

QUICK REFERENCE GUIDE FOR LITTLE APPLICATION ONE SHOEBOX DESIGNER

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FEATURES OF LITTLE APPLICATION ONE (LA1) SHOEBOX DESIGNER

Some important features of Little Applications and in particular LA1 are:

1. Single executable file “LittleApp_ShoeBox.exe” that does not require an installation process. Just copy and paste.
2. You own it but you can’t sell, share or distribute the application (see licensing agreement).
3. LA1 compensates for beam diameter and allows adjustment for looser or tighter finger joints.
4. LA1 has variable number of finger joints along the width, length and height of box.

5. LA1 stores data in common vector formats HPGL (.plt) and Scalable Vector Graphics (.svg). These formats can be imported into most laser cutters and photo editors.
6. LA1 has built in help documentation.
7. LA1 provides graphic templates in HPGL and SVG to aid in engraving layout or in graphical layout of artwork.

OVERVIEW

We define the term “Little Application” or “LA” as a software application that only consists of one executable file. There are no support files required such as DLLs, images, etc. Because of this, a LA does not have to be installed and can be copied as would any other type of file. Our licensing agreement does not allow for resale or distribution but for a single user, they may make multiple copies. For example, I have often kept a copy of a LA with the data it created. If something changes, such as a specific laser cutter in the case of the Shoebox Designer LA1, the program is readily found and used to update the data base to the new laser cutter parameters. Huntbrook’s policy for LAs is that the user owns their copy and the LA is functional as long as it’s used with a compatible OS platform. This cannot be said for online or web based applications or for applications that require re-registration when moved to a different computer.

The ShoeBox Designer LA is designed to generate vector data to be used to cut box components with finger joints on laser cutters. These cuts are designed for high accuracy and take into account the beam diameter of the laser cutter. Boxes are often engraved or covered with lithographic artwork so ShoeBox Designer also generates vector files to aid in layout, either to be imported into a laser cutter application for laying out engraving or in a photo editor to layout graphics. Most laser cutters use metric units so while the designer can choose to enter parameters in English or metric units, the output vector files are in metric units of millimeters. The file formats are well known .plt and .svg ascii formats.

WHAT YOU NEED BEFORE YOU GET STARTED

The designer will need several things before beginning the box design. They will need:

1. The ShoeBox.exe file.
2. A MS 64 bit operating system which includes Vista, Windows 7 thru Windows 10.
3. A linear caliper to measure laser cutter beam diameter and the thickness of the material that will be used to make a box. The accuracy of the caliper should be 0.001 inches or 25 microns. We use a 6 inch linear caliper that we purchased for less than \$25 at a local tool store.
4. The beam diameter of a laser cutter can be measured in several ways but one way is to cut a small square (~25mm square) from the same material the box is made from. Using the caliper to measure the cut square plug, say D_s , and then the width, D_h , of the square hole left by the plug the beam diameter is $D_{bd} = (D_h - D_s)/2$. For our laser cutter the beam diameter is about 0.011 inches or 0.28 mm.
5. Measure the thickness of the material that will be used for the box. Never depend on the measurements given by material provider. They may mean well but materials can have significant deviations in thickness.
6. Know the laser power and speed for your material you want to use to cut your box components.

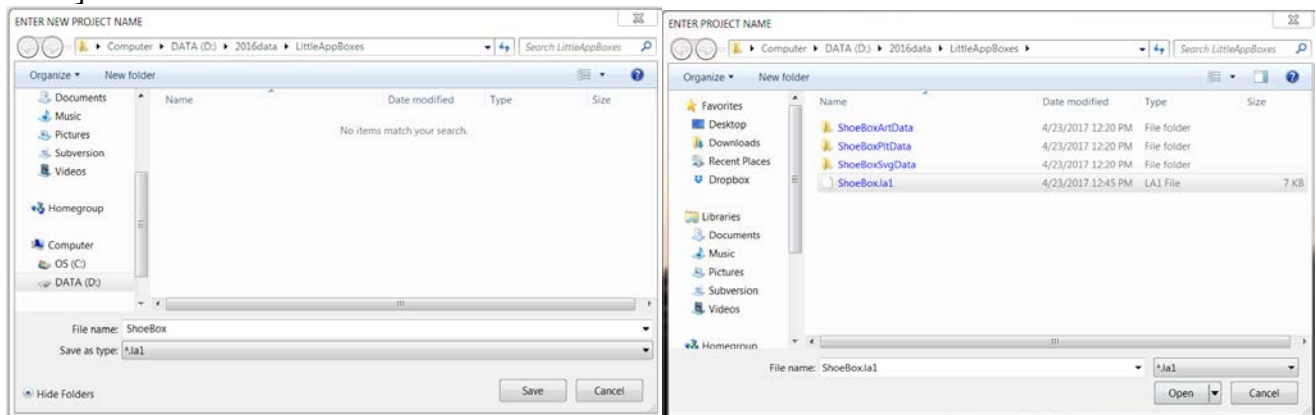
GETTING STARTED

1. The designer should know the inside width, length and height of the box design. The designer will also need the thickness of the material being used. Other dimensions can be determined on the fly.
2. **Run the program:** On the first run, the designer will be asked to read the licensing agreement and then either accept or decline it. If declined then there is no reason to go further but if accepted, go to the next step.



