for Windows Setup dialog box is displayed. Click Continue when the welcome prompt with the version number is displayed.
5. In the Install To field, type the directory in which you want to install Computer Lane Monitor for Windows, and click Continue. To accept the default C:\CLMWIN directory, click Continue.



6. When the "Please insert disk #2" message is displayed, insert disk 2, and click OK.

The installation process is complete when the Computer Lane Monitor Successfully Installed dialog box is displayed. At this time, the setup program will need to restart Windows. You should close any DOS or other Windows applications you are running, by using the Alt+Tab keys or the task manager.

If you are running Windows in standard mode, rather than 386 enhanced mode, you will be prompted to add the following line to your autoexec.bat file:

```
Share.exe /L:500
```

Share.exe is a DOS utility program that is included with your DOS operating system software. For more information about Share.exe, see the DOS documentation that came with your computer.

After adding share.exe to your autoexec.bat file, you must then restart your computer.

Computer Lane Monitor for Windows Basics

Computer Lane Monitor for Windows is a program that allows you to read tapes, store tape data, view tape data in various graphical formats, and print the graphs.

A status bar is located in the lower left corner of the display screen. The normal progression of reader status is from "Tape Reader Connected" to "Firmware: PC Lane Monitor Version 3.00" to "U.V. Bulb ON" to an automatic warm-up check. After the reader warm-up check is completed, the task buttons are normally selected in order from left to right, i.e. first Calibrate, then enter Tape Header information, then Read Tape, and so on through all the buttons.

Each time a tape sample is read, the information can be stored as a tape data record in the current database. The tape header information helps identify each tape data record for selection when viewing graphs or manipulating files.

You complete Computer Lane Monitor for Windows tasks with buttons or menu commands that are available in the Computer Lane Monitor for Windows window.

Buttons

There are five buttons you use to complete the most common Computer Lane Monitor for Windows tasks.



Calibrate—This button allows you to calibrate an optical tape reader with a calibration strip of a known value. You must calibrate before you can read a tape. When you select this button, dialog boxes walk you through the calibration process.



Tape Header—This button allows you to enter tape header information. This information helps identify each tape data record and is displayed when you view tape data records in graphical formats.



Read Tape—This button allows you to begin the tape reading process. When you select this button, you are prompted to insert the tape you want to read in the optical reader and Computer Lane Monitor for Windows displays the reading in a 2-D tape graph as the tape is being read. The status bar in the lower left corner of the display prompts the Read Tape process along with the dialog boxes.



2-D Tape Graph—This button allows you to view stored tape data records in a 2-D tape graph. You can view up to five tape data records at a time with this graph. This graph displays the amount of oil detected on individual tape samples.

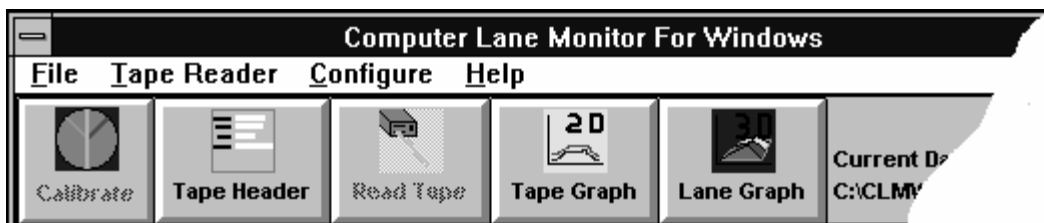


3-D Lane Graph—This button allows you to view tape data records in 3-D formats. These formats display the way oil was distributed on a lane as it was sampled from multiple tape data records. You can select to view data in four different graphical formats. You use the 3-D lane graphs to view how oil was distributed at different distances on the same lane.

Menus

You can also use menu commands to complete Computer Lane Monitor for Windows tasks. Some of the menu commands have an equivalent button. It does not matter if you use the menu command or button to complete the task.

You can find the menus at the top of the Computer Lane Monitor for Windows window as shown in the following illustration.



File Menu

There are five menu commands from the File menu:

New Graph—This menu command has two options that allow you to view stored tape data records in a 2-D tape graph or 3-D lane graph.

- **Tape Graph**

Use this command to view stored tape data in a 2-D tape graph. This menu command option allows you to complete the same task that the 2-D Tape Graph button allows you to complete.

- **Lane Graph**

Use this command to view stored tape data in a 3-D lane graph. This menu command option allows you to complete the same task that the 3-D Tape Graph button allows you to complete.

Close Graph—This menu command allows you to close 2-D tape, 3-D lane, or current Tape Read graphs that you have open. This command is available only when you have a graph open.

Database—This menu command has several options that allow you to create and manage database files in which you store tape data records. You do not have to use these menu commands to successfully use Computer Lane Monitor for Windows.

With these commands, you can create or delete database files for use with Computer Lane Monitor for Windows. You can also copy or delete records in database files.

Note: If you do not change the file extension or path, your tape data records are automatically stored in the Computer Lane Monitor for Windows default database file. (C:\CLMWIN\SAMPLES.MDB)

- **Select Database**

Use this command to select the database file that contains the tape data records that you want to view or the database file in which you want to store new tape data records. You can select only one database file at a time from the list of existing databases. If you do not use this command to select a database file, Computer Lane Monitor for Windows opens its default database file. The default database file is the easiest file to use to manage your tape data records.

- **Create New Database**

Use this command to create a new database file in which you want to store tape data records.

- **Delete Database**

Use this command to remove an old database file for which you no longer want to view its tape data record data. All the tape data records in the database file are deleted.

- **Copy Records**

Use this command to copy tape data records from one database to another.

- **Delete Records**

Use this command to remove a tape data record from a database file.

- **Repair Database**

Use this command to restore a database file should it become corrupted.

- **Import DOS Data**

Use this command to import, or transfer, data from an existing DOS database into a Computer Lane Monitor for Windows database file.

Print Setup—This menu command allows you to set up how you want to print data. It is a standard Windows menu command. For more information about this menu command, see your Windows user guide.

Exit—This menu command allows you to close the Computer Lane Monitor for Windows program.

Tape Reader Menu

There are four menu commands from the Tape Reader menu:

Warmup—This menu command has two warm-up process options: Bypass and Restart. You should make sure that your optical reader has been on for at least 30 minutes before you calibrate or read tapes. Otherwise, you might have to recalibrate frequently until the optical reader is warmed up. The warm-up process ensures that the optical reader is ready to be calibrated and read tapes.

- **Bypass**
Use this command to bypass the warm-up process. If you bypass this process and the optical reader is not warm, you may have to recalibrate more frequently.
- **Restart**
Use this command to manually restart the warm-up process if the automatic warm-up process that is run when you first start Computer Lane Monitor for Windows was bypassed or was not successful.

Calibrate—This menu command has two options that allow you to calibrate your optical reader and Computer Lane Monitor for Windows. These menu commands work the same as the Calibrate button.

- **Short**
Use this command if you want to calibrate your optical reader with only one calibration strip.
- **Standard**
Use this command if you want to calibrate your optical reader with three calibration strips.

Note: The first time you run the Computer Lane Monitor for Windows program you must use the standard calibration. After that, you can use the short calibration. The program automatically prompts you when you must use the standard calibration again.

Tape Header— This menu command allows you to enter tape header information for the current tape read graph. This information helps identify each tape data record and is displayed when you view tape data records in graphical formats. This menu command works the same as the Tape Header button.

Read Tape—This menu command allows you to start the tape data record process. This menu command works the same as the Read Tape button.

- **Automatic**
Use this command if you want the optical reader to automatically control the tape when you read a sample tape.
- **Manual**
Use this command if you want to manually control the tape through the optical reader when you read a sample tape. After the tape is positioned on the start of the second board, this process is identical to the automatic read tape process.

Move Tape—This menu command allows you to manually advance a tape through an optical reader. You can use this command to clear tape samples from the optical reader if the automatic tape feed was halted.

Configure Menu

There are four menu commands from the Configure menu:

Advanced Setting—This menu command allows you to configure special parameters for an optical reader. This command should only be used for specific diagnostic purposes under the direction of a qualified Brunswick representative. Changing the settings can reduce the accuracy of the calculated tape values. Use the “Default” button in the lower right corner of the dialog box to reset all variables to their original values if you suspect any have accidentally been changed.

Communications—This menu command allows you to set up the communication (COMM) port in which an optical reader is plugged in your computer.

Hide Button Bar—This menu command allows you to remove the button bar from the Computer Lane Monitor for Windows window. When you select this command, the button bar disappears and this menu command changes to Show Button Bar. Select the Show Button Bar command to display the button bar.

Window Menu

The commands available from the Window menu are standard Microsoft Windows menu commands. Please refer to your Windows documentation or the Help menu that is available from Window’s Program Manager for additional help using these menu commands.

Window—This menu allows you to select to view any active Current Tape Read graph, 2-D Tape graph, or 3-D Lane graph.

Tile and Cascade—The Tile and Cascade options are normal Windows commands.

Help Menu

The commands available from the Help menu are standard Microsoft Windows menu commands. Please refer to your Windows documentation or the Help menu that is available from Window’s Program Manager for additional help using these menu commands.

There are three menu commands from the Help menu:

Contents—This menu command allows you to select different reference sections from the Operator Manual. One of the key sections is the Troubleshooting section which could quickly identify the cause and solution to a problem.

Search for Help on—This menu command allows you to search through a list of key phrases or type in a key word. The system then searches for related topics and allows you to go to the reference section of the selected topic.

About CLMWIN—This menu command displays the software version and Tape Reader Firmware version.

Installing and Getting Started

This section provides instructions on how to install the Computer Lane Monitor for Windows program and the optical reader cables. It also includes instructions for how to start the Computer Lane Monitor for Windows program.

Connection of Optical Reader Cables

Complete the following steps to connect your optical reader to your computer. Be sure that the computer on which you use Computer Lane Monitor for Windows is turned off when you connect your optical reader.

Connecting optical reader cables

1. Plug the male end of the optical reader's serial computer data cable into the communication port in the back of the optical reader.
2. Plug the female end of the optical reader's serial computer data cable into an available communication port on your computer. Remember the communication port in which you plugged the cable.
3. Plug the optical reader's power supply cord into the back of the optical reader and then into the proper grounded 110 or 220 VAC outlet depending on the voltage range of the reader which you ordered.

