Turbo Lens®

Installation and Setup Instructions.

Includes Optoform versions;
TLRO.EXE (RGP) and TLSO.EXE (Soft)

Version 2.06
For IBM* and Compatible Computers.

Contents

Please note. All items shown in *italic* are in reference to the soft lens version of Turbo Lens® only.

Hardware Requirements.

♦ IBM* or compatible computer. (286, 386 or 486 or better) with a standard 25 pin "D" type printer (parallel) port.

♦ MS-DOS* 3.0 or higher. (5.0 or higher preferred)

♦ 3 ½ or 5 ¼ inch disk drives. HD or DD. (3 ½ preferred)

♦ EGA or VGA graphics adapter.

♦ Color monitor. (highly recommended)

♦ Hard Disk Drive. (highly recommended)

♦ At Least 0.5 Megabytes of Disk Space.

♦ 512 Kilobytes of Ram.

♦ 384 Kilobytes of Ram Disk Space. (recommended)

♦ IBM*   Graphics or compatible dot matrix printer. (If **MS-DOS** version 5.0 (or higher) is being used, many other types of printer can be used, including laser jet type printers.)

Installation.

Please read any "Manual Supplements" (found at the back of this manual) before commencing installation.

- Insert the **Installation** disk in to the appropriate disk drive.

- From the DOS prompt, type in the letter designation of the disk drive that the **Installation** disk is in; followed by a colon, and press the **ENTER** key.

  Example: (**Installation** disk is in drive A)

  Type *A:* and press the **ENTER** key.

- If you are installing the Soft lens program, type:

  INSTALL TLSO

  and press the **ENTER** key.

- If you are installing the RGP lens program, type:

  INSTALL TLRO

  and press the **ENTER** key.

- The **Installation** program will load into memory. Follow the on screen instructions to install **Turbo Lens**® to the required disk. The following gives a brief description of each screen and what the recommended action should be.

- **Copyright screen.** Press **ESCAPE** to quit, or any other Key to continue.

- **Type of Installation screen.** If you wish to install to the hard drive (very highly recommended) and the letter designation of your hard drive is **C:** select (**1)..Hard Drive** by pressing the **1 (one)** number key. If you are installing to a floppy disk then press the **2 (two)** number key.

♦ **Where is the Installation Disk.** Select the number key for the location of the disk drive that contains the **Installation** disk.

♦ **Installation Verification.** Check that the information you have entered is correct; and press either the **1 (one)** or **2 (two)** key.

The installation program will display the files it is copying as it sets up the working directories.

♦ **Installation Complete.** When the installation program is complete, press the **ESCAPE** key to exit the program.

Please refer to the **Setup** section.

Setup.

As software companies world wide lose millions of dollars to software piracy each year, various methods have been developed to protect them.

This software is protected by an external security device that plugs into any standard 25 pin "D" type parallel printer port.

Using this type of protection allows the user to make backup copies of the original program disk (look up **Diskcopy** in your **MS-DOS*** instruction manual), while limiting the use of the program to one computer at any one time.

♦ **Connecting the Security Device.** Switch both the computer and printer off. Disconnect the computer to printer connection cable; and connect the security device to the printer port on the back of the computer. Use a small screwdriver to lock down the locking screws. Reconnect the printer cable to the back of the security device. Power up the computer and printer.

The security device will not affect the use of a printer.

♦ **Modification of the AUTOEXEC.BAT File.**
Soft lens program users add the following to your **AUTOEXEC.BAT** file:

> **PATH=DRIVE:\TLSO**

RGP lens program users add the following to your **AUTOEXEC.BAT** file:

> **PATH=DRIVE:\TLRO**

(In place of the word **DRIVE** above enter the drive designation letter that the program is installed to i.e. **C:**)

In the **F2 VISUAL WINDOW** you will see that Turbo Lens® includes a facility to print a hard copy of the profile of the lens. To be able to print a graphic image on the printer, a graphics driver must be loaded first.

♦ If you are using a version of DOS that is earlier than **MS-DOS** version 5.0, add the following line to you **AUTOEXEC.BAT** file:

  C:\DOS\GRAPHICS

♦ If you are using **MS-DOS** version 5.0 or later, the line you add will depend on the type of printer you have.

  If you have an IBM* or compatible graphics printer, or a printer that can emulate IBM* mode, add the following line to your **AUTOEXEC.BAT** file:

  C:\DOS\GRAPHICS GRAPHICS

  If you are using a laser jet or desk jet type printer, add the following line to your **AUTOEXEC.BAT** file:

  C:\DOS\GRAPHICS DESKJET

(The above additions assume that the **GRAPHICS.EXE** and the **GRAPHICS.PRO** files are in the **C:\DOS** directory, you may have to substitute this for another directory.)

The above graphics driver need not be installed if the graphic printout is not required.

♦ Modification of the **CONFIG.SYS** file. (Optional)

If the computer that Turbo Lens® is installed on has two (2) megabytes or more of total memory, you may wish to use Ram Drive, to optimize the speed at which Turbo Lens® runs.

Add the following to your **CONFIG.SYS** file:

DEVICE=DRIVE:\DOS\RAMDRIVE.SYS 384 /e

(For information about the creation and modification of batch files, and a full description of RamDrive or other ram disk type systems, please refer to your **MS-DOS*** instruction manual)

Starting Turbo Lens®.

To start Turbo Lens®.

Type **TURBO** at the DOS prompt and press the **ENTER** key.

 (If you have not made the suggested changes to your **AUTOEXEC.BAT** file, or you have not re - booted your computer, since making the changes, you must type either;

> **CD\TLSO**

for the **Soft** lens program, or

> **CD\TLRO**

for the **RGP** program,

and press the **ENTER** key before starting **Turbo Lens**®).

The Main Screen.

Below is the format of the main screen.

```
                                        ┌──────────────┐
                                        │   M E N U    │
                                        │              │
                                        │ F1 New Lens  │
                                        │ F2 Visual    │
                                        │ F3 Custom    │
                                        │ F4 Design    │
                                        │ F5 Material  │
                                        │ F6 Files     │
                                        │ F7 Modify    │
                                        │ F8 Save      │
                                        │ F9 Print     │
                                        │              │
                                        │ F10 Quit     │
                                        └──────────────┘
                                        ┌──────────────┐
                                        │   T U R B O  │
                                        │    L E N S   │
                                        └──────────────┘
┌──────────────────────────────────────────────────────┐
│ Messages:-  Select <F> key, <ESC> for Info, or <ALT> <S> for Dos Shell │
└──────────────────────────────────────────────────────┘
```
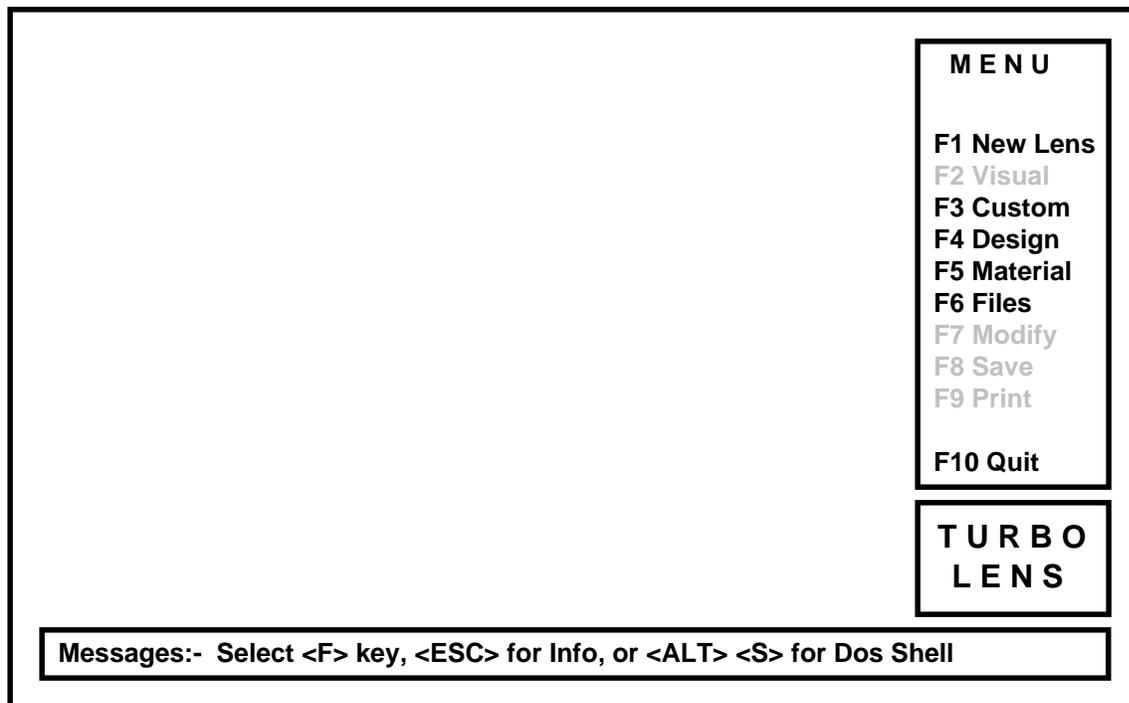
From this screen all selections are made by pressing one of the highlighted function keys, (F keys).

In the message box you will receive various messages throughout the session to keep you updated. When you see the message as displayed above, you can press any one of the **F** (Function) keys, for the desired action, pressing the **ESCAPE** key will open the technical service information window, pressing and holding the **ALT** key then pressing the **S** key will start the **MS-DOS** shell.

When the **MS-DOS** shell is started, you will see the screen change back to the DOS prompt, while in the shell, all of the standard DOS commands

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will be available to use, you can even run other programs. To return back to Turbo Lens®, type **EXIT** then press the **ENTER** key.

Some of the **F** keys are shown inactive (in gray), these will change depending on where you are within Turbo Lens®. If you press one of the inactive **F** keys, nothing will happen.

Lets try one of the **F** keys.

♦ Press the **F10 QUIT** key and see what happens.

Your message box should look like this:

```
Messages:-  Quit ! Are You Sure ? Press Y or N key
```

♦ Press the **N** key.

Now you know what sort of message to expect in the message box, and what it looks like, and how to quit Turbo Lens® !

You are now ready to continue on to design your first lens with Turbo Lens®.

F1 New Lens Window.

Below shows the main screen with the **F1 New Lens** window.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────┐              ┌──────────────────┐ │
│  │  B A S E   C U R V E   D A T A │              │    M E N U       │ │
│  │                                │              │                  │ │
│  │  1..Base Curve......  8.000    │              │  F1 New Lens     │ │
│  │  2..Power.............. +0.00  │              │  F2 Visual       │ │
│  │  3..Diameter.......... 10.000  │              │  F3 Custom       │ │
│  │  4..Material............ SAMPLE│              │  F4 Design       │ │
│  │  5..Design File....... SAMPLE  │              │  F5 Material     │ │
│  │                                │              │  F6 Files        │ │
│  │  C..Calculate.........         │              │  F7 Modify       │ │
│  └───────────────────────────────┘              │  F8 Settings     │ │
│                                                  │  F9 Print        │ │
│                                                  │                  │ │
│                                                  │  F10 Quit        │ │
│                                                  └──────────────────┘ │
│                                                  ┌──────────────────┐ │
│                                                  │   T U R B O      │ │
│                                                  │   L E N S        │ │
│                                                  └──────────────────┘ │
│  ┌──────────────────────────────────────────────────────────────┐   │
│  │ Messages:-  Select Number,  <C> to Calculate,  or <ESC> to Exit│  │
│  └──────────────────────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────────────────────┘
```

♦ Press the **F1** key to display the **New Lens** window.

In the **New Lens** window you will see the basic data required to calculate the lens.

To change any of the items, press the number key next to the required item.

♦ Press the **1** key.

♦   Enter **8.0** and press the **RETURN** key

The base curve of the lens will now be 8.00 mm. The same procedure is used to change any of the other items, please note that the **Material** and **Design** files names can not be more than eight (8) characters long.

There are one of each of the Material and Design files supplied with the program, both called **SAMPLE**. You will create more files later in the instruction manual. (ref. F6 Files).

When you select Material or Design, the **Material or Designs** window will open to the right of the **New Lens** window. These display the material and design files that are currently available to be used for this lens.

To calculate the lens using the displayed data, just follow the instructions in the **MESSAGE** window.

♦   Press the **C** key.

The **New Lens** window will disappear, and the main screen will change to show the following:

```
┌─────────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────┐  ┌──────────────────────┐  ┌──────────────┐    │
│  │ Base Curve (mm)      │  │ Front Curve (mm)     │  │   M E N U    │    │
│  │                      │  │                      │  │              │    │
│  │ Radius 1 = 8.000 @  8.000 │ Radius 1 = 8.007 @  10.000 │  │ F1 New Lens  │    │
│  │ Radius 2 = 10.000 @ 10.000 │                   │  │ F2 Visual    │    │
│  │                      │  │ Thicknesses... Axial Radial │  │ F3 Custom    │    │
│  │ Sag. Depth = 1.577   │  │                      │  │ F4 Design    │    │
│  │ Axial Edge Lift = 0.178 │ Center............ 0.265 0.265 │  │ F5 Material  │    │
│  │ Power = +0.00        │  │ Junction......... N/A   N/A  │  │ F6 Files     │    │
│  │                      │  │ Edge.............. 0.111 0.096 │  │ F7 Modify    │    │
│  └──────────────────────┘  └──────────────────────┘  │ F8 Settings  │    │
│                                                       │ F9 Print     │    │
│                                                       │              │    │
│                                                       │ F10 Quit     │    │
│                                                       └──────────────┘    │
│                                                       ┌──────────────┐    │
│                                                       │  T U R B O   │    │
│                                                       │   L E N S    │    │
│                                                       └──────────────┘    │
│  ┌──────────────────────────────────────────────────────────────────┐    │
│  │ Messages:-  Select <F> key,  <ESC> for Info,  or <ALT> <S> for Dos Shell │    │
│  └──────────────────────────────────────────────────────────────────┘    │
└─────────────────────────────────────────────────────────────────────────┘
```

*(**Turbo Lens® Soft Only:** Please note that all of the above data reflects the lens parameters in the hydrated state, and the numbers here may differ from your copy of the program.)*

In the **Base Curve** window, the data is displayed from the center to the edge of the lens. **Radius 1** shows the radius and diameter of the base curve, **Radius 2** shows the radius and diameter of the secondary curve, this continues out to a maximum of ten different curves if so desired. The quantity, change of radii, and diameter is controlled by the design file. (Ref. F6 Files).

The **Sag Depth** and **Axial Edge Lift** are calculated from the above data. The **Power** is displayed for reference.

The **Front Curve** window displays the radii and diameter in a similar way as the base curve, except that this information is calculated from the given data. The maximum number of curves that can be used on the front surface is ten (10). At the bottom of the **Front Curve** window are the thicknesses, these are based on minimum thickness values stored in each **Material File** (Ref. F6 Files). Turbo Lens® will try to calculate the thinest possible lens, without going below the minimum thickness values. Thicknesses are displayed in both radial and axial forms.

If so desired, thicknesses may be changed by pressing the **F7** key. (Ref. F7 Modification).

Now your lens has been calculated, you can graphically view your first Turbo Lens® in cross section......

♦ Press the **F2 Visual** key.

F2 Visual Window.

Messages:- Press [ESC],   [ALT] - [P],   [→], [←],   or [Z]oom Edge
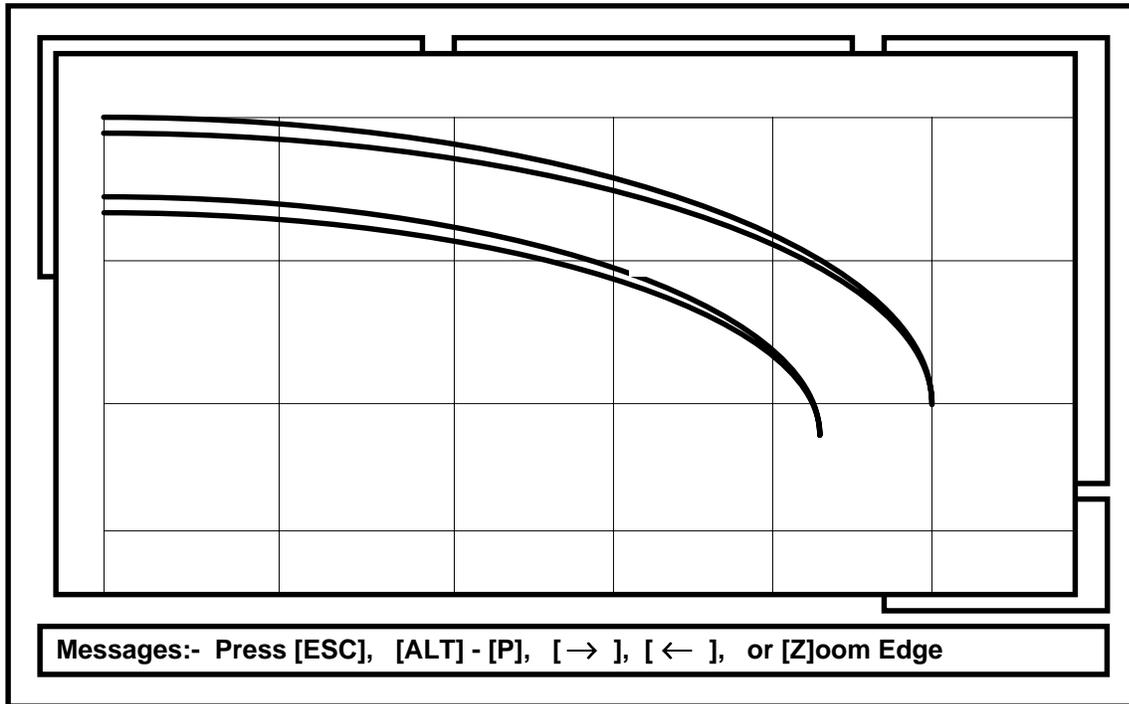
The **Visual** window is presented as a grid of 1mm squares. The lens is shown in cross section on the grid.

*(If you are using the **Soft Lens** version of the software, the top lens cross section is drawn in blue, and represents the hydrated lens. The lower cross section is drawn in red, and represents the dehydrated lens.)*

Displaying the lens cross section on the grid in this way, gives the user a quick and easy way to estimate dimensions at a glance.

To further aid the user, white marks appear above and below each lens cross section to show the various positions of the junctions.

As with previous screen displays, please note the contents of the **Message Box**.

♦ **[Z]oom Edge Feature.**

By pressing the Z key, the **Zoom Edge** feature will be activated. A second **Visual Window** will open to show a close up of the form of the edge.

Messages:- Press [ESC], [ALT] - [P], [→], [←], or [Z]oom Edge
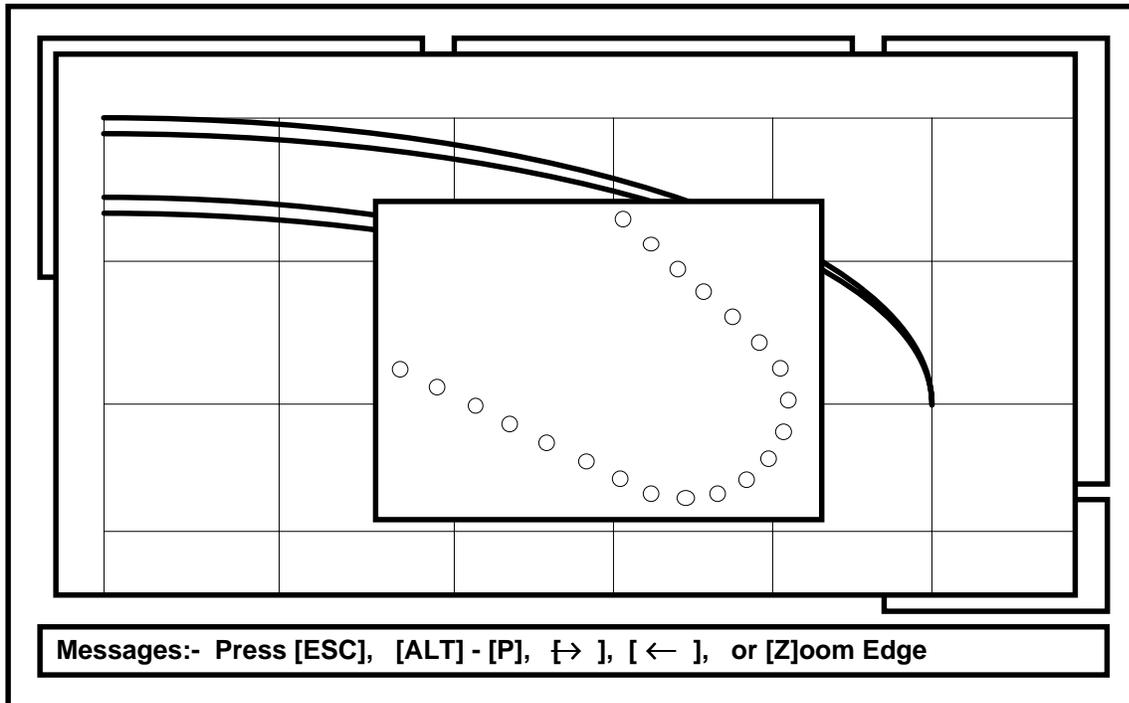
*(If the **Soft Lens** program is being used, the **Zoom** feature will show the edge of the hydrated lens, press the **Page Down** key to view the dehydrated edge).*

♦ To quit the **Zoom Edge** feature press **ESCAPE**.

The screen display will revert back to the lens cross section(s).

♦ **Measurement Feature. [→] or [←] keys.**

For more accurate measurement, press the left or right cursor keys ([→] or [←]) to scan the surface of the lens and display both the diameter and associated axial thickness of lens. *(If the soft lens program is being used, both hydrated and dehydrated information will be displayed).*

♦ **Profile Print Feature.**

If a print out of the lens profile is required, press and hold the **ALT** key, then press the **P** key. (For information on setting up the graphical; printing, please see the **SETUP** section of this manual.) The screen will change to the profile for a few moments, then revert back to normal.

♦ Please note that the drawn size of the lens and scale "auto scale" (change size) depending on the lens diameter and the sagital depth. This maximizes the image to fit into the **Visual** window.

To close the **Visual** window press the **ESCAPE** key.

♦ Press the **ESCAPE** key.

F3 Custom Windows.

To start the custom lens design session.....

♦ Press the **F3** key.

The first **Custom** window will be displayed as below.

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────┐   ┌──────────────────┐  │
│  │ Custom Lens                        │   │   M E N U        │  │
│  │                                    │   │                  │  │
│  │ 1..   Material File............  SAMPLE │   │ F1 New Lens     │  │
│  │ 2..   Concave Zones......   2      │   │ F2 Visual       │  │
│  │ 3..   Convex Zones........   1     │   │ F3 Custom       │  │
│  │ 4..   Configuration.........      │   │ F4 Design       │  │
│  │ 5..   Edge Shape ...........      │   │ F5 Material     │  │
│  └────────────────────────────────────┘   │ F6 Files        │  │
│                                            │ F7 Modify       │  │
│                                            │ F8 Settings     │  │
│                                            │ F9 Print        │  │
│                                            │                  │  │
│                                            │ F10 Quit         │  │
│                                            └──────────────────┘  │
│                                            ┌──────────────────┐  │
│                                            │   T U R B O      │  │
│                                            │   L E N S        │  │
│                                            └──────────────────┘  │
│  ┌────────────────────────────────────────────────────────────┐ │
│  │ Messages:-  Select Number,  <ESC> to Exit,  or <ENTER> to continue │ │
│  └────────────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────────────┘
```
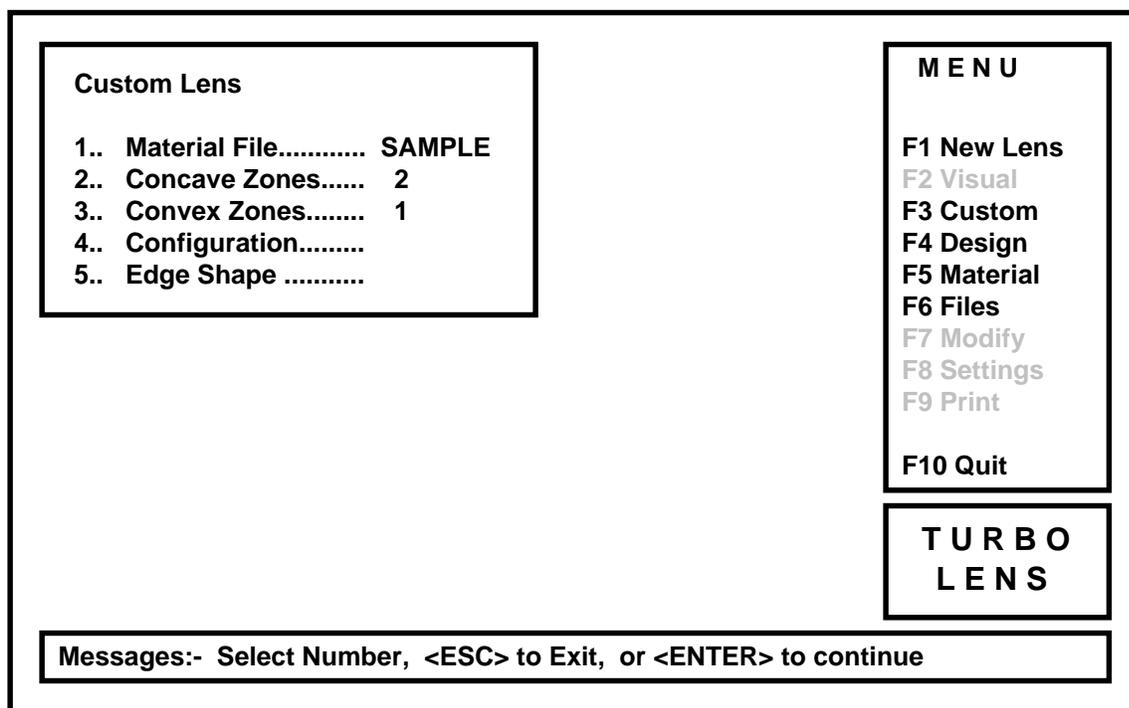
The **F3 Custom** window allows you to fully control the contour of your lenses, for special custom or design work.

♦ **Material File. (Custom Lens, Option 1).**

When this option is selected, the **Available Material** window will open to the right of the **Custom Lens** window, this will show what materials are

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available for selection. The material must be selected to set the minimum thickness values, and refractive index.

(If the Soft lens program is being used, this also sets the dehydrated refractive index, and expansion factors).

To select this option....

♦   Press the **1** key.

♦   Enter the material name and press the **ENTER** key.

Enter only materials that are displayed in the **Available Materials** window. (For information on creating more material files, see section **F6 Files**).

♦   **Concave Zones. (Custom Lens, Option 2.)**

The total number of curves required on the concave side of the lens (including the base curve).

♦   Press the **2** key.

♦   Enter **Number** and press the **ENTER** key.

In place of the word **Number**, enter the number of concave zones required.

Number can be in the range of 1 through 10.

♦   **Convex Zones. (Custom Lens, Option 3.)**

The total number of curves required on the convex side of the lens (including the power curve).

♦   Press the **3** key.

♦   Enter **Number** and press the **ENTER** key.

In place of the word **Number**, enter the number of convex zones required.

Number can be in the range of 1 through 10.