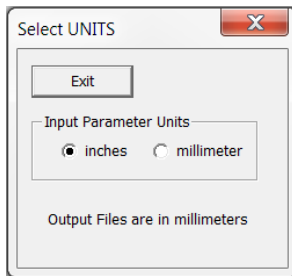
FILE MENU

3. **File-New or File-Open:** Under the File Menu, the designer can either create a new project or open an existing one. If new project is selected, a prompting dialog is activated. The designer can navigate, select or create a folder for the project. And then type in a project name. A parameter file starting with the project name and ending with .la1 will be stored in the project folder. When a project is created or opened, the LA1 program runs with the existing parameters. For the default settings, the main screen will display 3 lid components, 3 base components, 1 lid template layout and 1 base layout. Within the project folder, 3 new folders will be created: [project name]SvgData, [project name]PltData and [project name]ArtData where the SVG, HPGL and art templates are stored, respectively. There is also a *.txt file stored in [project name]ArtData which contains the outer dimensions and Area dimensions of the box.

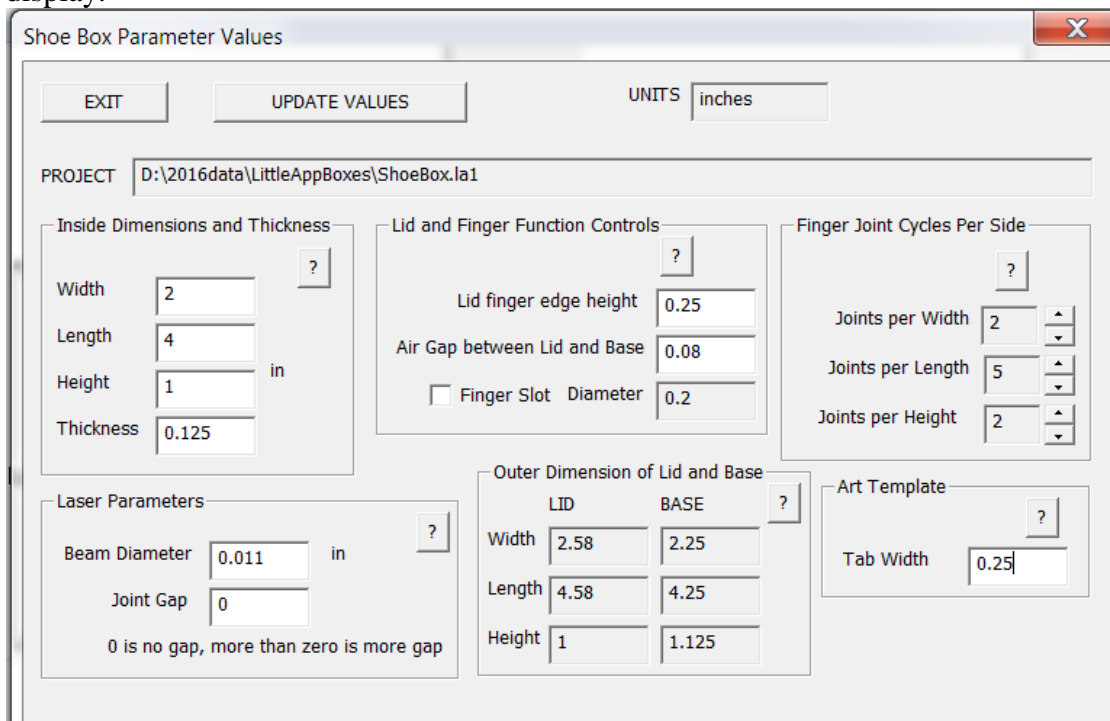


EDIT MENU

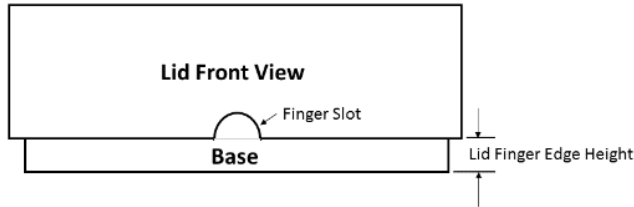
4. **INPUT UNITS:** Under Edit-Units select which type of input units, inches or millimeters, to use. This does not affect the output units which are in millimeters.