Optical Reader Power-Up and U.V. Lamp Start

Complete the following steps to turn on the optical reader and start the U.V. lamp. You should turn on the optical reader and U.V. lamp at least 30 minutes prior to starting the Computer Lane Monitor for Windows program and reading tapes. The reason for this is that it can sometimes take longer to go through the calibration and warm-up processes if you start using the Computer Lane Monitor for Windows program immediately after turning on the optical reader and U.V. lamp.

Powering-up the optical reader and starting the U.V. lamp

1. Turn on the Optical Reader power switch located on the back panel. See Figure 10 on page 11 in the Main Operator Manual. The switch is marked with an "I" for ON and "O" for OFF.
2. Turn on the U.V. lamp by pressing the "U.V. Start" switch on the front panel until the amber indicator light remains on, then release the switch. The light will stay on indicating the proper function of the U.V. lamp.

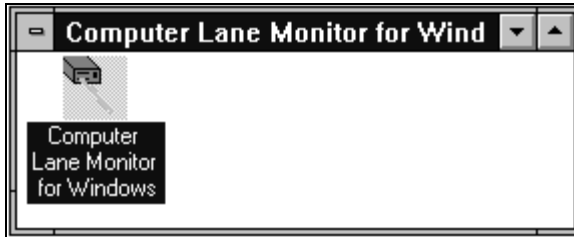
Note: Do not be alarmed if the U.V. lamp "starts" by itself when the power switch is activated. This sometimes happens if the bulb is warm.

Starting Computer Lane Monitor for Windows Program

Complete the following steps each time you want to use the Computer Lane Monitor for Windows program.

Starting Computer Lane Monitor for Windows

1. Start Windows.
2. Double-click on the Computer Lane Monitor for Windows group box.
3. Double-click on the Computer Lane Monitor for Windows icon to start the program.



4. Click OK on the Brunswick Computer Lane Monitor window.



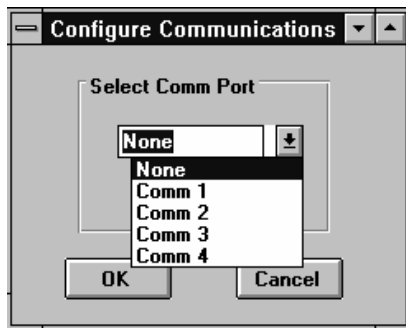
Note: If you have not installed or are not using an optical reader, you can still use Computer Lane Monitor for Windows to view data from past tape data records. If you do not have an optical reader connected to the computer you are working on, the message "No Tape Reader Detected" is displayed in the lower left corner of the program window.

Using Computer Lane Monitor for Windows for the First Time

The following steps need to be done only the first time you use Computer Lane Monitor for Windows. These instructions allow you to configure the optical reader for the Computer Lane Monitor for Windows program. You do not need to repeat these steps unless you change the communication port in which the optical reader is connected to your computer.

Using Computer Lane Monitor for Windows for the First Time

1. Start Windows.
2. Double-click on the Computer Lane Monitor for Windows group box.
3. Double-click on the Computer Lane Monitor for Windows icon to start the program.
4. The first time you run Computer Lane Monitor for Windows, a message box tells you that no communications port has been set. Click OK to acknowledge this message, and the Configure Communications dialog box appears.
5. In the Configure Communications dialog box, select the communication port in which you plugged the serial communication data cable, and click OK. If you do not have a tape reader attached to your computer, select None.



6. A status bar is located in the lower left hand corner of the display screen. When the correct communication port is selected, the status should progress from "No Tape Reader Detected" to "Tape Reader Connected". If the status bar remains on "No Tape Reader Detected", try selecting another communication port and/or switch the serial cable to another port on the computer. Make sure that the optical reader power is on and the cable connections are secure.

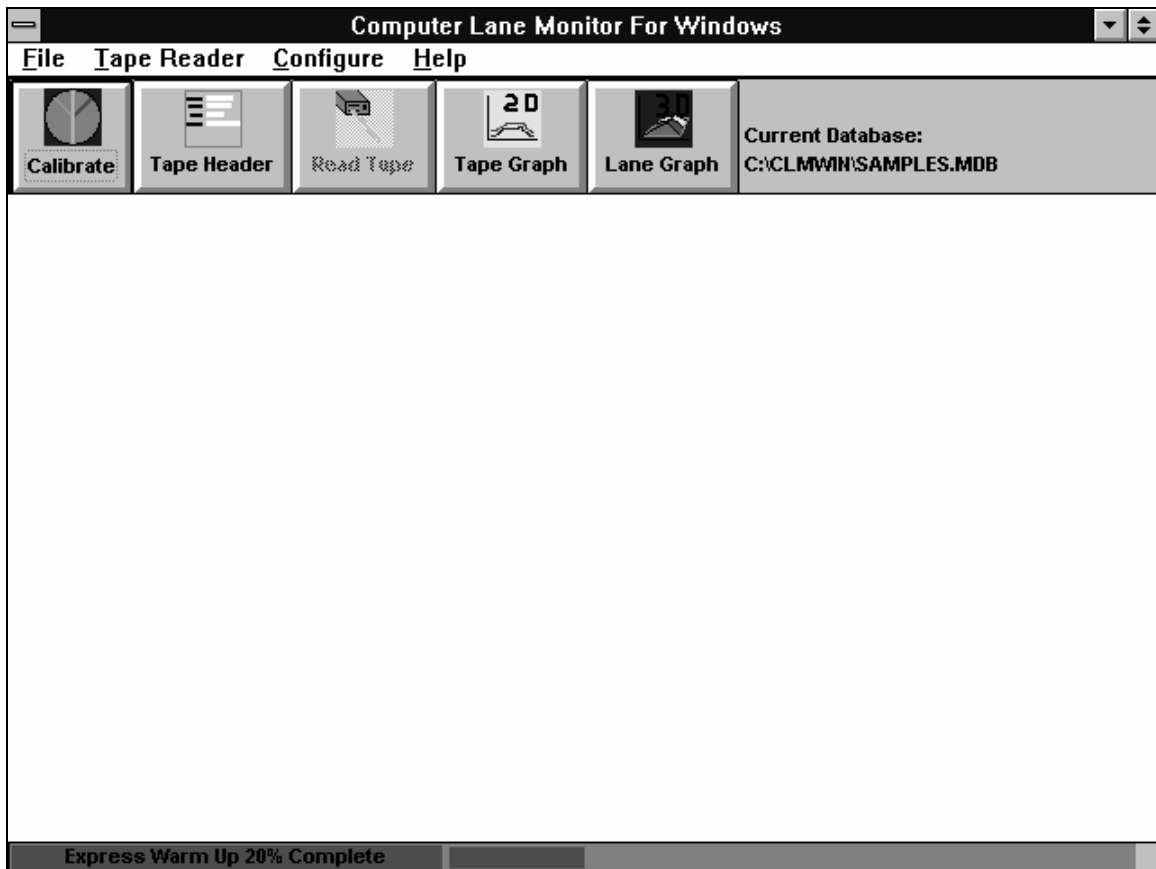
Operation of the Optical Reader

There are four steps you complete to read tapes with the Computer Lane Monitor for Windows program and an optical reader:

- Warm-up check
- Calibrate
- Create a header
- Read the tape

Warm-Up Check

The Warm-Up check monitors the U.V. lamp at the start of the Computer Lane Monitor program to make sure that it has stabilized enough to allow accurate calibration and reading of sample tapes. The Warm-Up Check is automatically started each time the program is started until the Warm-Up Check is completed or bypassed.



The status of the Warm-Up Check is displayed in the lower left corner of the computer display with a bar graph just to the right of the status box. After the status box indicates that the tape reader is connected and the U.V. bulb is on, the system starts an express warm-up check. If the optical reader and U.V. bulb is turned on before the Computer Lane Monitor program is started and is sufficiently stable, the express warm-up check will progress to 100% in a few minutes.

The express warm-up check time varies depending on the ambient temperature, storage temperature, age of the U.V. source tube, and the stability of the power supply. If the optical reader is not sufficiently stabilized, the express check will stop at the appropriate level and switch to the normal warm-up mode. In the normal warm-up mode, the system should take three minutes to advance to the next 10% level. This should allow you to predict when the unit will reach the 100% level. All menu options other than Calibration and Read Tape can be selected while the reader is warming up. A status box message "Tape Reader Ready to Calibrate" is displayed when the warm-up check is complete.

Tip: For minimum waiting, turn on the U.V. lamp an hour before use. The Warm-Up Check can then be complete in only a few minutes.

Two warm-up options are available from the Tape Reader menu. "Bypass" allows you to skip the warm-up check to temporarily calibrate the reader and take a quick tape reading. If the reader is not sufficiently warmed up and stable, this option may result in frequent recalibration or inaccurate tape readings.

"Restart" allows you to restart the warm-up check after the Bypass option or at any other time when the warm-up check does not seem to be progressing normally. Select these menu options as follows:

Restarting the warm-up process

1. From the Tape Reader menu, select Warm-up.
2. From the Warm-up command, select Restart. The express warm-up check begins automatically. When the process is complete, the status bar in the lower left corner reads "Tape Reader Ready To Calibrate".

Bypassing the warm-up process

1. From the Tape Reader menu, select Warm-up.
2. From the Warm-up command, select Bypass. The warm-up process is skipped.

Note: While the express warm-up check is running, the responsiveness of other features of Computer Lane Monitor for Windows and other applications may be slower. Once the express warm-up check is completed, the responsiveness should return.

Calibrating

Before you can read tapes with an optical reader, you must calibrate. Calibrating is a process in which you adjust the optical reader with calibration strips of a known value. This ensures the optical reader's accuracy. There are two types of calibrations: standard and short.

Your calibration kit includes three calibration strips. You should record the date on each calibration strip the first time you use them. You should replace each strip every four months. Always keep the calibration strips in an envelope when you are not using them. Exposure to direct sunlight is harmful to the strips and can result in inaccurate calibrations.

Standard Calibration

You must calibrate your optical reader the first time you run the Computer Lane Monitor for Windows program using the standard calibration. You use three calibration tape strips to complete the standard calibration. Each strip has a labeled value for a certain amount of oil on the strip. The three values from the three strips creates a current calibration value. When you read your actual lane tapes, the Computer Lane Monitor for Windows program and optical reader calculate the amount of oil on the tape sample in “units” of oil based on the current calibration value.

Standard calibration is more accurate than the short calibration. It verifies that all three strips are within the calibration range. The Computer Lane Monitor for Windows program prompts you when you must complete the standard calibration again. This usually occurs when the internal temperature of the optical reader changes.