♦   **Configuration. (Custom Lens, Option 4.)**

Opens the **Configuration** window. as follows:

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────┐      ┌─────────────────┐  │
│  │ Custom Lens                      │      │   M E N U       │  │
│  │                                  │      │                 │  │
│  │ 1.. Material File............ SAMPLE │  │ F1 New Lens     │  │
│  │ 2.. Concave Zones......  2       │      │ F2 Visual       │  │
│  │ 3..  ┌───────────────────────────────────┐ F3 Custom      │  │
│  │ 4..  │  Curve Configuration              │ F4 Design      │  │
│  │ 5..  │                                   │ F5 Material    │  │
│  └──────│  1.. Concave Radius..... VARIABLE │ F6 Files       │  │
│         │  2.. Concave Diameter. DIAMETER   │ F7 Modify      │  │
│         │  3.. Convex Radius...... AUTOMATIC │ F8 Settings    │  │
│         │  4.. Convex Dianeter... DIAMETER  │ F9 Print       │  │
│         │  5.. Thickness.............. RADIAL │                │  │
│         │                                   │ F10 Quit        │  │
│         └───────────────────────────────────┘─────────────────┘  │
│                                           ┌─────────────────┐    │
│                                           │   T U R B O     │    │
│                                           │   L E N S       │    │
│                                           └─────────────────┘    │
│  ┌───────────────────────────────────────────────────────────┐  │
│  │ Messages:- Select Number to Change, Press <ESC> when Finished. │
│  └───────────────────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────────────┘
```
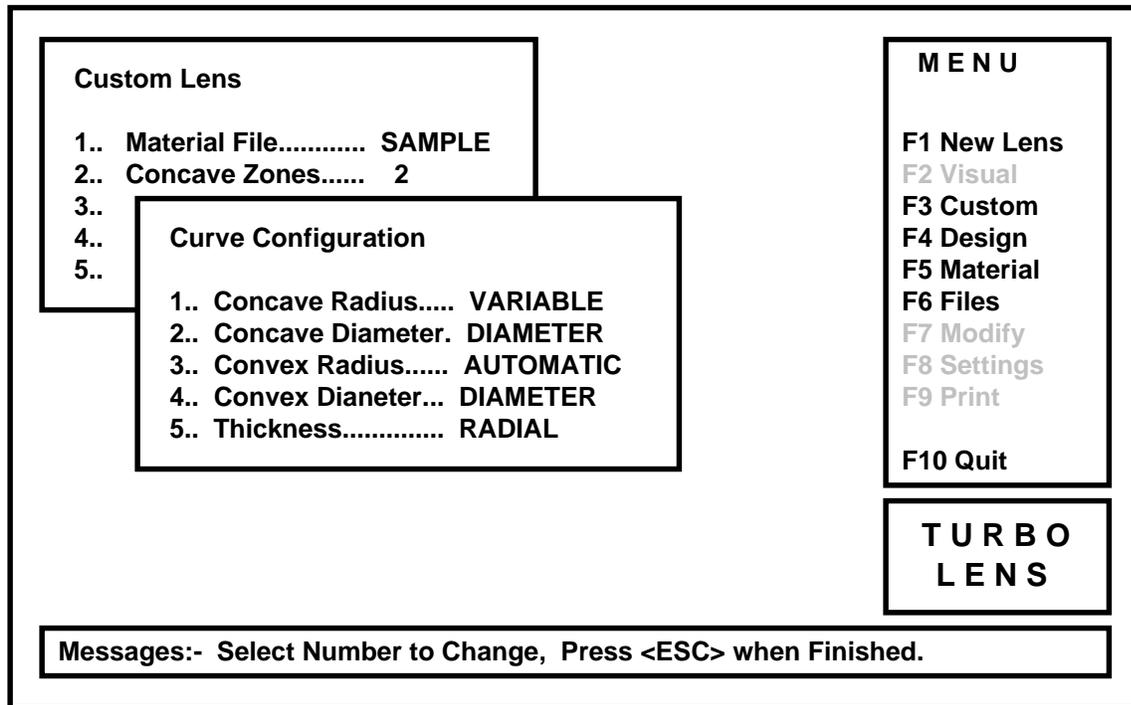
(As with previous windows, watch the **Message Window** for keys that are available for action.)

The **Curve Configuration** window, allows you to configure the way you wish to enter and calculate curves and diameters.

♦   **Concave Radius. (Curve Configuration, Option 1.)**

The Concave Radius configuration has two options, **FIXED** or **VARIABLE.** Each time the key is pressed, the Concave Radius Configuration will cycle between these two states.

♦   Press the **1** key, to change state.

If the **FIXED** state is selected, the radius will remain as entered through all calculations.

If the **VARIABLE** state is selected, all radii will be entered as an amount flatter (or steeper) than the base curve, thus during the calculations, the curves will always be relative to the entered base curve.

♦ **Concave Diameter. (Curve Configuration, Option 2.)**

The Concave Diameter configuration has two options, **WIDTH** or **DIAMETER.** Each time the key is pressed, the Concave Diameter Configuration will cycle between these two states.

♦ Press the **2** key, to change state.

If the **DIAMETER** state is selected, the diameters will remain as entered through all calculations.

If the **WIDTH** state is selected, only the total lens diameter will be entered as a diameter, all other zones will be entered as a specific width, thus the diameter of each zone will always be relative to the lens diameter. (example: to calculate the diameter of the smallest zone;

optical zone = lens diameter - 2(the sum of all the zone widths)

this may be desirable to maintain a consistent edge blend profile).

♦ **Convex Radius. (Curve Configuration, Option 3.)**

Convex Radius appears "grayed", and is permanently set to **AUTOMATIC**. The front surface radii status can not be changed, they are all calculated automatically, depending on the lens power, and lens thickness requirements.

♦ **Convex Diameter. (Curve Configuration, Option 4.)**

The Convex Diameter configuration has two options, **WIDTH** or **DIAMETER.** Each time the key is pressed, the Convex Diameter Configuration will cycle between these two states.

♦   Press the **4** key, to change state.

If the **DIAMETER** state is selected, the diameters will remain as entered through all calculations.

If the **WIDTH** state is selected, only the total lens diameter will be entered as a diameter, all other zones will be entered as a specific width, thus the diameter of each zone will always be relative to the lens diameter.

♦   **Thickness. (Curve Configuration, Option 5.)**

The lens thicknesses, may be expressed in one of two ways, **AXIAL** or **RADIAL**. Each time the key is pressed, the thickness method will cycle between these two states.

♦   Press the **5** key, to change state.

The Radial thickness method provides a more accurate lens thickness measurement, whereas the Axial method will only describe thickness parallel to the rotational axis.

Once all changes to the **Curve Configuration** window are complete;

♦   Press the **ESCAPE** key, to exit **Curve Configuration**.

The screen display will revert back to the **Custom Lens** window.

♦   **Edge Shape. (Custom Lens, Option 5.)**

The **Edge Shape** window, allows the user to modify the edge radius to virtually any shape required.

♦   Press the **5** key to open the **Edge Shape** window.

```
┌─────────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────────┐       M E N U                  │
│  │ Custom Lens                          │                                │
│  │                                      │       F1 New Lens              │
│  │  1.. M┌──────────────────────────────┴──────┐                         │
│  │  2.. C│  Edge Shape (Edge is sphere when X = 50 and Z = 50            │
│  │  3.. C│                                                                │
│  │  4.. C│  ┌─────────────────┐   X Position = 50                        │
│  │  5.. E│  │ ○  ○            │   Z Position = 50                        │
│  │       │  │      ○          │                                          │
│  │       │  │        ○        │   <SPACE> Selects                        │
│  │       │  │         ○       │   resolution                             │
│  │       │  │          ○      │                                          │
│  │       │  │         ○       │   <ENTER> Selects                        │
│  │       │  │        ○        │   shape, and exits.                      │
│  │       │  │       ○         │                                          │
│  │       │  │      ○          │   <ESC> sets sphere                      │
│  │       │  │    ○            │   edge, and exits.                       │
│  │       │  │ ○  ○            │                                          │
│  │       │  └─────────────────┘   Cursor keys move                       │
│  │       │                        edge shape.                            │
│  │       └─────────────────────────────────────┘                        │
│  ┌──────────────────────────────────────────────────────┐               │
│  │ Messages:-  Select <ENTER>,  <ESC>,  or cursor keys.  │               │
│  └──────────────────────────────────────────────────────┘               │
└─────────────────────────────────────────────────────────────────────────┘
```

M E N U

F1 New Lens
F2 Visual
F3 Custom
F4 Design
F5 Material
F6 Files
F7 Modify
F8 Settings
F9 Print

F10 Quit

**T U R B O
L E N S**

Using the cursor keys, the user may move the edge shape, until the desired shape is achieved, the user may then "lock in" the required shape;

♦   Press the **ENTER** key, to "lock in" the required shape.

If any fine tuning of the edge shape is required, the user may select a lower resolution. There are three different resolutions available, 10%, 5%, and 1%. The default resolution is 10%.

♦   Press the **SPACE BAR**, to change the resolution.

At any time, The user may exit with a spherical edge radius.

♦   Press **ESCAPE** to exit with a default spherical edge.

As with previous windows, watch the **Message Window** for warnings or instructions for the next possible key press.

If all the correct data has been entered into the **Custom Lens** window, the user may proceed to the data entry window.

♦   Press the **ENTER** key, to continue.

Now the **Data Entry** window will open as below.

Custom Lens					M E N U

1.. 2..		Concave Radius (V)	Concave Width	Convex Diameter	Junction Thickness
3..	1	Base Curve	N/A	6.00000	0.20000
4.. 5..	2	2.00000	0.00000	Lens Diam	N/A
	3	0.00000	0.00000	N/A	N/A
	4	0.00000	0.00000	N/A	N/A

M E N U

F1 New Lens
F2 Visual
F3 Custom
F4 Design
F5 Material
F6 Files
F7 Modify
F8 Settings
F9 Print

F10 Quit

**T U R B O
L E N S**

Messages:- Select Number, <ESC> to Exit or <ENTER> to Continue !

The **Data Entry** window, is where most of the design information is stored, here the user will enter all radii, diameters, and / or widths that are required to calculate the lens, except for the base curve, lens diameter, and power.

As can be seen above, this example has 4 concave zones, and 2 convex zones. The base curve configuration has been set to **Variable**, (note the "V" next to the word Radius, an "F" would appear here if the radius configuration was set to fixed.) The concave diameter configuration is set to **Width**, and the convex diameter configuration is set to **Diameter**.

Therefore, the concave radii will be entered as an amount flatter than the base curve; the concave diameters will be entered as width of zone size; the convex diameter(s) will be entered as whole diameters.

To enter the data, select one of the number keys next to the information you wish to change.

♦   Press the **1** key.

As the first box is the base curve, and the second column is set to **Width**, there is no data required for concave on this line. The first item that is ready for input, is the **Convex Diameter**, had **Width** been selected, then this box would have been skipped too.

Enter the value for the first front surface diameter.

♦   Enter the number **7.5** and press the **ENTER** key.

When the **ENTER** key was pressed, attention has moved on into the **Junction Thickness** box, if this number had previously been set to zero, it will now default to the minimum junction thickness for the material previously selected, (Ref. F6 Files - creating or modifying material files), you will not be able to use a smaller value than the minimum junction thickness.

If any of these boxes already contains a number you wish to keep, you can press the **ENTER** key to keep the same number, or type in a new number.

♦   Press the **ENTER** key.

Next select row number 2.

♦   Press the **2** key.

This time the **Concave Radius** column has been selected, (next to the word radius you will see the letter **V** in parentheses, this signifies that the concave curves are **Variable**, the alternative is an **F** signifying **Fixed**).

♦   Enter a value of **1.0** in this box.

(If the base curve was 7.50mm for example, the secondary curve will be 1mm flater than the base curve, or 8.50mm.)

♦   Press the **ENTER** key.

Next enter the **Width** of the radius just entered.

♦   Enter the required width, and press the **ENTER** key.

Continue filling the data entry box, until it is complete. When complete....

♦   Press the **ENTER** key.

The **Custom Lens - General Information** window will open.

		Concave Radius (V)	Concave Width	Convex Diameter	Junction Thickness
1..					
2..					
3..	1	Base Curve	N/A	6.00000	0.20000
4..	2				N/A
5..	3				N/A
	4				N/A

Custom Lens

Custom Lens - (general information)

1.. Base Curve 7.50000

2.. Power .... +1.25

3.. Lens Diameter 9.20000

M E N U

F1 New Lens
F2 Visual
F3 Custom
F4 Design
F5 Material
F6 Files
F7 Modify
F8 Settings
F9 Print

F10 Quit

**T U R B O
L E N S**

Messages:- Select Number, <ESC> to Exit or <ENTER> to Continue !

Using the same method for data entry, fill the **General Information** window with the required information. Please note, that you must not enter a lens diameter smaller than the largest diameter in the previous window.

Once the correct data is entered, the lens can be calculated.

♦   Press the **C** key.

After a brief pause, the results will be displayed.

```
+-------------------------------------------------------------------------------+
|                                                                               |
|  +---------------------------+  +---------------------------+  +-----------+  |
|  | Base Curve (mm)           |  | Front Curve (mm)          |  |  M E N U  |  |
|  |                           |  |                           |  |           |  |
|  | Radius 1 = 7.500 @ 8.000  |  | Radius 1 = 7.435 @ 6.000  |  |           |  |
|  | Radius 2 = 9.500 @ 8.400  |  | Radius 2 = 7.442 @ 9.200  |  | F1 New Lens |
|  | Radius 3 = 10.500 @ 8.800 |  |                           |  | F2 Visual  |  |
|  | Radius 4 = 11.500 @ 9.200 |  | Thicknesses... Axial Radial| | F3 Custom  |  |
|  |                           |  |                           |  | F4 Design  |  |
|  | Sag. Depth = 1.577        |  | Center............ 0.220 0.220| F5 Material|  |
|  | Axial Edge Lift = 0.178   |  | Junction......... 0.214 0.197 | F6 Files  |  |
|  | Power = +0.00             |  | Edge.............. 0.055 0.050 | F7 Modify |  |
|  +---------------------------+  +---------------------------+  | F8 Settings|  |
|                                                               | F9 Print   |  |
|                                                               |            |  |
|                                                               | F10 Quit   |  |
|                                                               +-----------+  |
|                                                               +-----------+  |
|                                                               | T U R B O |  |
|                                                               |  L E N S  |  |
|                                                               +-----------+  |
|  +-------------------------------------------------------------------------+  |
|  | Messages:- Select <F> key, <ESC> for Info, or <ALT> <S> for Dos Shell  |  |
|  +-------------------------------------------------------------------------+  |
+-------------------------------------------------------------------------------+
```

When the results have been displayed, you may select one of the **F** keys, or re-select **F3 CUSTOM** if modification of this lens is required.

F4 Design Window.

The **Design** window allows a quick view of the **Design** files currently stored on disk.