The best accuracy is obtained when the tape samples are read soon after the reader is calibrated. For this reason, it is recommended that at least a short calibration be conducted every hour while reading tape samples.

Calibrating your optical reader using the standard calibration

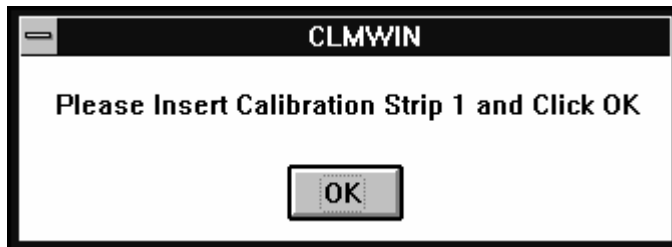
1. Click on the Calibrate button, or from the Tape Reader menu, select Calibrate.
2. The Calibrate command has two options, select Standard.
3. Insert the first calibration strip into the “Tape In” slot until the label end is flush with the front edge of the “Tape In” guide as shown.

Make sure the tape is flush with the front edge of the Tape In slot.

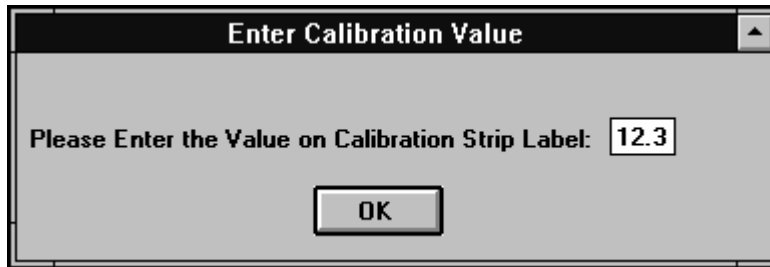


Insertion of the Calibration Strip

- Click the OK button while holding the calibration strip in the reader for 5 seconds.



- Type in the value printed on the label of the calibration strip, and click OK.



- When prompted to do so, insert the second calibration strip in the optical reader, and click OK. Leave the strip in the optical reader until you are prompted to enter the label value.
- Enter the value on the calibration strip, and click OK.
- When prompted to do so, insert the third calibration strip in the optical reader, and click OK. (Same as Step 6.)
- Enter the value on the calibration strip, and click OK.
- If the calibration process was not successful, repeat the standard calibration, making sure to enter the correct label values.

Short Calibration

The short calibration option requires only one calibration strip. This is a time saving option which is useful when the optical reader is fully warmed up and the calibration strip is known to be accurate. If the short calibration results in a calibration value that is considerably different than the previous value, the system will prompt you to use the standard calibration.

Calibrating your optical reader using the short calibration

- Click on the Calibrate button, or from the Tape Reader menu, select Calibrate.
- The Calibrate command has two options, select Short.
- Insert the calibration strip in the optical reader, and click OK. Leave the strip in the optical reader until you are prompted to enter the label value.
- Enter the value on the calibration strip, and click OK.
- If the calibration was not successful, select the standard calibration.

Entering the Tape Header Data

A header identifies specific information about each tape data record and is used when you select specific records to view in the 2-D tape graph or 3-D lane graph. You must enter this information to save a tape data record.

Header information includes:

- The lane number of the lane for which the tape is read.
- The distance from the foul line in feet for which the tape reading begins.
- The date of the tape data record.
- The establishment's name for which the tape is read.
- The number of lines bowled since the lane was last conditioned.
- The first and last name of the person completing the tape reading.
- The time of the reading.
- Any comments about the tape data record.

You can enter header information before or after you read a tape. However, you cannot save a tape data record until you enter a header. It is recommended that you enter the tape header information before reading each tape sample.

- If you select to read a tape before you enter header information, you are prompted to enter the header information after you read the tape, when you attempt to read another tape, or close the Computer Lane Monitor for Windows program.

Enter Tape Header Information

Brunswick Computer Lane Monitor™ Lane Dressing Analysis

Lane Number : Distance From Foul Line: Feet Date:

Establishment Name:

Approximate Number of Lines Bowled Since Last Conditioned:

Readings taken by

First Name: Last Name: Time:

Memo

OK Cancel

Entering header information

1. Click on the Tape Header button.
2. In the Lane Number field, enter the number of the lane for which you want to read a tape, and press Tab.

3. In the Distance From Foul Line field, enter the number of feet from the foul line the oil starts to appear on the tape being read, and press Tab.
4. In the Date field, enter the date that reading is taking place if it is different from the displayed date, and press Tab. Use the Backspace, delete and arrow keys to edit the displayed information fields.
5. In the Establishment Name field, enter the establishment's name for which you are reading a tape if it is different from the displayed name, and press Tab.
6. In the Approximate Number of Lines Bowled Since Last Conditioned field, enter the number of lines bowled since the last time the lane was conditioned, and press Tab.
7. In the First Name field, enter the first name of the person taking the reading, and press Tab.
8. In the Last Name field, enter the person's last name, and press Tab.
9. In the Time field, enter the time of the reading.
10. In the Memo field, enter any comments such as the type of oil, pattern, or any other desired information.
11. Click OK to save the header information and start reading a tape.

If you enter the header before reading a tape, Computer Lane Monitor for Windows will save the information with the next tape read. If you are not ready to read a tape, you can select Cancel. However, if you select Cancel, you must re-enter the header information for the lane.

Reading Tapes

Select the "Read Tape" option to read and display the value of a new tape sample. There are two options with the "Read Tape" menu. Use the "Automatic" option if you have the proper lane edge marker as explained on page 12 of the Main Operator Manual. Otherwise, use the "Manual" option.

The "AUTOMATIC" option will automatically control the tape drive roller motor to position the tape and advance it while it reads the entire tape length. The "MANUAL" option allows you to manually position the tape for the tape zero reading and the start of the board #2 before the reader automatically reads and graphs the entire tape length.

Caution: Make sure there is no tape sample already in the Optical Reader when you select a "Read Tape" option. The Reader takes an empty slot reading to check the calibration before each tape sample is read.

The program prompts you if the previous tape sample data was not saved and gives you the option to save it. If the previous tape data is not saved, the information is lost as the new tape sample data is loaded into the Current Tape Read graph.

Note: If you have not read and followed the instructions on Sample Tape Preparation for Optical Reader, return to page 12 of the Main Operator Manual. Make sure that the tape sample has a straight 6" or longer leader with the recommended white lane edge marker.

In either of the two tape read options, the status bar in the lower left corner of the display screen prompts you through the tape read process.

As the tape is being read, the data is displayed in a 2-D tape graph with the digital reading in units of oil listed in a column on the right side of the screen. The system prompts you to save the tape sample record if the information displayed in the tape header and graph are correct.

“Read Tape” Option - Automatic

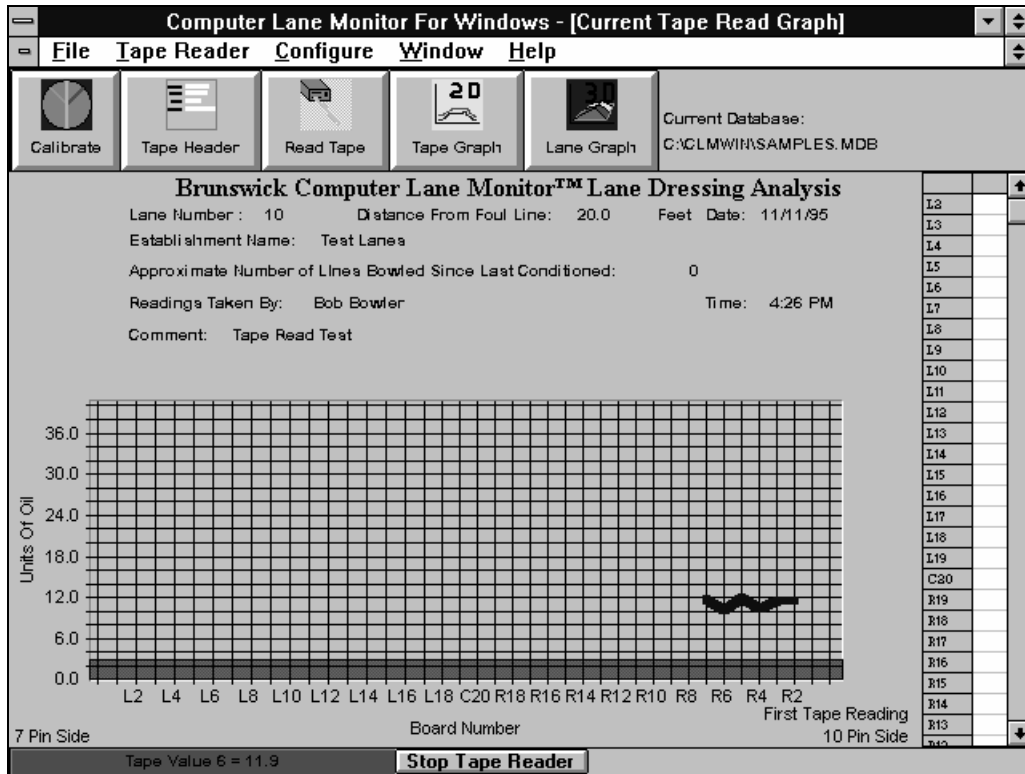
The automatic option allows the optical reader to control the tape when you insert it in the Tape In slot to be read. The optical reader’s tape drive roller motor positions the tape and advances it while it reads the entire length of the tape.

Automatically Reading a Tape

1. Click on the Read Tape button, or from the Tape Reader menu, select Read Tape.
2. The Read Tape command has two options, select Automatic.
3. If you have not already entered the tape header information, you will be prompted to enter it or cancel.
4. Insert a sample tape into the “Tape In” slot of the Optical Reader. The automatic tape drive motor will not start until you have inserted the tape sample leader into the “Tape In” slot of the Optical Reader.
5. **After the tape drive motor starts, continue to insert the sample tape further into the slot until it contacts the drive rollers and is pulled in by itself.** The tape will slowly advance until it finds the lane edge marker. Then it will reverse to take a zero reading from the leader before it advances to quickly read the entire tape length.

Tip: Place a pencil or pen through the center of the tape sample roll to allow it to unroll without twisting before it enters the “Tape In” slot. For best results, grasp the front end of the tape as it exits the rear opening of the Reader and watch for a steady a tape flow.