```
                              ┌──────────────┬──────────────┐
                              │ Available    │  M E N U     │
                              │ Designs      │              │
                              │              │  F1 New Lens │
                              │ Sample       │  F2 Visual   │
                              │              │  F3 Custom   │
                              │              │  F4 Design   │
                              │              │  F5 Material │
                              │              │  F6 Files    │
                              │              │  F7 Modify   │
                              │              │  F8 Settings │
                              │              │  F9 Print    │
                              │              │              │
                              │              │  F10 Quit    │
                              └──────────────┴──────────────┤
                                             │  T U R B O   │
                                             │  L E N S     │
                              ┌──────────────┴──────────────┤
  Messages:-  Press  <ESC>  to Exit designs window          │
  ──────────────────────────────────────────────────────────
```
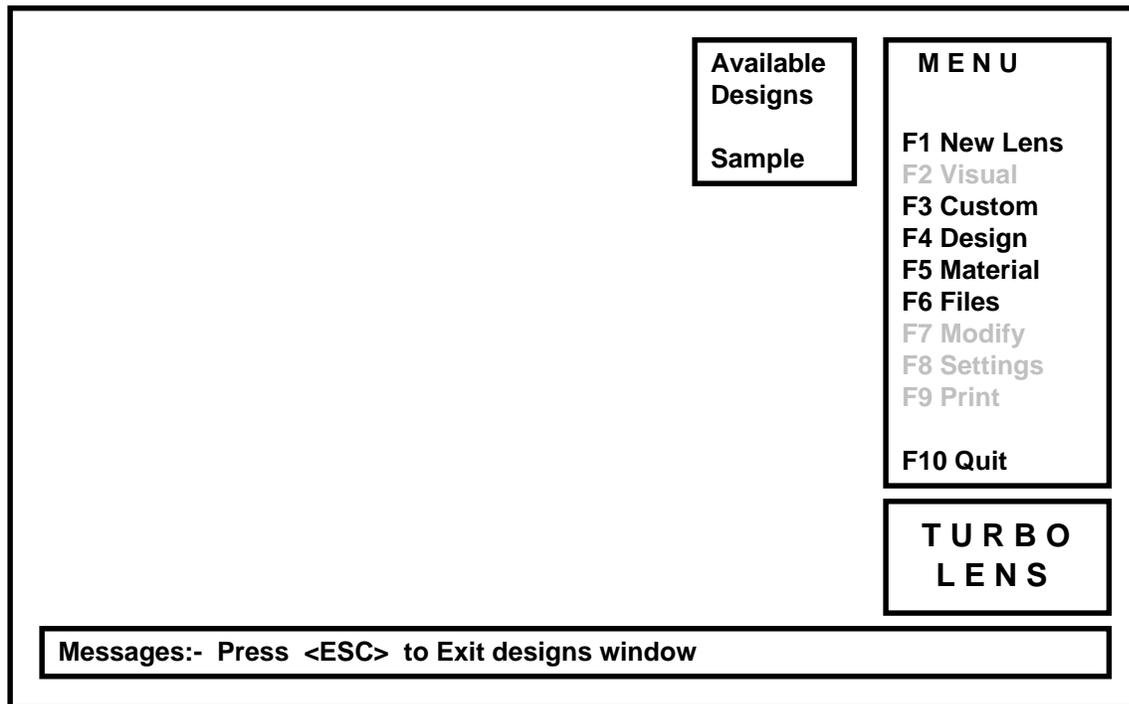
Follow the instructions in the **MESSAGE** window to close the **DESIGN** window.

F5 Material Window.

The **Material** window allows a quick view of the **Material** files currently stored on disk.

```
                                    ┌──────────┐ ┌──────────────┐
                                    │ Available│ │ M E N U      │
                                    │ Material │ │              │
                                    │          │ │ F1 New Lens  │
                                    │ Sample   │ │ F2 Visual    │
                                    └──────────┘ │ F3 Custom    │
                                                 │ F4 Design    │
                                                 │ F5 Material  │
                                                 │ F6 Files     │
                                                 │ F7 Modify    │
                                                 │ F8 Settings  │
                                                 │ F9 Print     │
                                                 │              │
                                                 │ F10 Quit     │
                                                 └──────────────┘
                                                 ┌──────────────┐
                                                 │  T U R B O   │
                                                 │  L E N S     │
                                                 └──────────────┘
 ┌────────────────────────────────────────────────────────────┐
 │ Messages:-  Press  <ESC>  to Exit materials window          │
 └────────────────────────────────────────────────────────────┘
```
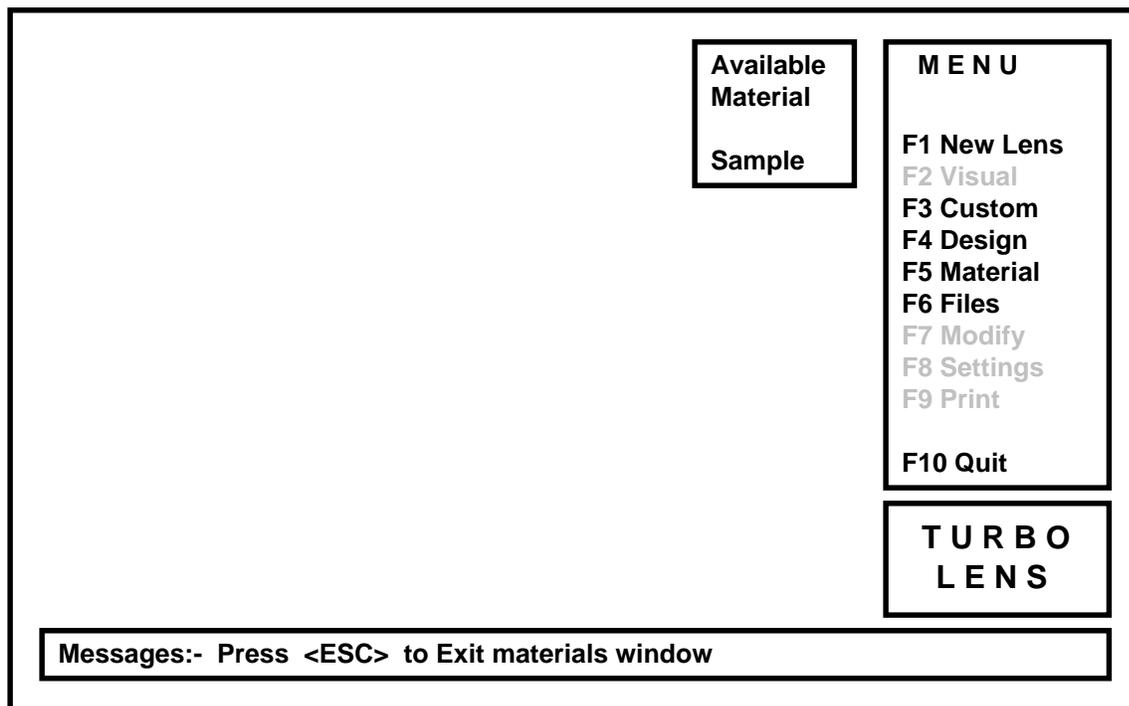
Follow the instructions in the **MESSAGE** window, to close the **MATERIAL** window.

F6 Files Window.

♦ Press the **F6** key to enter the **Files** window.

```
┌──────────────────────────────────────────────────────────────┐
│  ┌────────────────────────────────┐      ┌──────────────────┐ │
│  │  FILES MENU                    │      │    M E N U       │ │
│  │                                │      │                  │ │
│  │  1.....Material Files          │      │  F1 New Lens     │ │
│  │  2.....Design Files            │      │  F2 Visual       │ │
│  │  3.....Material Files Path     │      │  F3 Custom       │ │
│  │  4.....Design Files Path       │      │  F4 Design       │ │
│  │                                │      │  F5 Material     │ │
│  │  Press <ESC> to Exit           │      │  F6 Files        │ │
│  │                                │      │  F7 Modify       │ │
│  └────────────────────────────────┘      │  F8 Settings     │ │
│                                           │  F9 Print        │ │
│                                           │                  │ │
│                                           │  F10 Quit        │ │
│                                           └──────────────────┘ │
│                                           ┌──────────────────┐ │
│                                           │   T U R B O      │ │
│                                           │   L E N S        │ │
│                                           └──────────────────┘ │
│  ┌──────────────────────────────────────────────────────────┐ │
│  │  Messages:-                                               │ │
│  └──────────────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────────┘
```
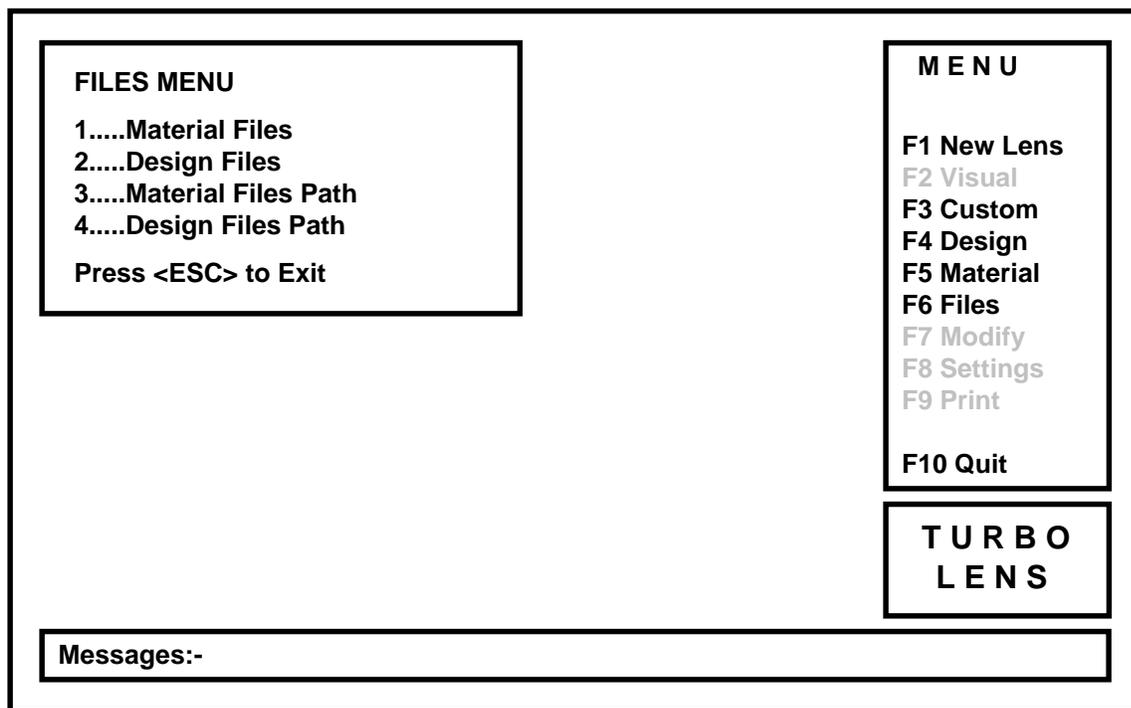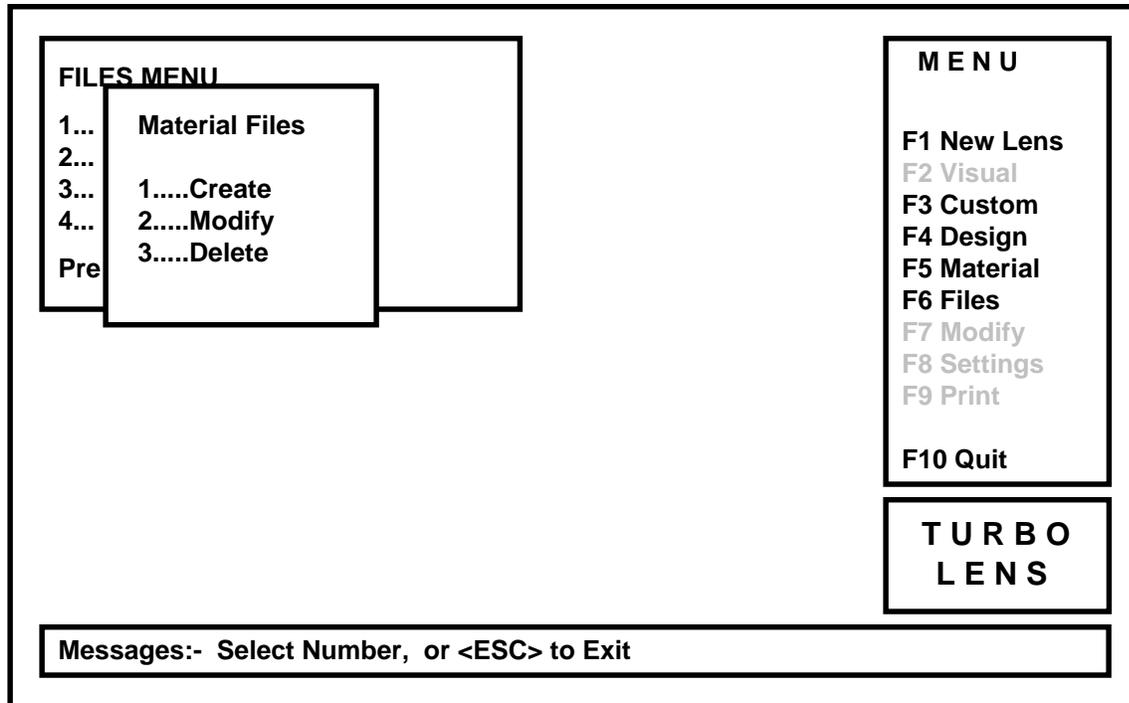
The **Files** window is used for; creating, modifying or deleting material and/or design files, and displaying the materials or design file path.

Selection can be made by pressing one of the number keys, or the **ESCAPE** key may be pressed to Exit.

Material Files.

♦   Press the **1** key.

The **Material File** window will open as follows:

```
┌────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────┐      ┌──────────────────┐ │
│  │ FILES MENU                   │      │    M E N U       │ │
│  │  ┌──────────────────────────┐│      │                  │ │
│  │ 1│    Material Files        ││      │ F1 New Lens      │ │
│  │ 2│                          ││      │ F2 Visual        │ │
│  │ 3│    1.....Create          ││      │ F3 Custom        │ │
│  │ 4│    2.....Modify          ││      │ F4 Design        │ │
│  │  │    3.....Delete          ││      │ F5 Material      │ │
│  │ Pre                         ││      │ F6 Files         │ │
│  │  └──────────────────────────┘│      │ F7 Modify        │ │
│  └──────────────────────────────┘      │ F8 Settings      │ │
│                                         │ F9 Print         │ │
│                                         │                  │ │
│                                         │ F10 Quit         │ │
│                                         └──────────────────┘ │
│                                         ┌──────────────────┐ │
│                                         │   T U R B O      │ │
│                                         │     L E N S      │ │
│                                         └──────────────────┘ │
│  ┌──────────────────────────────────────────────────────┐   │
│  │ Messages:-  Select Number,  or <ESC> to Exit         │   │
│  └──────────────────────────────────────────────────────┘   │
└────────────────────────────────────────────────────────────┘
```

♦   **Create New Material File. (Option 1.)**

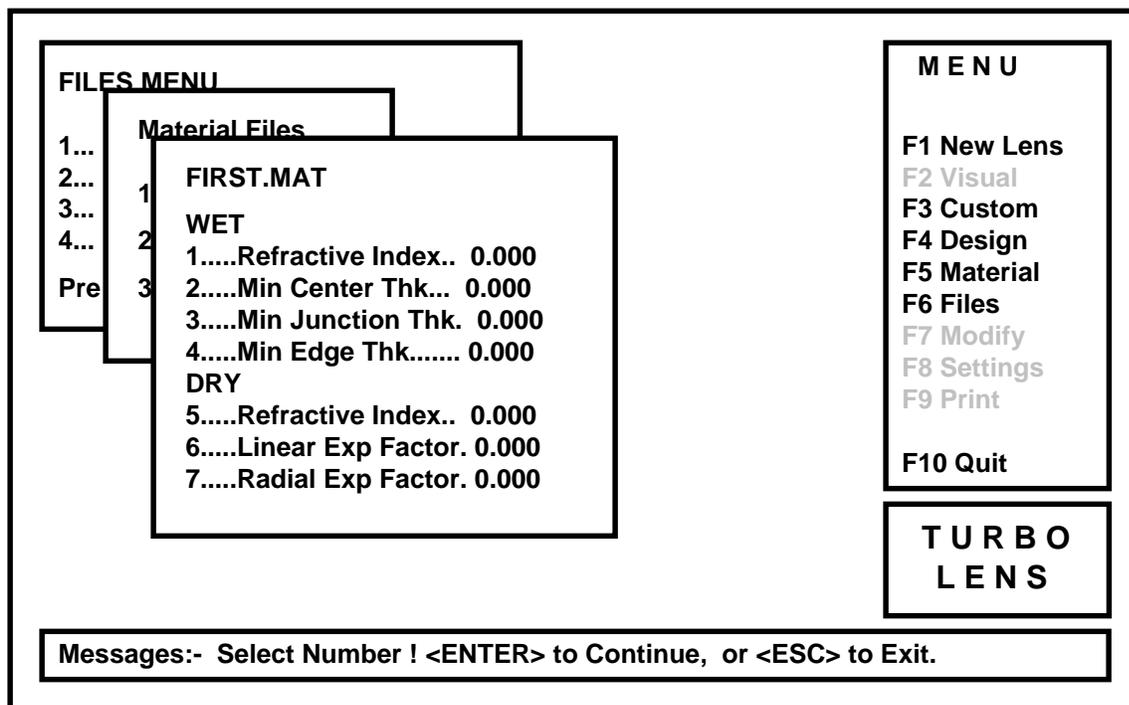To create a new material file....

♦   Press the **1** key.

The **Available Material** window will open, and the user will be prompted to enter the new material name in the **Create New Material** window.

♦   Type **FIRST** and press the **ENTER** key.

The **New Material** window will close, and the **FIRST** window will open as shown below.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────┐         ┌──────────────────┐ │
│  │ FILES MENU                         │         │    M E N U       │ │
│  │     ┌──────────────────────────────┴──┐      │                  │ │
│  │  1..│  Material Files                 │      │ F1 New Lens      │ │
│  │  2..│    ┌────────────────────────────┴──┐   │ F2 Visual        │ │
│  │  3..│  1 │  FIRST.MAT                    │   │ F3 Custom        │ │
│  │  4..│  2 │                              │   │ F4 Design        │ │
│  │     │  3 │  WET                         │   │ F5 Material      │ │
│  │  Pre│    │  1.....Refractive Index..  0.000 │ F6 Files         │ │
│  │     │    │  2.....Min Center Thk...   0.000 │ F7 Modify        │ │
│  └─────┴────┤  3.....Min Junction Thk.   0.000 │ F8 Settings      │ │
│            │  4.....Min Edge Thk.......  0.000 │ F9 Print         │ │
│            │  DRY                         │   │                  │ │
│            │  5.....Refractive Index..  0.000 │ F10 Quit         │ │
│            │  6.....Linear Exp Factor.  0.000 │                  │ │
│            │  7.....Radial Exp Factor.  0.000 └──────────────────┘ │
│            │                              │    ┌──────────────────┐ │
│            └──────────────────────────────┘    │   T U R B O      │ │
│                                                │   L E N S        │ │
│  ┌─────────────────────────────────────────────┴──────────────────┐ │
│  │ Messages:-  Select Number ! <ENTER> to Continue,  or <ESC> to Exit. │
│  └──────────────────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────────────────┘
```

The **FIRST.MAT** window shown above, contains some data that is used with the soft lens program only shown in *italic*. The RGP program will contain Refractive Index, Minimum Center Thickness, Minimum Junction Thickness, and Minimum Edge Thickness.

To enter data into the material file, simply select the required item by number, enter the value, and press the **ENTER** key.

The following are an example of typical values that could be used in either a soft or RGP material file.

- Refractive Index.   1.45

- Minimum Center Thickness.   0.10

- Minimum Junction Thickness.   0.12

- Minimum Edge Thickness.   0.08

- *Refractive Index (Dry).*   *1.44*

- *Linear Expansion Factor.*   *1.22*

- *Radial Expansion Factor*   *1.21*

(The last three items apply to soft lenses only)

Once all of the data has been entered, the **ENTER** key must be pressed again to accept these values.

♦　　Press the **ENTER** key.

The **Save Material File** window will open, simply follow the instructions in the **MESSAGE** window to save the new material file.

♦　　Press the **1** key.

The **FIRST.MAT** material file is saved on disk ready to be used by **Turbo Lens®**.

♦　　**Modify Material File. (Option 2).**

If it becomes necessary to modify one of the stored material files, select **Modify**

♦　　Press the **2** key.

The **Modify Material** window will open, and the user will be prompted for the material name.

♦　　Enter the **Material Name**, and press the **ENTER** key.

When the **Modify Material** window opens, it is used in the same way as the **Create New Material** window.

♦　　**Delete Material. (Option 3.)**

To delete a material file....

♦　　Press the **3** key.

♦　　Enter the **Material Name**, and Press the **ENTER** key.

The material will now be deleted.

Design Files.

♦ Press the **2** key to open the **Design** window.

```
FILES MENU                                    M E N U

1...    Design Files                          F1 New Lens
2...                                          F2 Visual
3...    1.....Create                          F3 Custom
4...    2.....Modify                          F4 Design
        3.....Delete                          F5 Material
Pre                                           F6 Files
                                              F7 Modify
                                              F8 Settings
                                              F9 Print

                                              F10 Quit


                                              T U R B O
                                               L E N S

Messages:-  Select Number,  or <ESC> to Exit
```
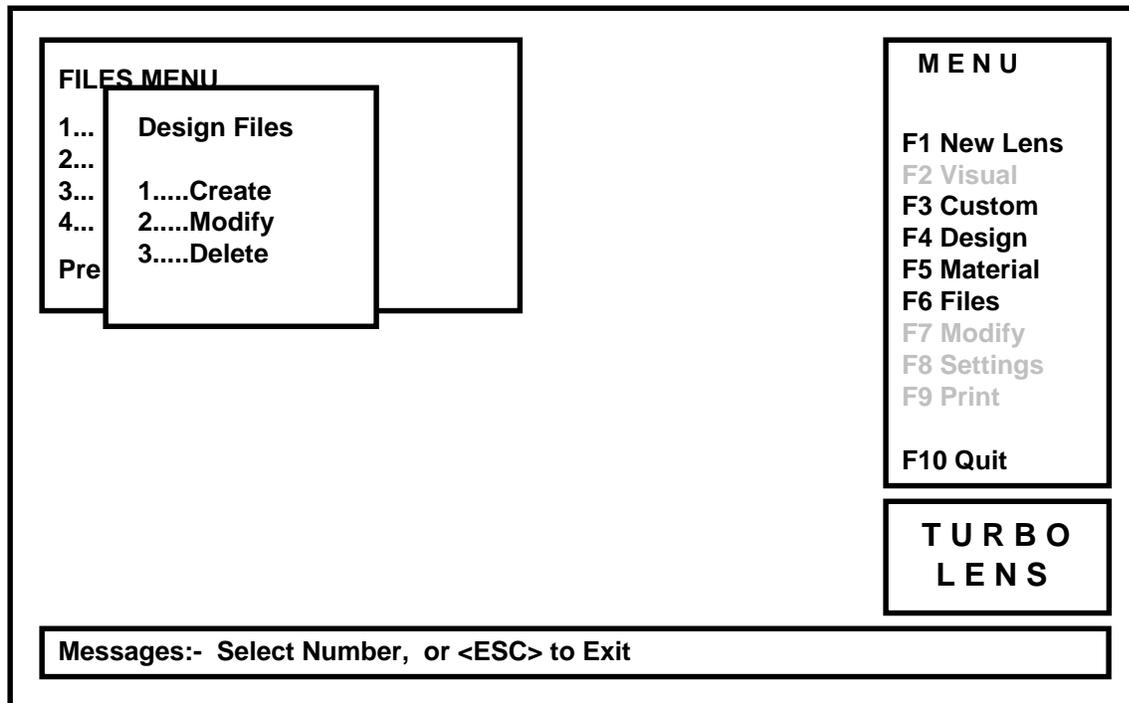
♦ **Create Design File. (Option 1.)**

To create a design file....

♦ Press the **1** key.

The **Create New File** window will open as below.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────┐      ┌──────────────┐  │
│  │ FILES MENU                       │      │  M E N U     │  │
│  │ 1...  ┌──────────────────────────┤      │              │  │
│  │ 2...  │ Design Files             │      │ F1 New Lens  │  │
│  │ 3...  │     ┌────────────────────┤      │ F2 Visual    │  │
│  │ 4...  │ 1.. │ Create New File    │      │ F3 Custom    │  │
│  │       │ 2.. │                    │      │ F4 Design    │  │
│  │ Pre   │ 3.. │ 1... Design Name ......│   │ F5 Material  │  │
│  │       └─────│ 2... Concave Zones ... │   │ F6 Files     │  │
│  │             │ 3... Convex Zones .....│   │ F7 Modify    │  │
│  │             │ 4... Configuration ....│   │ F8 Settings  │  │
│  │             │ 5... Edge Shape .......│   │ F9 Print     │  │
│  │             └────────────────────────┘   │              │  │
│  │                                          │ F10 Quit     │  │
│  │                                          └──────────────┘  │
│  │                                          ┌──────────────┐  │
│  │                                          │  T U R B O   │  │
│  │                                          │  L E N S     │  │
│  │                                          └──────────────┘  │
│  ┌───────────────────────────────────────────────────────┐  │
│  │ Messages:-  Select Number,  or <ESC> to Exit,  <ENTER> to Continue │
│  └───────────────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────────┘
```
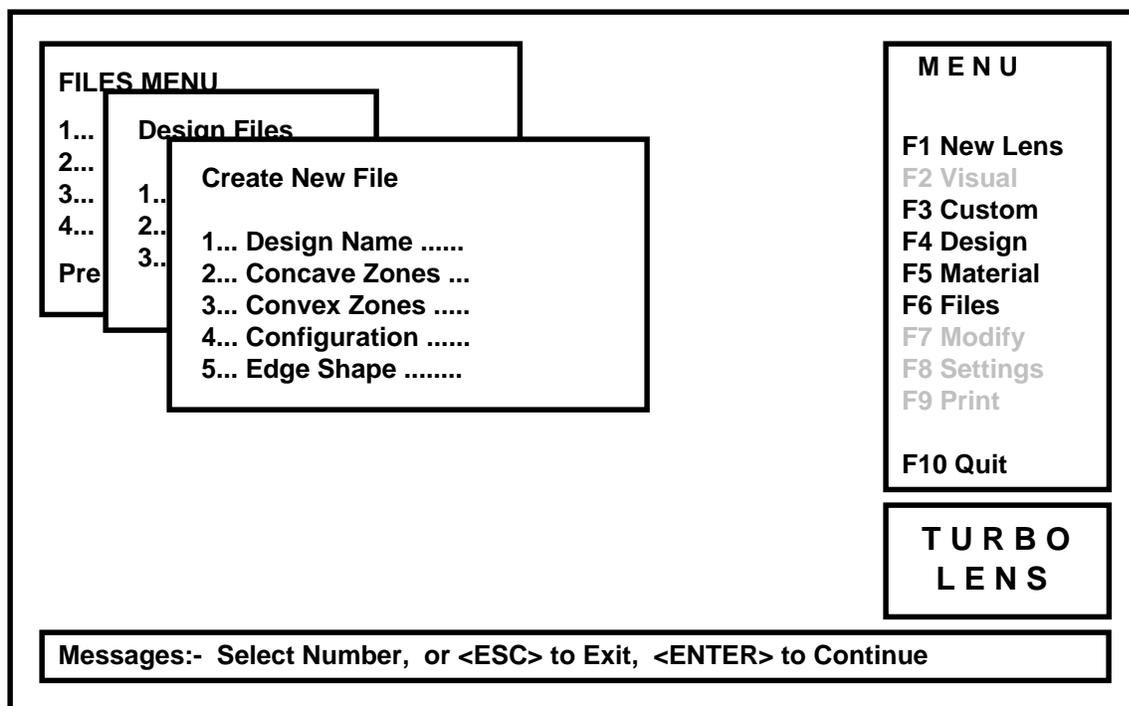
♦ **Design Name. (Create New File. Option 1.)**

The new **Design Name** must be entered first.

♦ Press the 1 key.

The **Available Designs** window opens to show the current design files stored on disk.

Select the required design file name, (the name can be no more than 8 characters long, and can be any combination of letters or numbers.)

♦ Enter **Design Name**, and press the **ENTER** key.

The **Available Designs** window will close.

♦ **Concave Zones. (Create New File. Option 2.)**

The total number of curves required on the concave side of the lens (including the base curve).

♦   Press the **2** key.

♦   Enter **Number** and press the **ENTER** key.

In place of the word **Number**, enter the number of concave zones required.

Number can be in the range of 1 through 10.

♦   **Convex Zones. (Create New File. Option 3.)**

The total number of curves required on the convex side of the lens (including the power curve).

♦   Press the **3** key.

♦   Enter **Number** and press the **ENTER** key.

In place of the word **Number**, enter the number of convex zones required.

Number can be in the range of 1 through 10.

♦   **Configuration. (Create New File. Option 4.)**

Opens the **Configuration** window. as follows:

```
FILES MENU                                        M E N U
1...    Design Files
2...                                              F1 New Lens
3...    1..   Create New File                     F2 Visual
4...    2..                                       F3 Custom
        3..   1..   Curve Configuration           F4 Design
Pre           2..                                 F5 Material
              3..   1..  Concave Radius.....  VARIABLE     F6 Files
              4..   2..  Concave Diameter.  DIAMETER       F7 Modify
              5..   3..  Convex Radius......  AUTOMATIC     F8 Settings
                    4..  Convex Dianeter...  DIAMETER       F9 Print
                    5..  Thickness..............  RADIAL
                                                  F10 Quit


                                                  T U R B O
                                                   L E N S

Messages:-  Select Number to change,  Press <ESC> when finished
```

The **Curve Configuration** window, allows you to configure the way you wish to enter and calculate curves and diameters.

♦   **Concave Radius. (Curve Configuration, Option 1.)**

The Concave Radius configuration has two options, **FIXED** or **VARIABLE.** Each time the key is pressed, the Concave Radius Configuration will cycle between these two states.

♦   Press the **1** key, to change state.

If the **FIXED** state is selected, the radius will remain as entered through all calculations.

If the **VARIABLE** state is selected, all radii will be entered as an amount flatter (or steeper) than the base curve, thus during the calculations, the curves will always be relative to the entered base curve.

♦   **Concave Diameter. (Curve Configuration, Option 2.)**

The Concave Diameter configuration has two options, **WIDTH** or **DIAMETER.** Each time the key is pressed, the Concave Diameter Configuration will cycle between these two states.

♦   Press the **2** key, to change state.

If the **DIAMETER** state is selected, the diameters will remain as entered through all calculations.

If the **WIDTH** state is selected, only the total lens diameter will be entered as a diameter, all other zones will be entered as a specific width, thus the diameter of each zone will always be relative to the lens diameter. (Example: to calculate the diameter of the smallest zone;

optical zone = lens diameter - 2(the sum of all the zone widths)

this may be desirable to maintain a consistent edge blend profile).

♦   **Convex Radius. (Curve Configuration, Option 3.)**

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Convex Radius appears "grayed", and is permanently set to **AUTOMATIC**. The front surface radii status can not be changed, they are all calculated automatically, depending on the lens power, and lens thickness requirements.

♦ **Convex Diameter. (Curve Configuration, Option 4.)**

The Convex Diameter configuration has two options, **WIDTH** or **DIAMETER.** Each time the key is pressed, the Convex Diameter Configuration will cycle between these two states.

♦ Press the **4** key, to change state.

If the **DIAMETER** state is selected, the diameters will remain as entered through all calculations.

If the **WIDTH** state is selected, only the total lens diameter will be entered as a diameter, all other zones will be entered as a specific width, thus the diameter of each zone will always be relative to the lens diameter.

♦ **Thickness. (Curve Configuration, Option 5.)**

The lens thicknesses, may be expressed in one of two ways, **AXIAL** or **RADIAL**. Each time the key is pressed, the thickness method will cycle between these two states.

♦ Press the **5** key, to change state.

The Radial thickness method provides a more accurate lens thickness measurement, whereas the Axial method will only describe thickness parallel to the rotational axis.

Once all changes to the **Curve Configuration** window are complete;

♦ Press the **ESCAPE** key, to exit **Curve Configuration**.

The screen display will revert back to the **Create New Design** window.

♦ **Edge Shape. (Create New Design, Option 5.)**

The **Edge Shape** window, allows the user to modify the edge radius to virtually any shape required.

♦ Press the **5** key to open the **Edge Shape** window.

```
┌─────────────────────────────────────────────────────────────────────┐
│ ┌──────────────────────────────────────────┐   ┌──────────────────┐ │
│ │ Custom Lens                              │   │ M E N U          │ │
│ │                                          │   │                  │ │
│ │ 1..  M┌──────────────────────────────────┼───┤ F1 New Lens      │ │
│ │ 2..  C│ Edge Shape (Edge is sphere when X = 50 and Z = 50  F2 Visual  │ │
│ │ 3..  C│                                    │   F3 Custom        │ │
│ │ 4..  C│  ┌─────────────────┐  X Position = 50  F4 Design       │ │
│ │ 5..  E│  │  ◯ ◯            │  Z Position = 50  F5 Material     │ │
│ └───────┤  │     ◯           │                 │ F6 Files         │ │
│         │  │       ◯         │  <SPACE> Selects  F7 Modify        │ │
│         │  │        ◯        │  resolution       F8 Settings      │ │
│         │  │         ◯       │                 │ F9 Print         │ │
│         │  │         ◯       │  <ENTER> Selects  │                │ │
│         │  │        ◯        │  shape,  and exits.  F10 Quit      │ │
│         │  │       ◯         │                 │                  │ │
│         │  │     ◯           │  <ESC> sets sphere └──────────────────┘
│         │  │  ◯ ◯            │  edge,  and exits.                  │
│         │  └─────────────────┘                 ┌──────────────────┐ │
│         │                       Cursor keys move  T U R B O        │ │
│         │                       edge shape.      L E N S          │ │
│         └────────────────────────────────────┘ └──────────────────┘ │
│ ┌──────────────────────────────────────────────────────────────┐   │
│ │ Messages:-  Select <ENTER>,  <ESC>,  or cursor keys.         │   │
│ └──────────────────────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────────────────────┘
```

Using the cursor keys, the user may move the edge shape, until the desired shape is achieved, the user may then "lock in" the required shape;

♦   Press the **ENTER** key, to "lock in" the required shape.

If any fine tuning of the edge shape is required, the user may select a lower resolution. There are three different resolutions available, 10%, 5%, and 1%. The default resolution is 10%.

♦   Press the **SPACE BAR**, to change the resolution.

At any time, The user may exit with a spherical edge radius.

♦   Press **ESCAPE** to exit with a default spherical edge.

As with previous windows, watch the M**essage Window** for warnings or instructions for the next possible key press.

If all the correct data is entered in to the **Create New Design** window, the user may proceed to the data entry window.

♦   Press the **ENTER** key, to continue.

Now the **Data Entry** window will open as below.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────────────┐      ┌──────────────┐ │
│  │ FILES MENU                                │      │   M E N U    │ │
│  │  ┌──────────────────────────────────┐     │      │              │ │
│  │ 1...  Design Files                   │     │      │ F1 New Lens  │ │
│  │ 2...  ┌──────────────────────────────────┐ │      │ F2 Visual    │ │
│  │ 3...  │ Create New File                  │ │      │ F3 Custom    │ │
│  │ 4... 1..┌──────────┬──────────┬──────────┐│      │ F4 Design    │ │
│  │      2.. 1.│ Concave  │ Concave  │ Convex   ││     │ F5 Material  │ │
│  │ Pre  3.. │  │ Radius(V)│  Width   │ Diameter ││     │ F6 Files     │ │
│  │         2.│ 1│Base Curve│   N/A    │ 6.00000  ││     │ F7 Modify    │ │
│  │         3.│  │          │          │          ││     │ F8 Settings  │ │
│  │         4.│ 2│ 2.00000  │ 0.00000  │Lens Diam ││     │ F9 Print     │ │
│  │           │ 3│ 0.00000  │ 0.00000  │   N/A    ││     │              │ │
│  │           │ 4│ 0.00000  │ 0.00000  │   N/A    ││     │ F10 Quit     │ │
│  │           └──┴──────────┴──────────┴──────────┘│     └──────────────┘ │
│                                                        ┌──────────────┐ │
│                                                        │  T U R B O   │ │
│                                                        │   L E N S    │ │
│                                                        └──────────────┘ │
│  ┌─────────────────────────────────────────────────────────────────┐ │
│  │ Messages:- Select Number, or <ESC> to Exit, <ENTER> to Continue  │ │
│  └─────────────────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────────────────┘
```

The **Data Entry** window, is where most of the design information is stored, here the user will enter all radii, diameters, and / or widths that are required to calculate the lens, except for the base curve, lens diameter, and power.

As can been seen above, this example has 4 concave zones, and 2 convex zones. The base curve configuration has been set to **Variable**, (note the "V" next to the word Radius, an "F" would appear here if the radius configuration was set to "fixed".) The concave diameter configuration is set to **Width**, and the convex diameter configuration is set to **Diameter**.

Therefore; the concave radii will be entered as an amount flatter than the base curve, the concave diameters will be entered as width of zone size, and the convex diameter(s) will be entered as whole diameters.

To enter the data, select one of the number keys next to the information you wish to change.

♦   Press the **1** key.

As the first box is the base curve, and the second column is set to **Width**, there is no data required for concave on this line. The first item that is ready for input, is the **Convex Diameter**, had **Width** been selected, then this box would have been skipped too.

Enter the value for the first front surface diameter.

♦   Enter the number **7.5** and press the **ENTER** key.

If any of these boxes already contains a number you wish to keep, you can press the **ENTER** key to keep the same number, or type in a new number.

Next select row number 2.

♦   Press the **2** key.

This time the **Concave Radius** column has been selected, (next to the word radius you will see the letter **V** in parentheses, this signifies that the concave curves are **Variable**, the alternative is an **F** signifying **Fixed**).

♦   Enter a value of **1.0** in this box.

(If the base curve was 7.50mm for example, the secondary curve will be 1mm flatter than the base curve, or 8.50mm.)

♦   Press the **ENTER** key.

Next enter the **Width** of the radius just entered.

♦   Enter the required width, and press the **ENTER** key.

Continue filling the data entry box, until it is complete. When complete....

♦   Press the **ENTER** key.

The **Save Design File** window will open, follow the instructions to save the design -

♦   Press the **1** key.

To abort saving the design, and return back to the previous window, press the **2** key.

♦   **Modify Design File. (Option 2).**

If it becomes necessary to modify one of the stored design files, select **Modify**

♦   Press the **2** key.

The **Modify Design** window will open, and the user will be prompted for the design name.

♦   Enter the **Design Name**, and press the **ENTER** key.

When the **Modify Design** window opens, it is used in the same way as the **Create New Design** window.

♦   **Delete Design. (Option 3.)**

To delete a design file....

♦   Press the **3** key.

♦   Enter the **Design Name**, and Press the **ENTER** key.

The design will now be deleted.

Display Material Files Path.

From the **FILES MENU**

♦   Press the **3** key.

The **Material Path** will be displayed in a window. To exit this window.

♦   Press the **ESCAPE** key.

Display Design Files Path.

From the **FILES MENU**

♦   Press the **4** key.

The **Design Path** will be displayed in a window. To exit this window.

♦   Press the **ESCAPE** key.

F7 Modify Window.

The **F7 Modify** selection, is intended to be used after the calculation of a new lens, that has been created using the **F1 New Lens** option.

If the user should wish to modify the thicknesses of the current lens, the **F7** key should be pressed.

♦   Press the **F7** key.

The **Modify** window will open, and display three options,

        1.. Center Thickness
        2.. Junction Thickness
        3.. Edge Thickness

From this selection the new value for the thickness may be entered. *(All thicknesses are hydrated parameters).*

Once entered, Press the **C** key to calculate the new front curves, and display the modified lens.

(Please Note. A thickness of less than the minimum thickness from the selected **Material File** may not be entered. If a modification of a thickness causes another thickness to be calculated less than its respective minimum thickness, calculating will show no change.)

F8 Save Window.

The **Save** window is used to create the Optoform job file. (The Optoform job file, is a text file that contains X and Z data points that describe the lens that is to be manufactured. The job files must conform to the Optoform Job File Description, Rank Pneumo, Inc. Drawing number 8901-433ZZ. See appendix B.)