Caution: If the sample tape becomes jammed in the Optical Reader while it is being read, IMMEDIATELY STOP THE TAPE READ OPERATION BY CLICKING THE “Stop Tape Reader” BUTTON ON THE STATUS BAR, OR TURNING OFF THE POWER TO THE READER! Refer to the “Clearing a Tape Jam” section in the Service section of the Main Operator Manual.



Note: If the Optical Reader cannot find the lane edge marker to automatically position the sample tape, or if the lane edge marker is covering part of the second board, you will need to use the “Manual” tape positioning explained in the following set of steps. You will need to clear the tape from the Reader by selecting the “Move Tape” option from the “Tape Reader” menu BEFORE selecting the “Manual” option of the “Read Tape”.

- The lane dressing analysis 2-D graph will be automatically displayed as the end of the tape sample exits the Reader. The digital units of oil for each board position will be displayed in a column on the right side of the display screen.
- You are prompted to save the current tape data.
Select Yes if you want to save the tape data record for later viewing or reference.
OR
Select No if you do not want to save the tape data record.

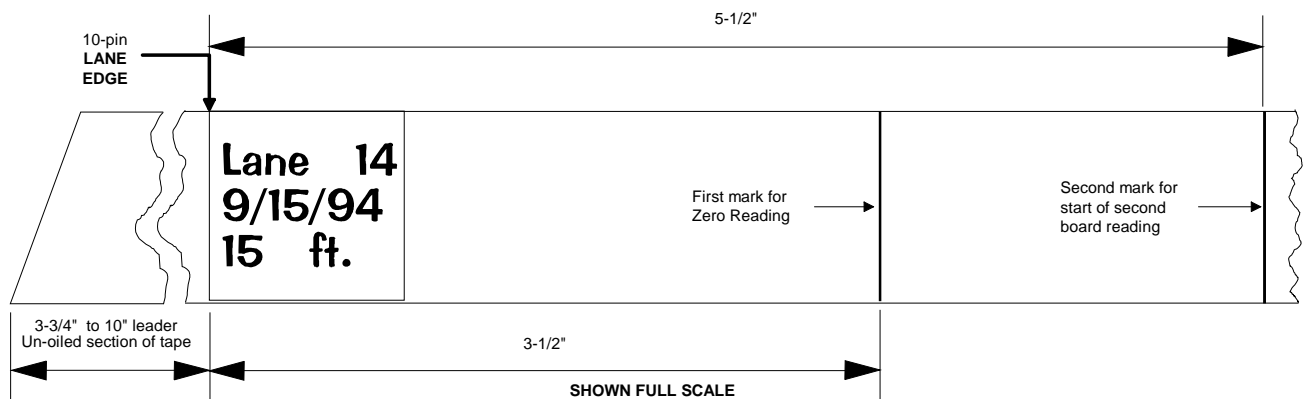
Note: If the tape header information is not correct, do not save the tape data record. Make the correction by selecting the Tape Header and editing. Then save the tape sample record by selecting the “Save Tape” option from the File menu.

“Read Tape” Option - Manual

The “MANUAL” option of the “Read Tape” program requires the operator to manually position the tape on the leader to take the zero reading then manually position the tape at the start of the second board (10-pin side). The program is then started to automatically read and graph the entire tape length. This option should be used if the sample tape does not contain the recommended one-inch square, white lane edge marker or if the tape leader is less than 6” long. The “Manual” option is may not be as accurate or repeatable as the “Automatic” option of the “Read Tape” program because of possible variations in the tape positioning during the Zero Reading and slight shift of the lane edge and board readings. The “Manual” option is useful if the tape sample is in poor condition and the tape leader needs extra care while feeding it into the tape slot.

Manually Reading a Tape

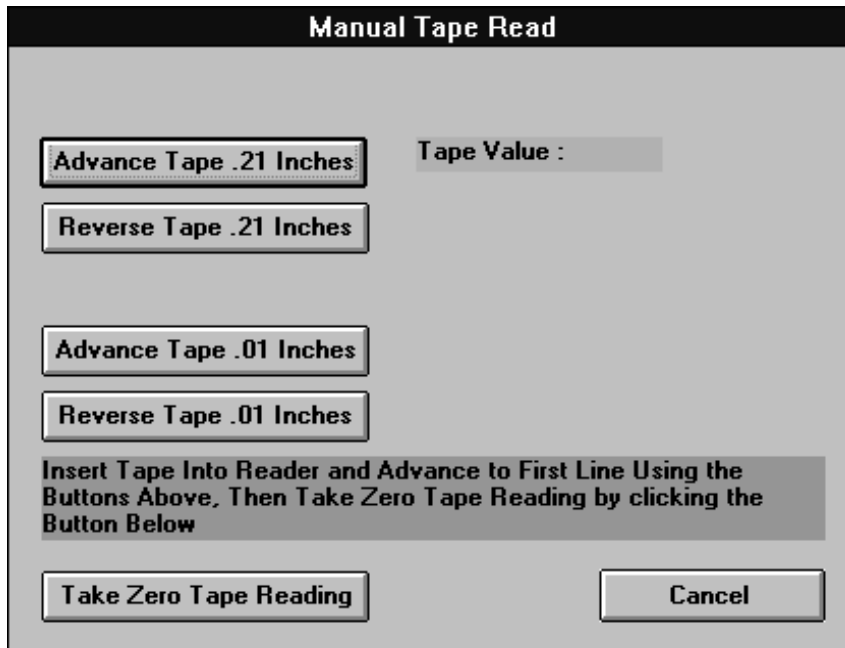
1. Mark two lines on the sample tape as shown in the figure below. The first line should be 3-1/2” after the 10-pin lane edge with the second line 5-1/2” after the 10-pin lane edge. The figure below is shown full scale and can be used as a guide for marking a tape.



Preparing a Tape for Manual Read

2. Click on the Read Tape button, or from the Tape Reader menu, select Read Tape.
3. The Read Tape command has two options, select Manual.
4. Insert the sample tape into the “Tape In” slot of the Optical Reader. With a normal sample tape with a 6” leader, the tape positioning is done by inserting the tape until it contacts the rollers.
5. Click on the “Advance .21” button to cause the reader tape drive motor to engage the front of the tape sample. Repeat clicking the “Advance .21” button to move the tape into the reader until the first marked line (3-1/2” after the 10-pin lane edge) **is flush with the front edge of the “Tape In” guide.**

Note: You can also click on the Advance .01 button to move the tape forward through the optical reader in smaller increments. The Reverse .21 and Reverse .01 buttons move the tape backwards.



6. Click on the Take Zero Tape Reading button to the tape zero reading. The reader has now adjusted for the un-oiled tape leader and will now display units of oil as the tape sample is advanced or reversed.

Note: If the sample tape leader is shorter than 6", the leader may not contact the drive rollers and will have to be held on the 3-1/2" line by hand while the Tape Zero Reading button is clicked.

7. Click on the "Advance .21" button until the second marked line (5-1/2" after the 10-pin lane edge) nears the front edge of the "Tape In" guide. Use the "Advance .01", "Reverse .01", and "Reverse .21" until the second line is exactly flush with the front edge of the guide.

Note: If the 10-pin lane edge was not clearly marked or if the lane edge marker is covered by part of the second board, the tape can manually be positioned by noting the units of oil of the tape reading on the screen as the tape is advanced. The lane edge should be the point where the reading starts to increase noticeably above zero. (Advance ~1" further to the start of the second board.) A white lane edge marker will cause a very high reading. Position the tape just beyond these high readings where the values are normal. Because this procedure involves some estimation as to where the second board starts, it may result in readings which are slightly shifted from the true board positions.

8. Click on the Start Reading Tape button. The optical reader takes over to allow the reader to read the entire tape just as previously described in the steps for Automatically Reading a Tape.

9. If the tape sample becomes jammed in the optical reader, click on the “Stop Tape Reader” button as explained in the “Read Tape” Option - Automatic section of this manual.

Viewing Stored Tape Data

Each time a tape reading is saved, it creates another tape data record that is stored in the current database. You can view stored tape data records in the currently selected database in two different graphical formats: a 2-D tape graph or a 3-D lane graph. You cannot change stored tape data for a 2-D tape graph or a 3-D lane graph record. If there are errors in a tape data record, such as the wrong lane number or wrong center, you must re-enter the header information and reread the tape.

For either a 2-D tape graph or a 3-D lane graph, you can select to show or hide the Button Bar, Tape Header or Graph Toolbar. Hiding some or all of these items allows you to display a larger graph. The Graph Toolbar allows you to customize how a graph is displayed.

To display or hide the Button Bar, Tape Header or Graph Toolbar

- From the Configure menu, select Show Button Bar, Show Tape Header or Show Graph Toolbar, as desired. The selected item is then displayed.
- OR
- From the Configure menu, select Hide Button Bar, Hide Tape Header or Hide Graph Toolbar, as desired. The selected item is then hidden from view.

Viewing a 2-D Tape Graph

When you select to view a 2-D tape graph, the screen displays lane statistics in a two-dimensional line graph. The line graph displays the board number legend on the bottom of the graph and the units of oil legend along the left side of the graph.

You use the 2-D tape graph to see how oil is distributed across the lane at a given distance from the foul line. The digital units of oil are listed for each board position in a column on the right side of the display.

You can view up to five tape data records overlaid in a single 2-D tape graph. All the records you select display in different colors on the graph so that you can compare the tape data records. The graph's header information provides a legend so that you can identify each of the records.