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌─ Base Curve (mm) ──────────┐  ┌─ Front Curve (mm) ──┐   M E N U    │
│  │ ┌─────────────────────────────────────────────────┐ │             │
│  Ra│ Save Data File. (Last Job Number...      )       │ │ F1 New Lens │
│  Ra│                                                  │ │ F2 Visual   │
│  Ra│ 1. . Job Directory . . . . .  TEST          dial │ │ F3 Custom   │
│  Ra│ 2. . Job Number . . . . . .                  20  │ │ F4 Design   │
│  Sa│ 3. . Date . . . . . . . . . . . .  MM-DD-YYYY 97  │ │ F5 Material │
│  Ax│ 4. . Originator . . . . . . .  YOURNAME      50  │ │ F6 Files    │
│  Po│ 5. . Disk Drive . . . . . . .  C:                 │ │ F7 Modify   │
│    │ 6. . CX Lathe Number .  L1021                    │ │ F8 Settings │
│    │ 7. . CC Lathe Number .  L1021                    │ │ F9 Print    │
│    │ 8. . Number of Lenses .  1000                    │ │             │
│    │ 9. . Edge Rotation . . . .  0                    │ │ F10 Quit    │
│    │                                                  │ │             │
│    │ <ENTER> . .  Save Optoform Job File              │ │ ┌─────────┐ │
│    │ <PGDN> . .   Dry Lens Data                       │ │ │ T U R B O│ │
│    │ <ESC> . . . .  Exit                              │ │ │ L E N S │ │
│    └─────────────────────────────────────────────────┘ │ └─────────┘ │
│  ┌─────────────────────────────────────────────────────────────────┐ │
│  │ Messages:- Select number, <ENTER> to Save, <PGDN>, or <ESC> to Exit.│
│  └─────────────────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────────────────┘
```

To save the job file, Items 1 through 9 must be complete.

♦ Job Directory. (Option 1.)

The **Job Directory** is the directory where the job file will be saved. The **Job Directory** name my be up to eight characters long, and may consist of either letters, numbers, or a combination of both. To enter a new **Job Directory**....

♦ Press the **1** key.

♦ Enter the **Job Directory** name, and press the **ENTER** key.

Although the **Job Directory** name is left to the user, it is usually better to use a name that is useful, for example. RGP manufacturers may find that an order date, or week number may be convenient, whereas a soft lens manufacturer may use a lens design name, or lot number.

♦ **Job Number. (Option 2.)**

The **Job Number** is the name used to store the job file. The job file name may be up to eight characters long, and may consist of either letters, numbers, or a combination of both. To enter a new **Job Number**....

♦ Press the **2** key.

♦ Enter the **Job Number**, and press the **ENTER** key.

Like the **Job Directory** above, the **Job Number** is left to the user, but should be something logical. Examples may include an invoice number for RGP manufacturers, or a product code or SKU for soft lens manufacturers.

♦ **Date. (Option 3.)**

The **Date** is automatically set to the current date the computer is set to. This may be changed by.....

♦ Press the 3 key.

♦ Enter the **Date**, and press the **ENTER** key.

Please note the format of the **Date** in the **Message** window.

♦ **Originator. (Option 4.)**

The **Originator** is the person who created the file. To enter the **Originator**.....

◆   Press the **4** key.

◆   Enter the **Originator**, and press the **ENTER** key.

The **Originator** could be the users name or initials etc.

◆   **Disk Drive. (Option 5.)**

The **Disk Drive** is the designation drive the job file is saved to. To change the **Disk Drive**....

◆   Press the **5** key.

◆   Enter the **Disk Drive** letter designation, and press the **ENTER** key.

The **Disk Drive** letter designation are typically **A** and **B** for the two floppy drives, and **C** for the hard drive.

◆   **CX Lathe Number. (Option 6.)**

The **CX** (convex) **Lathe Number**, is a sequence of characters and/or numbers, that should match the **Lathe Number** on the machine. To change the lathe number....

◆   Press the **6** key.

◆   Enter the **CX Lathe Number**, and press the **ENTER** key.

The default **Lathe Number** is **L1021**

◆   **CC Lathe Number. (Option 7.)**

The **CC** (concave) **Lathe Number**, is a sequence of characters and/or numbers, that should match the **Lathe Number** on the machine. To change the lathe number....

◆ Press the **7** key.

◆ Enter the **CC Lathe Number**, and press the **ENTER** key.

The default **Lathe Number** is **L1021**

◆ **Number of Lenses. (Option 8.)**

The **Number of lenses** is the required amount of the same lens. To change....

◆ Press the **8** key.

◆ Enter the **Number of Lenses**, and press the **ENTER** key.

The machine will not be limited by a low value.

◆ **Edge Rotation. (Option 9.)**

The **Edge Rotation** is an angle the edging tool rotates around the edge of the lens, during back surface cutting. The default is 0 (zero). To change the **Edge Rotation**....

◆ Press the **9** key.

◆ Enter the **Edge Rotation**, and press the **ENTER** key.

Zero **Edge Rotation** means that the edge tool will stop cutting the edge, perpendicular to the rotational center of the lens. When the front surface is cut, the tool will start at where the edge tool left off. Therefore, the more the **Edge Rotation** amount, the more the edge tool rotates round the edge behind the lens, when cutting the back surface, and the less of the edge the front surface tool cuts. The **Edge Rotation** cannot be less than 0 (zero). If an attempt is made to enter 90 (ninety) degrees, or the entered value is greater than the angle which blends the edge radius to the front surface, then the display will default to **"AUTO-BLEND"**, and the edge tool will rotate to the correct angle to blend to the front surface.

Please note: an **Edge Rotation** of more than 0 (zero), may require special tooling.

♦ **Saving the Job File.**

Once all the above data is entered, the job file may be saved. To save the job file....

♦ Press the **ENTER** key.

The **Message** window will show the status of the save.

♦ **Exit the F8 Window.**

To exit the **F8 Save** window....

♦ Press the **ESCAPE** key.

The **F8 Save** window will remember the last information entered.

The following information is available to users of the soft lens program only.

♦ *Dry Lens Data*

*At the bottom of the **F8 Save** window, inbetween the prompts for **ENTER** to save the job file, and **ESCAPE** to exit the **F8 Save** window. There is a prompt to press the **PGDN** (page down) key, for **Dry Lens Data**.*

*If the **PGDN** key is pressed, the **F8 Save** window contents will change to show the dehydrated radii, diameters, and lens power, as shown below.*

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────┐  ┌───────────────────────┐   ┌───────┐ │
│  │ Base Curve (mm)      │  │ Front Curve (mm)      │   │ M E N U│ │
│  │ ┌──────────────────────────────────────────────┐ │           │
│  │ │              Dehydrated Settings             │ │ F1 New Lens│
│  │ │                                              │ │ F2 Visual  │
│  │ │  Base Curve(s)              Front Curve(s)   │dial F3 Custom│
│  │ │                                              │ │ F4 Design  │
│  │ │  Rad  1 =  6.000 @   6.400   Rad  1 = 5.948 @  4.800  20 F5 Material│
│  │ │  Rad  2 =  7.600 @   6.720   Rad  2 = 5.957 @  7.360  97 F6 Files│
│  │ │  Rad  3 =  8.900 @   7.040                    50 F7 Modify│
│  │ │  Rad  4 =  9.200 @   7.360                       F8 Settings│
│  │ │                                              │   F9 Print │
│  │ │  Dry Power  =  +1.15                         │           │
│  │ │                                              │  F10 Quit  │
│  │ │                                              │ ┌───────┐  │
│  │ │                                              │ │ TURBO │  │
│  │ │                                              │ │ LENS  │  │
│  │ └──────────────────────────────────────────────┘ └───────┘  │
│  ┌──────────────────────────────────────────────────────────┐   │
│  │ Messages:- Press <PGUP> for Data File Info, or <ESC> to Exit.│ │
│  └──────────────────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────────────────┘
```

*The **PGUP** (page up) key will return back to the **Save Data File** information.*

*The **ESCAPE** key, will exit the **F8 Save** window.*

F9 Print Window.

After the lens is calculated, a hard copy of the job may be printed out.

To open the **PRINT** window.

♦ Press the **F9** key.

The **Print Schedule** window will open as below.

```
┌──────────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────┐  ┌──────────────────────────┐  ┌──────────┐ │
│  │ Base Curve (mm)          │  │ Front Curve (mm)         │  │ M E N U  │ │
│  │                          │  │                          │  │          │ │
│  │ Radius 1 = 7.500 @ 8.000 │  │ Radius 1 = 7.435 @ 6.000 │  │          │ │
│  │ Radius 2 = 9.500 @ 8.400 │  │ Radius 2 = 7.442 @ 9.200 │  │ F1 New Lens │
│  │ Radius 3 = 10.500 @ 8.800│  │                          │  │ F2 Visual│ │
│  │ Radius 4 = 11.500 @ 9.200│  │ Thicknesses...  Axial  Radial │ F3 Custom│ │
│  │                          │  │                          │  │ F4 Design│ │
│  │ Sag. Depth = 1.577       │  │ Center............ 0.220 0.220 │ F5 Material │
│  │ Axial Edge Li ┌──────────────────┐.. 0.214 0.197 │ F6 Files│ │
│  │ Power = +0.00 │ Print Schedule   │.. 0.055 0.050 │ F7 Modify│ │
│  │               │                  │              │  │ F8 Settings │
│  │               │ 1 . . . . Left lens Only       │  │ F9 Print │ │
│  │               │ 2 . . . . Right Lens Only      │  │          │ │
│  │               │ 3 . . . . Pair of Lenses       │  │ F10 Quit │ │
│  │               └──────────────────┘              │  └──────────┘ │
│                                                       ┌──────────┐ │
│                                                       │ T U R B O│ │
│                                                       │  L E N S │ │
│                                                       └──────────┘ │
│  ┌──────────────────────────────────────────────────────────────┐ │
│  │ Messages:- Select Number, <ESC> to Exit.                     │ │
│  └──────────────────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────────────────────┘
```

Depending on the requirement, the user must select one of the displayed number keys.

♦ **Left Lens Only. (Option 1.)**

If this option is selected, the **Doctor / Patient Information** window will open as below.

♦   **Right Lens Only. (Option 2.)**

If this option is selected, the **Doctor / Patient Information** window will open as below.

♦   **Pair of Lenses. (Option 3.)**

If this option is selected, the current lens will be stored as the **LEFT** lens. Then the **Print Schedule** window will close to allow the right lens to be designed At this point all other **Turbo Lens®** functions will be available. After designing and calculating the **RIGHT** lens, press the **F9** key, the **Doctor / Patient Information** window open as below.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────┐  ┌──────────────────────────┐  ┌─────────────┐ │
│  │ Base Curve (mm)          │  │ Front Curve (mm)         │  │  M E N U    │ │
│  │                          │  │                          │  │             │ │
│  │ Radius 1 = 7.500 @ 8.000 │  │ Radius 1 = 7.435 @ 6.000 │  │ F1 New Lens │ │
│  │ Radius 2 = 9.500 @ 8.400 │  │ Radius 2 = 7.442 @ 9.200 │  │ F2 Visual   │ │
│  │ Radius 3 = 10.500 @ 8.800│  │                          │  │ F3 Custom   │ │
│  │ Radius 4 = 11.500 @ 9.200│  │ Thicknesses... Axial Radial│ │ F4 Design   │ │
│  │                          │  │ Center............ 0.220 0.220│ │ F5 Material │ │
│  │ Sag. Depth = 1.577       │  │ Junction........ 0.214 0.197│ │ F6 Files    │ │
│  │ Axial Edge Lift =     ┌──────────────────────────┐   F7 Modify  │ │
│  │ Power = +0.00         │ Doctor / Patient Information│  F8 Settings│ │
│  └───────────────────────│                          │   F9 Print   │ │
│                          │ 1 . . Doctor . . . . .   │              │ │
│                          │ 2 . . Patient . . . . .  │   F10 Quit    │ │
│                          │ 3 . . Tray ID . . . . .  │              │ │
│                          │ 4 . . Tray Color . .     │  ┌─────────────┐│
│                          │ 5 . . Rush . . . . . . NO │  │ T U R B O   ││
│                          └──────────────────────────┘  │  L E N S    ││
│  ┌────────────────────────────────────────────────────┐│             ││
│  │ Messages:- Select <F> key, <ESC> for Info, or <ALT> <S> for Dos Shell │ │
│  └────────────────────────────────────────────────────┘ └─────────────┘ │
└─────────────────────────────────────────────────────────────────────┘
```


♦   **Doctor. (Option 1.)**

To enter the name of the **Doctor**....

- ♦   Press the **1** key.
- ♦   Enter the name of the **Doctor**, and press the **ENTER** key.

This item may be omitted if not required.

- ♦   **Patient. (Option 2.)**

To enter the name of the **Patient**....

- ♦   Press the **2** key.
- ♦   Enter the name of the **Patient**, and press the **ENTER** key.

This item may be omitted if not required.

- ♦   **Tray ID. (Option 3.)**

To enter the **Tray ID**....

- ♦   Press the **3** key.
- ♦   Enter the **Tray ID**, and press the **ENTER** key.

This item may be omitted if not required.

- ♦   **Tray Color. (Option 4.)**

To enter the **Tray Color**....

- ♦   Press the **4** key.
- ♦   Enter the **Tray Color**, and press the **ENTER** key.

This item may be omitted if not required.

- ♦   **Rush. (Option 5.)**

To enter if the current lens is a **Rush**....

♦ Press the **5** key.

The **Rush** item will toggle between **YES** and **NO**.

If the printer has been set up correctly, the input information will be printed.

A sample of the printout is enclosed with this manual. (See appendix A).

F10 QUIT

To exit **Turbo Lens®**,

♦ Press the **F10** key.

The **MESSAGE** window will display the following.

QUIT ! Are you sure ? Press Y or N key.

♦ Press the **Y** or **N** key as required.

Appendix A.

Sample of Turbo Lens® Printout.