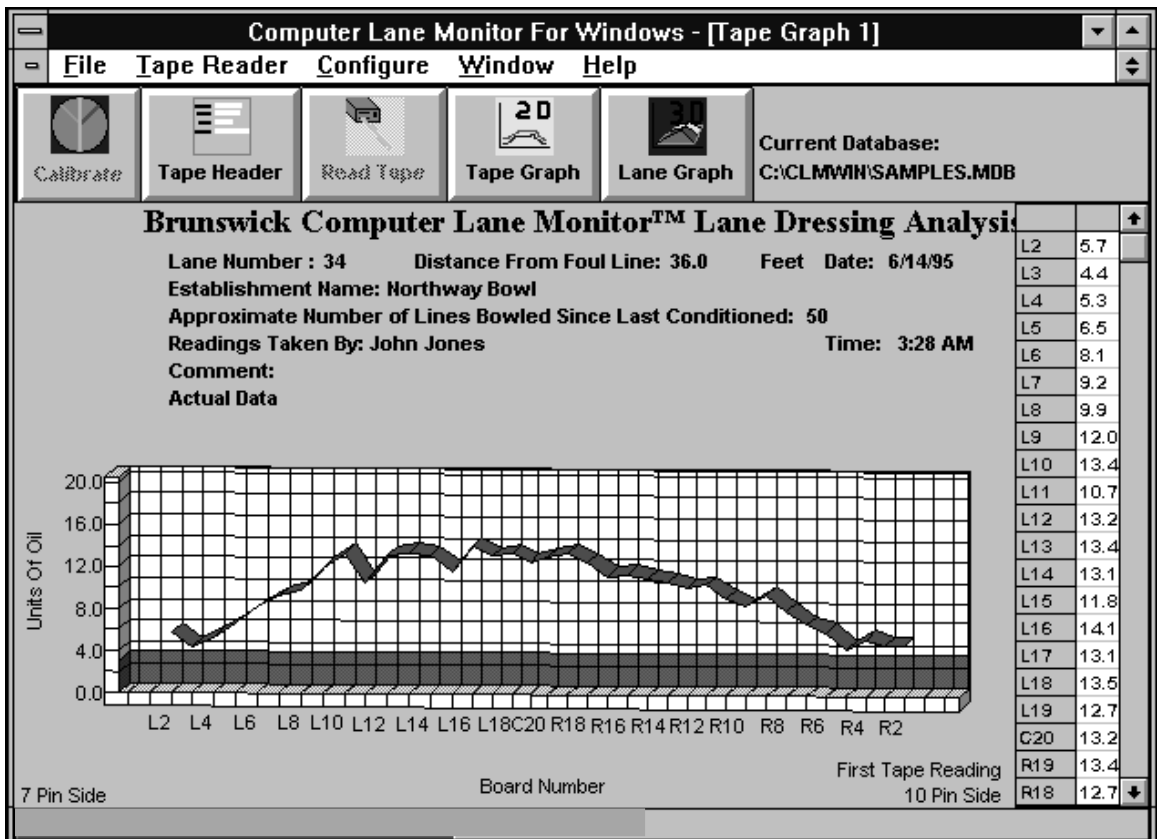
1. Click the 2-D tape graph button. The Select Data to Graph dialog box is displayed.
2. Select the tape data record(s) you want to view, and click OK. Selected records are highlighted. Clicking on a record a second time deselects the record and remove the highlighting.

Note: The tape data records that are listed depend on the database file that you opened when you first started using Computer Lane Monitor for Windows. To view records in another database file, use the File menu's Database|Select Database command to open the other database file and repeat Steps 1 and 2.

Note: The memo field can be lengthened in this dialog box to display more of its contents by clicking and holding the the mouse cursor on the right end of the Memo Title range and dragging it further to the right before releasing.

Select Data to Graph						
Center Name	Tape Date	Tape Time	Lane Number	Distance	Me	
Center 1	8/1/95	12:00:00 AM	1	10		↑
Northway Bowl	6/14/95	3:28:00 AM	34	16		
Northway Bowl	6/14/95	3:28:00 AM	34	26		
Northway Bowl	6/14/95	3:28:00 AM	34	36		
Japantown Bowl	6/8/95	4:22:00 PM	18	25		
Japantown Bowl	6/8/95	4:22:00 PM	18	15		
Japantown Bowl	6/8/95	4:22:00 PM	18	25		
Japantown Bowl	6/8/95	4:22:00 PM	18	30		
Japantown Bowl	6/8/95	4:22:00 PM	18	35		
Tophat Lanes	6/2/95	1:35:00 PM	6	20		
Tophat Lanes	6/2/95	1:35:00 PM	6	22		
Tophat Lanes	6/2/95	1:35:00 PM	6	24		
Tophat Lanes	6/2/95	1:35:00 PM	6	18		
Tophat Lanes	6/2/95	1:35:00 PM	6	28		
Tophat Lanes	6/2/95	1:35:00 PM	6	8		↓

After you click OK, the window displays the selected record(s) in a 2-D tape graph.



Viewing a 3-D Lane Graph

The 3-D lane graph displays multiple tape-read data for one lane at a time. When you select to view a 3-D lane graph, the screen displays lane statistics in a three-dimensional graph. The 3-D Lane Graph is useful only when all selected records are from the same lane condition at different distances.

The Computer Lane Monitor for Windows program assumes that the distribution of oil was the same from the foul line to the distance that the first tape sample was recorded. It then averages the amount of oil on each board between each of the next tape samples recorded to show the entire oil pattern for that lane. The 3-D graph becomes more accurate by recording more tape samples along the distance of the lane. The distance of each tape sample from the foul line is displayed on the 3-D graph.

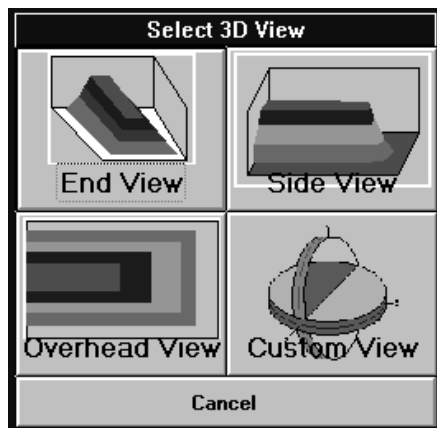
Colors identify different amounts of oil on the lane in this graph. Use the legend on the right side of the window to see how many units of oil each color represents.

You can select the layout of a 3-D lane graph. There are a number of different layouts you can view. Each of the following graph layouts displays the same information, just in different perspectives.

- End View—Displays the graph as if you were looking at the lane from the pinsetter end.
- Side View—Displays the graph as if you were looking at the lane from the side.
- Overhead View—Displays the graph as if you were looking at the lane from a top view.
- Custom View—Displays the graph in a format that you specify. See instructions for Changing a lane graph's angle on page 26.

Viewing a 3-D lane graph

1. Select the 3-D lane graph button.
2. Click on the graph layout you want to view.



3. In the Select Data to Graph dialog box, select the lane record that you want to view by using the following "filter" method:

The three drop-boxes at the top of the dialog box help you quickly select a set of tape records to display for the desired center, sorted by the selected date and lane number. To use the drop-boxes, click on the down arrow button to the right of the desired drop-box. This will show all available options under that heading. Make your selection from the list of items shown by clicking to highlight the desired Center Name, Date and Lane Number.

- Select Center Name from the options in the drop-box first.
- Select Date next from the options in the drop-box (filtered for the selected Center Name).
- Select Lane Number last from the options in the drop-box (filtered for the Center Name and Date).
- If you want to view the filtered header information for each tape data record for the selected Center Name, Date and Lane Number, click the View Records button. (If you want to view the graph without viewing the records, proceed to step 5 below). All records that are specific to the information entered in the Center Name, Date, and Lane Number fields are displayed. Individual tape records cannot be selected by using this “filter” method. See step 4 below.

Select Data to Graph

Filter

Center Name: Blend Bowl Date: 5/28/95 Lane Number: 27 View Records

Header Data				
Distance	Tape Time	First Name	Last Name	Lane Number
20	11:30:00 PM	Bill	Smith	
2	11:30:00 PM	Bill	Smith	
4	11:30:00 PM	Bill	Smith	
6	11:30:00 PM	Bill	Smith	
8	11:30:00 PM	Bill	Smith	
10	11:30:00 PM	Bill	Smith	
12	11:30:00 PM	Bill	Smith	
14	11:30:00 PM	Bill	Smith	
0	11:30:00 PM	Bill	Smith	
18	11:30:00 PM	Bill	Smith	
40	11:30:00 PM	Bill	Smith	
22	11:30:00 PM	Bill	Smith	
24	11:30:00 PM	Bill	Smith	

Show Graph Show All Records Cancel

4. If you want to select individual tape data records from a list of all your centers, for all dates, and all lane numbers, click the Show All Records button. All the records in the database file you currently have opened will be displayed in the dialog box. Now you can select individual tapes for the 3-D Lane Graph by clicking on the desired tape records to highlight them similar to the 2-D graph selection process. This is useful if you have a number of tape data records from the same lane but from different times on the same day. Select the tape records from the same lane condition (i.e., morning reading or evening reading). Also, this allows you to select any tape record which may have been entered with the wrong date, lane number, or center name. There is no limit to the number of tape records you may select, but the 3-D graph will only be useful if all tape records are from the same lane number at different distances from the foul line.
5. Click on the Show Graph button to view data in the selected 3-D layout.

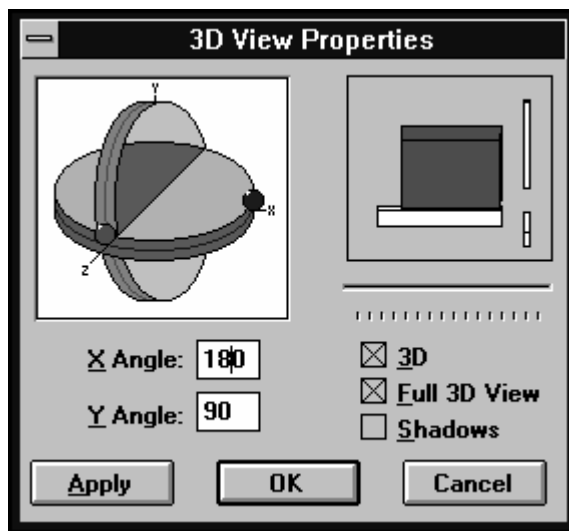
Custom View and Changing a Lane Graph Angle

If you select Custom View from the Select 3D View dialog box, the 3D View Properties dialog box is displayed. When you are already viewing a 3D graph, you can also access this dialog box from the Configure menu by selecting 3-D Angle. To use the dialog box, either:

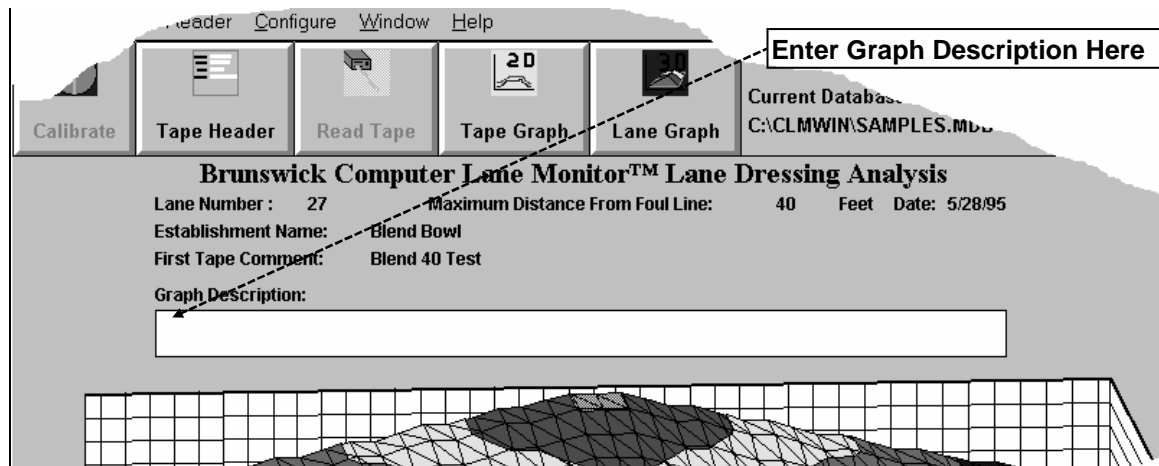
Enter the desired values in the X Angle and Y Angle fields, and click OK.

OR

You can change the X angle by clicking on the red dot. Hold down the mouse button and drag the dot along the red line. You can change the Y angle by clicking on the blue dot. Hold down the mouse button and drag the dot along the blue line. Click OK when the dots are at the angles you want to view. Values in the X Angle and Y Angle fields change to represent the angle of the red and blue dots.



Adding a Comment to the 3-D Lane Graph



The header of the 3-D Lane Graph includes the comment field from the tape sample nearest the foul line. You may also add a general comment regarding the entire graph by clicking in the Graph Description edit box. A text cursor then becomes active, and you may type in the desired description. This information will be printed, but will not be saved after the 3-D Lane Graph is changed or closed.

Selecting a Graph to View

The most recent 3D Lane Graph, 2D Tape Graph and Current Tape Read Graph are kept in memory while Computer Lane Monitor for Windows is running. To select a graph to view, click on the Window menu, then select the desired graph from the menu list. The menu item for the currently viewed graph is check-marked. If a graph is active, its menu item will be enabled, otherwise it will be disabled.

Note: You can speed up graphics performance by closing or minimizing the 3D Lane Graph window when not in use. Leaving the 3D Lane Graph window in the maximized in the background can cause a slowdown in graphics performance.

Printing a Graph

You can print any of the Current Tape Read, 2-D tape graph or 3-D lane graphs.

1. Display the graph you want to view.
2. From the File menu, select Print.

For the best printed output, you should select the landscape mode for your printer, if available. This can be done by selecting the File | Printer Setup menu option.

Note: The 3D Lane Graph can take several minutes to print, depending on the type of printer you have. Particularly with color printers, due to the Windows system resources required to print, you may wish to close other applications. Printing may also slow down system responsiveness. If you encounter other printer errors, such as printer overrun, check that the printer configuration is correct and that the printer memory is sufficient.

Using the Graph Toolbar

The Graph Toolbar permits the user to access several commands and features for customizing the graph display. This guide does not teach you how to use the graph toolbar. In fact, the tool bar is intentionally not shown unless selected from the Configure menu. It is recommended that only experienced Windows users utilize the graph toolbar since some of the commands do not apply to the Computer Lane Monitor graphs and may cause errors. The two graph toolbar commands which may be useful with Computer Lane Monitor graphs are as follows:



This button is most useful with the 2-D Tape Graph. It changes the ribbon type tape graph into a true line graph for detail comparisons of more than one tape record. Click on this button to switch between the ribbon and line type graphs.



This button allows the user to select a region in the graph to zoom in. It is useful to enlarge a section of the 3D Lane Graph. Click once on the zoom button, then move the mouse to one corner of an area to enlarge. Click the left mouse button and hold it down. You can then move the mouse to select a rectangular area to zoom into. Release the mouse button once you have defined the desired rectangle. The graph display will then zoom in and display only the selected area. Click the left mouse button again to return to the original graph view.

Working with Database Files and Records

The Computer Lane Monitor for Windows program is initially set up with a database named SAMPLES.mdb in the CLMWIN subdirectory. All saved tape data records are stored into this database and all viewing commands will select tape data records out of this database until another database file is created and selected.

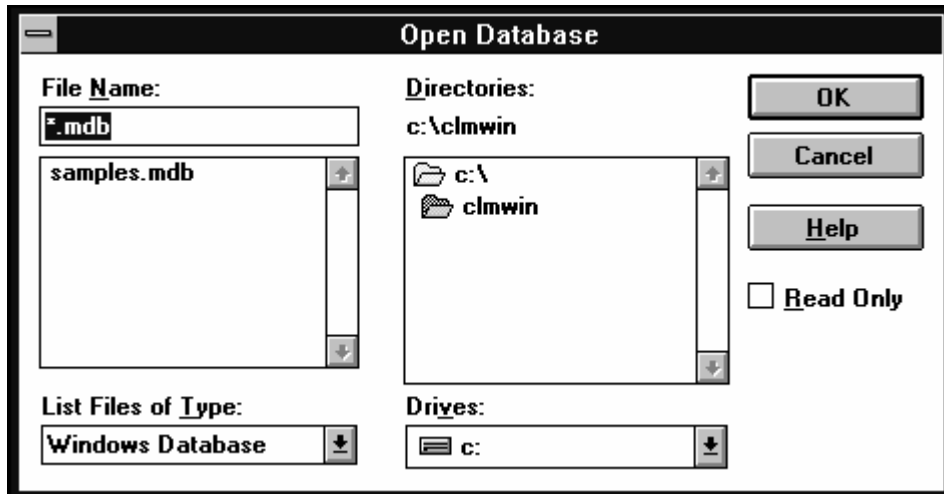
The following sections explain how to select a different database, how to create a new database, and how to delete an entire database. The sections also explain how to copy one or more tape data records from one database file to another, how to delete one or more tape data records within a database, and how to import tape data records from a Computer Lane Monitor DOS database file into a Windows database file.

Selecting a Database File


The Computer Lane Monitor for Windows program allows you to open only one database file at a time. The name of this “current” database is displayed to the right of the button bar. All saved tape data records are stored into this database and all viewing commands select tape data records from this database until another database file is selected. The following steps explain how to select or open a different database file.

Opening a database file

1. From the File menu, select the Database command. Then, from the Database menu, select Select Database. The Open Database dialog box is displayed.



2. A list of database files is displayed in the list below the File Name field. Select the database file you want to open.

Note: If you do not see the database file that you want to open, you can change the Drive: field to open a file that was saved to a different drive, such as to a floppy disk in Drive A. You can also use the Directories list to find a database file in a different subdirectory. Click on  c:\ at the top of the Directories list to see all the directories in that drive. These are basic Windows commands. See your Windows User Guide if you need more help opening files in Windows.

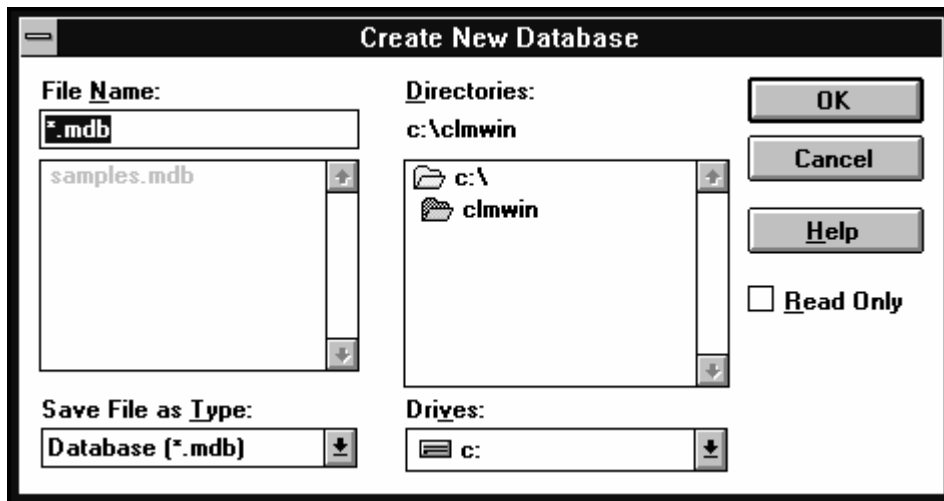
3. Click OK after the desired filename appears in the upper left box.

Creating a New Database File

You can create as many database files as you want. For example, you can create a different database for a different center or a different time period such as at the start of a new season.

Creating a new database file

1. From the File menu, select the Database command. Then, from the Database menu, select Create New Database. The Create New Database dialog box is displayed.



2. In the File Name field, type the name of your new database file. There are some points to remember when naming a database file:
 - Do not use a space or “/” in the database filename.
 - Do not use more than eight letters or numbers in the filename.
 - All database files must end with the “.MDB” extension. You can include this in the filename if you want; otherwise, it is automatically added to the end of your filename. Do not use other file extensions.

Note: You can change the Drive: field to save a new database file to a different drive, such as to a floppy disk in Drive A. You can also use the Directories list to save a new database file to a different subdirectory. These are basic Windows commands. See your Windows User Guide if you need more help saving files in Windows.

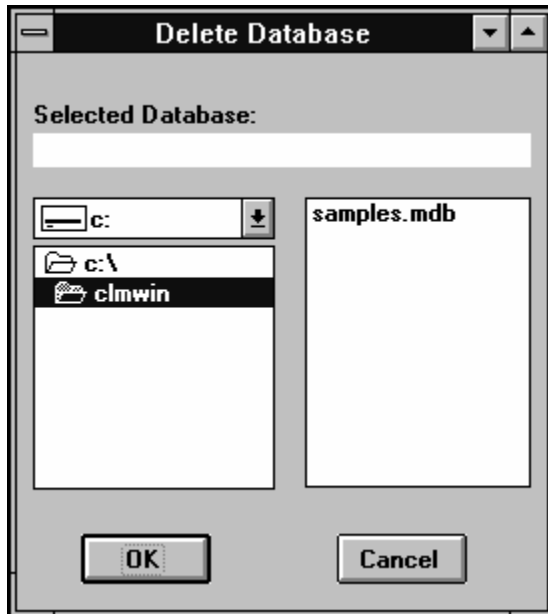
3. Click OK.

Deleting a Database File

You can delete a database file if you no longer need the tape data records that were stored in the file.