```
  RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH

Doctor...              Tray ID.....                02-07-1994
Patient..              Tray Color..                18:28:45
Left Matl... SAMPLE    Index Wet..... 1.50000      Index Dry... 1.40000
Right Matl.. SAMPLE    Index Wet..... 1.50000      Index Dry... 1.40000
Left Design.           Right Design.. SAMPLE
----------------------------------------------------------------------------
            Left Lens                        Right Lens
----------------------------------------------------------------------------
Base Curve                           | Base Curve

Radius  1 =  6.000 @  6.400 Diameter | Radius  1 =  6.400 @  6.400 Diameter
Radius  1 =  7.600 @  6.720 Diameter | Radius  1 =  8.000 @  8.000 Diameter
Radius  1 =  8.400 @  7.040 Diameter |
Radius  1 =  6.000 @  7.360 Diameter |

Front Curve                          | Front Curve

Radius  1 =  5.948 @  4.800 Diameter | Radius  1 =  6.457 @  8.000 Diameter
Radius  2 =  5.957 @  7.360 Diameter |
----------------------------------------------------------------------------
                Wet      Dry         |                  Wet      Dry
Power.......... +1.25    +1.15       | Power.......... +0.00    -0.08
Center Thk..... 0.220    0.176       | Center Thk..... 0.215    0.172
Junction Thk... 0.214    0.171       | Junction Thk... 0.057    0.045
Edge Thk....... 0.055    0.044       | Edge Thk....... 0.057    0.045
Edge Lift...... 0.150    0.120       | Edge Lift...... 0.178    0.143
----------------------------------------------------------------------------
                        L a t h e   S e t t i n g s
----------------------------------------------------------------------------
Base Curve                           | Base Curve

Set Top Slide......  6.000           | Set Top Slide......  6.400
Set Lower Slide....  1.818 Black     | Set Lower Slide....  1.790 Black
Set Angle..........  32.23           | Set Angle..........  30.00

Front Curve                          | Front Curve

Set Top Slide......  5.948           | Set Top Slide......  6.457
Set Lower Slide....  0.010 Red       | Set Lower Slide....  0.000
Set Angle..........  23.80           | Set Angle..........  0.00
----------------------------------------------------------------------------
  RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH RUSH
```

Appendix B.

Optoform Job File Format

Optoform 50 job files consist of four sections of ASCII text. The first section contains information relating to file, lens and lathe information. The second section contains a sequential list of surface coordinates (x and z values) that describe the front (convex) lens surface. The third section contains a sequential list of surface coordinate that describe the back (concave) lens surface. And the last sections contains a sequential list of surface coordinates that describe the lens edge.

The job file sections are separated by a single line that contains one text character. The beginning of the second section which contains the points for the front surface begins with a line containing the letter "F". The third section of data that describes the back surface begins with a line containing the letter "B". The fourth section of data that describes the edge surface begins with a line containing the letter "E". And the job file concludes with the line containing the letter "Q".

The sketch at the right shows how the points that describe the front, back and edge surfaces can be divided. All points reside in the first or fourth quadrant of a global coordinate system (positive x and positive or negative z coordinates) with the vertex of the front surface at the origin. The front points are enumerated starting at a user defined coordinate (usually the maximum x point) and continue sequentially to the vertex. The back points begin at a user defined coordinate (usually the maximum z point) and continue sequentially to the vertex of the back surface which has an x value of zero and a positive z value equal to the lens center thickness. The edge points start with the first back surface point and continue to the first front surface point (usually with increasing x values).
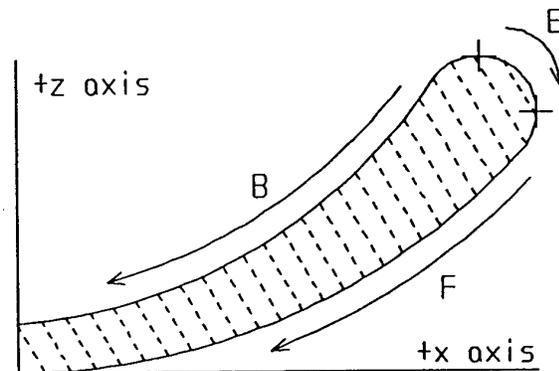
Each surface coordinate is represented in a signed two decimal five format (i.e. "X±xx.xxxxxZ±zz.zzzzz"). Spaces may be substituted for positive signs but leading zero's are required (see example next page). The spacing of data points is at the user's discretion, however a uniform ten micron x spacing is often employed. An example of the lens data job file format is shown on the next page.

Example	Description
RGPJD	job file sub-directory
102	job number
5/13/92	origination date
MCG	originator
50	number of lens in process run active
C:	disk drive
1000	convex lathe number
2000	concave lathe number
RGPASPH	lens design file
o	number of finished convex surfaces
o	number of finished concave surfaces
5/14/92	completion date for convex surfaces
5/14/92	completion date for concave surfaces
-1.00 8.210.226 9.5 RGPASPH	convex surface description
8.00 9.5 RGPASPH	concave surface description
F	start of front surface description
X 04.75164Z 01.52259	first front surface point
X 04.75052Z 01.50927	second front surface point
|	
X 00.01000Z 00.00001	next to last front surface point
X 00.00000Z 00.00000	vertex of front surface
B	start of back surface description
X 04.72963Z 01.54527	first back surface point
X 04.71200Z 01.54515	second back surface point
|	
X 00.01000Z 00.22599	next to last back surface point
X 00.00000Z 00.22598	vertex of back surface
E	start of edge surface description
X 04.72963Z 01.54527	first back surface point
X 04.74174Z 01.53964	next edge surface point
|	
X 04.74989Z 01.53170	next to last edge surface point
X 04.75164Z 01.52259	first front surface point
Q	end of job file description

Taylor Hobson Pneumo Specification Number 8901433ZZ

Appendix C.

Turbo Lens® V2.05 Manual Supplement.

(PLEASE READ THIS BEFORE INSTALLING Turbo Lens®)

The following are recent changes to your Turbo Lens® program, which may not be included in the manual.

All RGP and SOFT lens programs.

Versions 2.05 and higher use a new type of software security device, the SENTINAL SUPER PRO. This security device is not compatible with the earlier ACTIVATOR device.

Note: Please look after your security device, the nature of this type of software security prevents Sterling from being able to replace the device if it is lost. We can exchange defective devices if the original is returned to Sterling.

Since its original version, Turbo Lens® has undergone many changes as it has been improved and developed. Because of its current size and to alleviate potential computer memory problems, Turbo Lens® has been separated in to two separate programs, the Turbo Lens® design program and the file management program. This change is virtually transparent to the user, and only requires a modification in the way the program is started, as described below.

Previously the user would type TLS, TLR, TLSO, or TLRO depending on the program type (Turbo Lens® Soft, Turbo Lens® RGP, Turbo Lens® Soft for Optoform, and Turbo Lens® RGP for Optoform respectively). Version 2.05 requires the user to type TURBO for any program type, then press the enter key. (If Turbo Lens® is to be used from within Microsoft Windows, the shortcut properties should be set to run the TURBO.BAT file in the programs working directory).

The only change the user will be aware of, is a momentary screen flicker when the file management program is selected from within the design program. This is caused by the design program automatically ending, and the design program beginning. The same will occur when exiting the file management program.

Appendix D.

<u>Turbo Lens® Year 2000 Compliance.</u>

- All versions of Turbo Lens® have been tested as being compliant with the Year 2000 date change.

- Tests were performed on DOS version 5.00 and later. Turbo Lens® should not be run on earlier versions of DOS.

- **It is however possible that a problem may occur with earlier types of BIOS used in some earlier computers, that do not support the four digit date format.**

- **If problems with the year 2000 date change were to occur while running Turbo Lens®, these would probably cause no more than an error in the date and/or time printed to the lens design print out.**

In no event shall Sterling International Technologies, Inc. be liable for any direct, incidental, or consequential damages, such as, but not limited to, loss of anticipated profits, benefits, use, or data resulting from the use of the software, or arising out of any breach of warranty.

Turbo Lens® is a registered trademark of Sterling International Technologies, Inc.

Please refer all technical support questions to Sterling International Technologies, Inc. Phone (813) 621-8001. Fax (813) 622-8229.

Appendix E.

Using the Turbo Lens® Bifocal option.

The following shows one method of using the Turbo Lens Bifocal Option, to create a simple concentric zone bifocal.

- The bifocal lens should ideally use three or more front surface zones. To create a new design, select the F6 FILES option from the main Turbo Lens screen. Next select "Design Files" then "Create". Enter the name of the design, 3 front zones, and 2 back zones, as in fig.1 below.
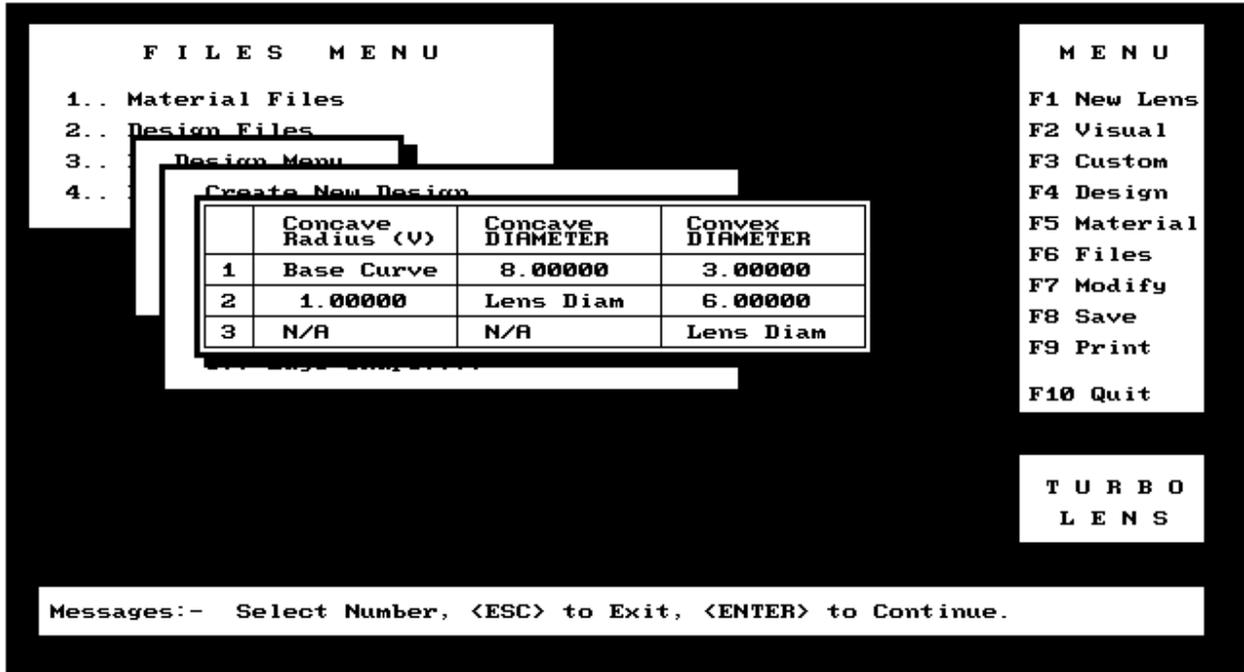
Fig.1.
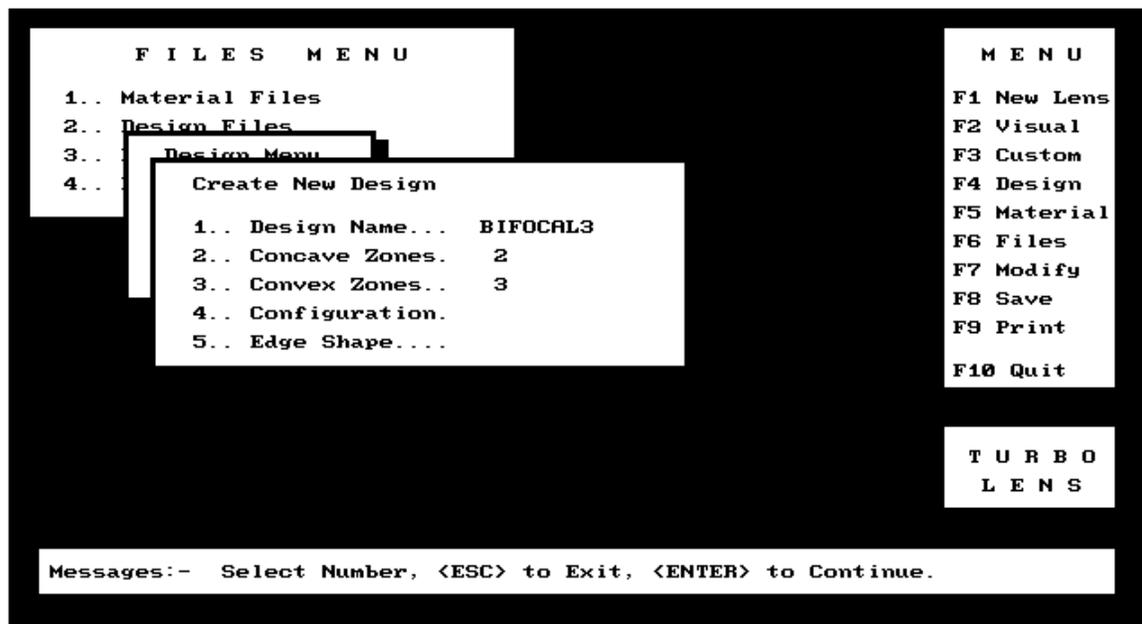
- Next press the ENTER key, and the spreadsheet like design definition screen will be shown, as in fig. 2 below.

- Press the 1 key and enter concave diameter 1 (the back optic zone) as shown in fig. 2, and press ENTER. Enter convex diameter 1 (the diameter of the front distance vision optic zone) as shown in fig 2, and press ENTER.

- Press the 2 key, and enter concave radius 2 as shown in fig.2, and press ENTER, note the "V" next to the text "Concave Radius" this signifies that concave radius 2 is 1mm larger (flatter) than the base curve. Enter convex diameter 2 (the diameter of the near vision optic zone) as shown in fig.2, and press ENTER.

- Press ENTER one more time, then press the 1 key to confirm the save of the "Bifocal3" design file.

Fig.2.

```
  F I L E S   M E N U                                  M E N U

1.. Material Files                                 F1 New Lens
2.. Design Files                                   F2 Visual
3..       Design Menu                              F3 Custom
4..         Create New Design                      F4 Design
         ┌─────────┬──────────┬──────────┐         F5 Material
         │ Concave │ Concave  │ Convex   │         F6 Files
         │Radius(V)│ DIAMETER │ DIAMETER │         F7 Modify
       ┌─┼─────────┼──────────┼──────────┤         F8 Save
       │1│Base Curve│ 8.00000 │ 3.00000 │          F9 Print
       ├─┼─────────┼──────────┼──────────┤
       │2│ 1.00000 │Lens Diam │ 6.00000 │          F10 Quit
       ├─┼─────────┼──────────┼──────────┤
       │3│   N/A   │   N/A    │Lens Diam │
       └─┴─────────┴──────────┴──────────┘          T U R B O
                                                    L E N S


Messages:-  Select Number, <ESC> to Exit, <ENTER> to Continue.
```

- Press the ESCAPE key two times to return to the main Turbo Lens screen.