Deleting a database file

1. From the File menu, select the Database command. Then, from the Database menu, select Delete Database. The Delete Database dialog box is displayed.



2. Click on the database filename in the list displayed on the right side of the dialog box. The selected database file is displayed in the Selected Database field. If the database file is not listed, change the drive and subdirectories in the left side of the dialog box.
3. Click OK.
4. A warning message is displayed. Select OK if you are sure that you want to delete the database file. If you do not want to delete the file, select Cancel.

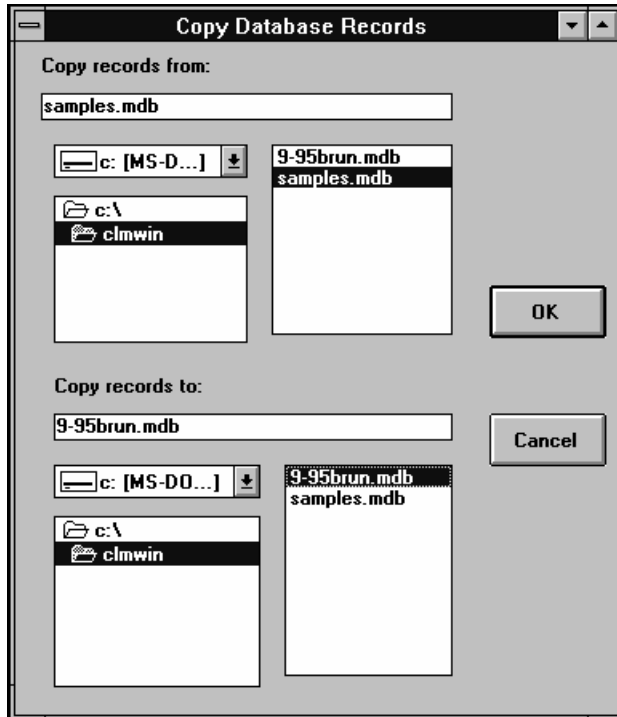
Note: You cannot delete the current database. It is necessary to close any graph that is displayed from the database before you can delete it. It is suggested to select a current database which will not be deleted and make sure any displayed graph is from that current database.

Copying Tape Data Records

You can copy tape data records from one database file to another.

Copying tape data records

1. From the File menu, select the Database command. Then, from the Database menu, select Copy Records. The Copy Records dialog box is displayed.



2. In the list on the right side of the dialog box, just below the Copy records from field, select the database file that contains the records you want to copy. The name of the selected database is displayed in the Copy records from field.
3. In the list on the right side of the dialog box, just below the Copy records to field, select the database file in which you want to copy database records. The name of the selected database is displayed in the Copy records to field.
4. Click OK. The Select Records to Copy dialog box is displayed.

Select Records To Copy				
Header Data				
Center Name	Tape Date	Lane Number	Distance	Memo
Japantown Bowl	6/8/95	18	25	Actual Data
Japantown Bowl	6/8/95	18	15	Actual Data
Japantown Bowl	6/8/95	18	25	Actual Data
Japantown Bowl	6/8/95	18	30	Actual Data
Japantown Bowl	6/8/95	18	35	Actual Data
Pyramid Bowl	5/20/95	10	0	Pyramid Test
Pyramid Bowl	5/20/95	10	2	Pyramid Test
Pyramid Bowl	5/20/95	10	4	Pyramid Test
Pyramid Bowl	5/20/95	10	6	Pyramid Test
Pyramid Bowl	5/20/95	10	8	Pyramid Test
Pyramid Bowl	5/20/95	10	10	Pyramid Test
Pyramid Bowl	5/20/95	10	12	Pyramid Test
Pyramid Bowl	5/20/95	10	14	Pyramid Test
Pyramid Bowl	5/20/95	10	16	Pyramid Test
Pyramid Bowl	5/20/95	10	18	Pyramid Test

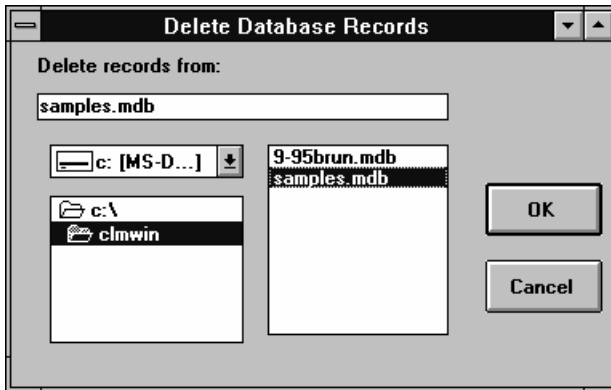
5. Select the tape data records that you want to copy, and click Copy Selected Records.
OR
Click the Copy All Records button if you want to copy all the tape data records.
- All the records are copied into the selected database. Use the Select Database command to open the database file in which you copied the records.

Deleting Tape Data Records

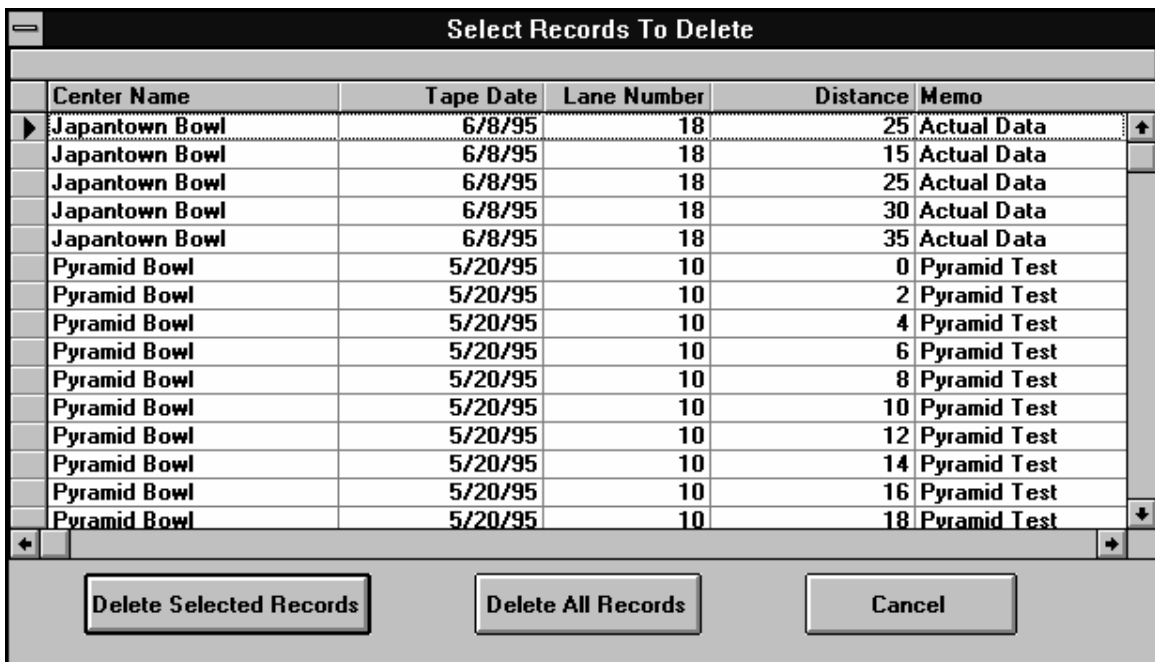
You can delete old tape data records from a database file without deleting the whole database file itself.

Deleting tape data records

1. From the File menu, select the Database command. Then, from the Database menu, select Delete Records. The Delete Records dialog box is displayed.



2. Click on the database filename in the list displayed on the right side of the dialog box that contains the records you want to delete. The selected database file is displayed in the Delete records from field. If the database file is not listed, change the drive and subdirectories in the left side of the dialog box.
3. Click OK. The Select Records to Delete dialog box is displayed.



4. Select the tape data records that you want to delete, and click Delete Selected Records.
OR
Click the Delete All Records button if you want to delete all the tape data records.

The records are removed from the database file.

Repairing a Database

You can restore any database file which is suspected of being corrupt.

Repairing a database

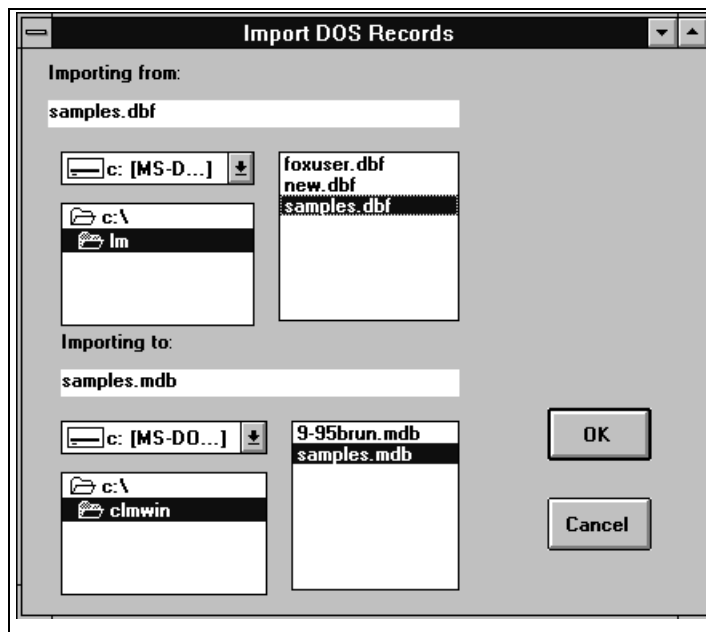
1. From the File menu, select the Database command. Then, from the Database menu, select Repair Database. The Repair Database dialog box is displayed.
2. A list of database files is displayed in the list below the File Name field. Select the database file you want to repair.
3. Click OK.


Importing DOS Data

You can import data stored in other file formats into an *.MDB file format so that the Computer Lane Monitor for Windows program can understand the data. For example, if you used Computer Lane Monitor for DOS, you can import all the tape data records taken with that software into the Computer Lane Monitor for Windows program.

Importing DOS data

1. From the File menu, select the Database command. Then, from the Database menu, select Import DOS Data. The Import DOS Data dialog box is displayed.



To change the import from or to drives, use the drop-boxes to select the desired disk drive. To navigate through the directories, click on the topmost [Drive]:\ folder icon to display the root-level directory on the selected disk drive. For example, double clicking on the  c:\ line in the "Importing from" section will list the subdirectories on the C: drive. Then double clicking on the "Im" subdirectory will list the database files available for importing in the file list box in the upper-center portion of the dialog box.

2. In the file list in the upper center of the dialog box, just below the Importing from field, select the database file (with a .dbf extension) that contains the data you want to import. The name of the selected database is displayed in the Importing from field.
3. In the list in the lower center of the dialog box, just below the Importing to field, select the destination database file (with a .mdb extension) in which you want to receive the data. The name of the selected database is displayed in the Importing to field.
4. Click OK.

Troubleshooting

PROBLEM NO. 1: LANE RECORDER CARRIAGES DO NOT SLIDE FREELY.

CAUSE A: Dirty track or carriage.

SOLUTION A: Clean track or carriage.

CAUSE B: Bent parts.

SOLUTION B: Replace or have repaired by competent machine shop.

CAUTION: The hard coating on aluminum parts is essential to proper sliding.

PROBLEM NO. 2: SAMPLE TAPES MADE WITH THE LANE RECORDER REPEATEDLY COME OUT MISMATCHED, WRINKLED, OR DISTORTED.

CAUSE A: Tape rolls not seated against the shoulder of tape hub.

SOLUTION A: Reposition tape roll on tape hub.

CAUSE B: Tape roll distorted so that outer tape is out of line with core.

SOLUTION B: Use a new roll of tape.

CAUSE C: Tape core loose on hub.

SOLUTION C: Because tape cores vary in size, the hub may have to be built up with tape to get a tight fit.

CAUSE D: Shoulder bolts on carriages loose or bent.

SOLUTION D: Use straight carriage bolts, properly tightened.

CAUSE E: Push rod held at wrong angle, causing carriages to lift or misguide.

SOLUTION E: Push rod at recommended 45 degree angle.

CAUSE F: Channel track assembly was moved between the time that the first strip of tape was applied by the applicator carriage and the time that the second lifter carriage was pushed across to match the two tape strips.

SOLUTION F: Make sure that the channel track assembly is not moved on the lane while making tape samples.

PROBLEM NO. 3: TAPE STICKS TO LANE RECORDER END PLATES.

CAUSE A: Improper technique in handling carriages.

SOLUTION A: See "Operation of Lane Recorder" in manual.

CAUSE B: Emery cloth missing.

SOLUTION B: A 2" x 3" piece is required on the rear plate and a 2" x 5-1/2" piece is required on the far plate. Replace as necessary.

PROBLEM NO. 4: U.V. START INDICATOR FAILS TO LIGHT WHEN "U.V. START" SWITCH IS DEPRESSED.

CAUSE A: Optical Reader power is not on.

SOLUTION A: Make sure Optical Reader is plugged into a live outlet and that the power switch is turned ON. The switch is marked with a "0" and a "1". The "1" is ON.

CAUSE B: Fuse is burned out.

SOLUTION B: Check the fuse and replace if necessary. See Optical Reader Fuse Replacement Procedure. The specified fuse is a 1 Amp 250 Volt fast blow fuse. DO NOT USE A LARGER FUSE.

CAUSE C: U.V. Source tube is burned out.

SOLUTION C: Replace U.V. source tube. See U.V. Source Tube Replacement Procedure.

PROBLEM NO. 5: U.V. START INDICATOR LIGHTS WHEN "U.V. START" SWITCH IS DEPRESSED, BUT GOES OUT WHEN SWITCH IS RELEASED.

CAUSE A: "U.V. START" switch not held long enough.

SOLUTION A: Hold "U.V. START" switch for at least one second before releasing.

CAUSE B: U.V. Source tube is burned out.

SOLUTION B: Replace U.V. source tube. See U.V. Source Tube Replacement Procedure.

PROBLEM NO. 6: COMPUTER SCREEN INDICATES THAT "LANE MONITOR NOT FOUND" WHEN PROGRAM SOFTWARE IS RUN OR "HARDWARE STATUS FAILURE" IS INDICATED.

CAUSE A: Optical Reader power or U.V. source tube are not on.

SOLUTION A: Make sure Optical Reader is plugged into a live outlet and that the power switch is turned ON, and U.V. source tube is turned on. The power switch is marked with a "0" and a "1". The "1" is ON.

CAUSE B: Serial data cable is not properly connected.

SOLUTION B: Make sure the female end of the serial data cable is plugged into the connection on the back panel of the Optical Reader and that the male end of the serial data cable is properly connected to the serial port of the computer.

CAUSE C: Incorrect serial port set-up or connection.

SOLUTION C: Move the computer serial data cable to another available serial port on the back of the computer or change the serial port set-up from the Configure Communications menu. See section "Using Computer Lane Monitor for Windows for the First Time" in the online help.

CAUSE D: Serial data cable is damaged.

SOLUTION D: Replace the serial data cable.

PROBLEM NO. 7: LANE READER TAPE DRIVE MOTOR DOES NOT AUTOMATICALLY START TO READ A SAMPLE TAPE.

CAUSE A: Optical Reader improperly calibrated.
SOLUTION A: Repeat the "Calibrate" option and make sure the calibration strip is not too old (should be less than four months since first used) and that the calibration value of the strip was properly input from the keyboard. Use the Manual Tape Read Option if necessary.

PROBLEM NO. 8: SAMPLE TAPE STARTS FEEDING INTO THE OPTICAL READER, BUT THE PROGRAM INDICATES THAT THE LANE EDGE MARKER CAN'T BE FOUND.

CAUSE A: Sample tape does not have the proper lane edge marker.
SOLUTION A: Refer to "Sample Tape Preparation for Optical Reader." Use the Manual Tape Read option if necessary.

PROBLEM NO. 9: SAMPLE TAPE DOES NOT FEED INTO THE OPTICAL READER AFTER POSITIONED ON THE LANE EDGE MARKER.

CAUSE A: Sample tape leader is not long enough. Front of leader becomes disengaged from tape drive rollers as tape is reversed to take a zero reading ~1" in front of the lane edge marker.
SOLUTION A: Refer to "Sample Tape Preparation for Optical Reader." Use the Manual Tape Read option if necessary.

PROBLEM NO. 10: SAMPLE TAPE STARTS FEEDING INTO THE OPTICAL READER, BUT DOES NOT EXIT THE SLOT IN THE REAR OF THE UNIT.

CAUSE A: Sample tape is jammed inside the Optical Reader.
SOLUTION A: STOP THE TAPE READ OPERATION IMMEDIATELY BY PRESSING THE "ESCAPE" KEY OR TURNING OFF THE POWER TO THE OPTICAL READER! Refer to "Clearing a Tape Jam" section of this manual.

PROBLEM NO. 11: THE TAPE DRIVE MOTOR STALLS OR MAKES A RATTLING NOISE AS THE SAMPLE TAPE IS BEING READ.

CAUSE A: Excessive wrinkling on sample tape.
SOLUTION A: Smooth tape sample if possible. If tape condition is too poor, it will not be able to be read by the Lane Monitor. Apply slight tension on the tape sample at the rear tape exit side of the Reader.

CAUSE B: Foreign material build up on rollers.
SOLUTION B: Clean rollers. Refer to "Optical Reader Roller Cleaning" section of this manual. The rollers should be cleaned after approximately every 100 tapes, depending on condition of the tapes and other operating conditions.

PROBLEM NO. 12: THE VALUES OF THE SAMPLE TAPE READINGS ARE NEGATIVE.

CAUSE A: The tape zero reading was taken over the lane edge marker.
SOLUTION A: Apply very slight tension on the tape sample near the "Tape In" side of the Reader to assist tape reverse during tape zero readings. Use the Manual Tape Read option if necessary.

PROBLEM NO. 13: COMPUTER SCREEN INDICATES THAT "LANE EDGE MARKER IS COVERING PART OF BOARD NO. 2".

CAUSE A: Lane edge marker is longer than 1.0 inch.
SOLUTION A: Use the Manual Tape Read option. The tape sample may have to be advanced into the Optical Reader slightly farther than the normal second line to move the lane edge marker out from under the sensor. Note that the lane edge marker normally reads above 20 units of oil. Advance the tape sample until the units of oil indicated on the display drops from high readings over the lane edge marker to normal readings for the second board. Remember that the board reading displayed on the 2-D Tape graph will be shifted slightly from the actual lane positions. The alternate method is to follow the Manual Read Tape procedure while aligning the tape sample exactly with the first and second lines. This will result in proper board positioning, but the unit of oil value for board no. 2 may be inaccurate since the lane edge marker is covering part of board no. 2.

CAUSE B: Board no.2 actually has more than 20 units of oil, which is interpreted by the Computer Lane Monitor as a continuation of the lane edge marker.

SOLUTION B: Use the Manual Tape Read option following the two alignment lines (3.5" and 5.5" from the lane edge).

CAUSE C: Wrinkled or mismatched tape samples slipped in rollers or tape doubled under itself while reversing, allowing the lane edge marker to remain under the sensor instead of board no. 2.

SOLUTION C: Apply very slight tension on the tape sample near the "Tape In" side of the Reader to assist tape reversal process. Clean rollers and use Manual Tape Read option if necessary.

PROBLEM NO. 14: EXPERIENCING FREQUENT PROMPTS TO RECALIBRATE OR WARM-UP TIMES ARE LONGER THAN AN HOUR.

CAUSE A: U.V. Source tube in reaching the end of its useful life and is unstable or not up to full intensity.

SOLUTION A: Replace the U.V. Source tube. See U.V. Source Tube Replacement Procedure.

PROBLEM NO. 15: COMPUTER SCREEN INDICATES THAT “Calibration Value is Out of Range”.

CAUSE A: Optical Reader improperly calibrated.

SOLUTION A: Repeat the “Calibrate” option and make sure the calibration strip is not too old (should be less than four months since first used) and that the calibration value of the strip was properly input from the keyboard. The upper limit on standard calibration is 1.6. Use the short calibration until the old calibration strips can be replaced.

CAUSE B: U.V. Source tube is reaching the end of its useful life and is unstable or not up to full intensity.

SOLUTION B: Replace the U.V. Source tube. See U.V. Source Tube Replacement Procedure. Use the short calibration method until the U. V. Source tube can be replaced.

PROBLEM NO. 16: COMPUTER SCREEN INDICATES MEMORY ERROR MESSAGE.

CAUSE A: Your computer is configured with less than 600K conventional memory or less than 4MB total memory.

SOLUTION A: Reconfigure your conventional memory and add additional memory if necessary.