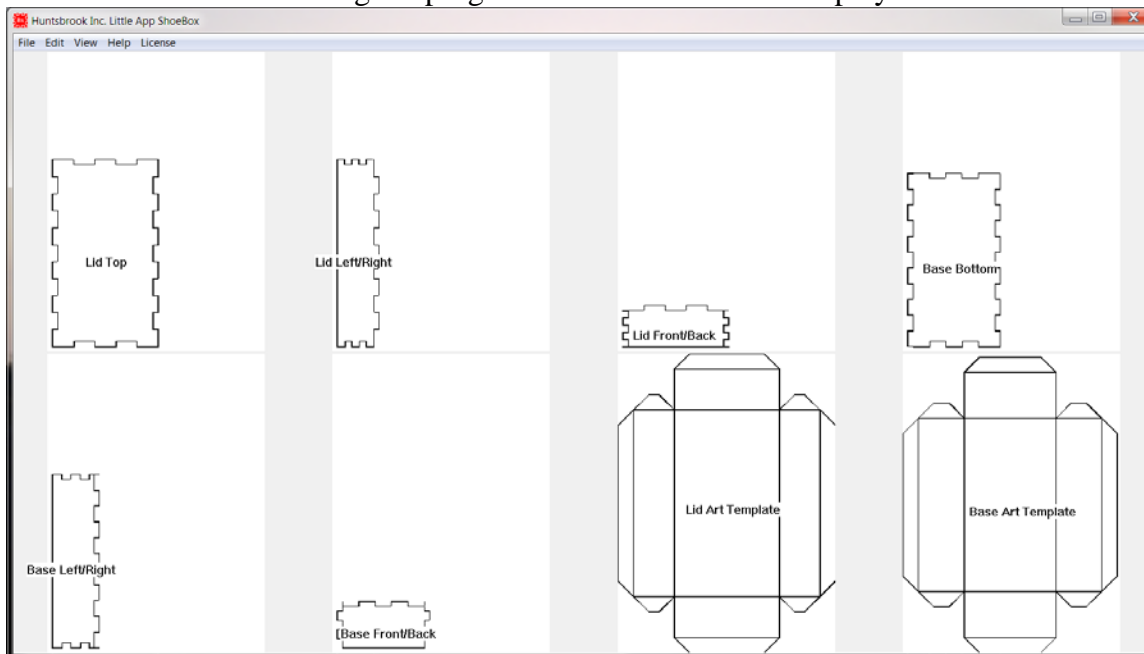
5. **Edit-Box Controls and Help Buttons:** The Shoe Box Parameter Values control all the design aspects of the shoe box. The check boxes and spinner controls update the parameters as they are used but manual entries need to be followed by clicking the “UPDATE VALUES” button. The displayed results change real time on the main screen. Units are displayed and there are small buttons with “?” on them which provide help documentation. Some of these help buttons have a toggle feature between text and graphical display.



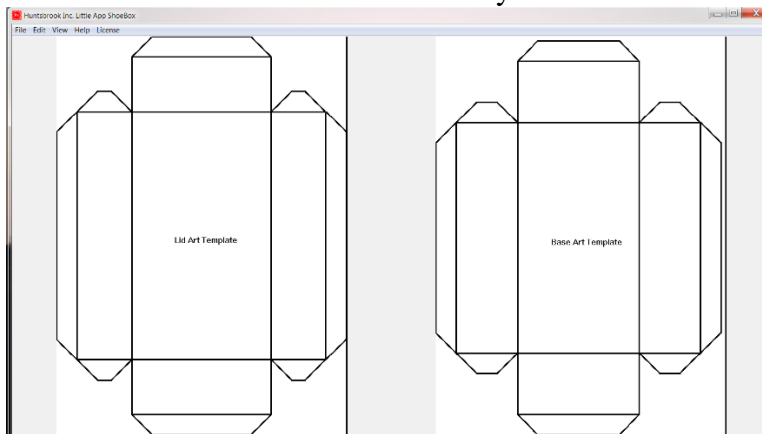
6. **INSIDE DIMENSIONS:** Enter the inside dimensions and material thickness. When you select the “UPDATE VALUES” button is selected at the top of the dialog box, the graphics is updated.
7. **LASER PARAMETERS:** Enter the Beam Diameter and Joint Gap. **Start with the Joint Gap = 0 and do a test cut of two components that go together.** If the fit is snug then the beam diameter is correct. **If it's loose then the Beam Diameter should be reduced** whereas **if the joints are so tight they will not fit, the Beam Diameter needs to be made larger.** Once snug, the Joint Gap value should be used to loosen the joints. The maximum Joint Gap is equal to the beam Diameter and that will be the space between the finger joints.
8. **Lid and Finger Function Controls:** The shoe box design has two methods to make it easy for someone to open the box. The “Lid finger edge height” raises the bottom edge of the lid so the fingers can get underneath and open the box. The second method is the semicircular finger slot on all four sides of the lid. A check box is used to turn the finger slots on or off. A third parameter is the air gap between the lid and the base which acts to loosen the lid enough to open by either method.



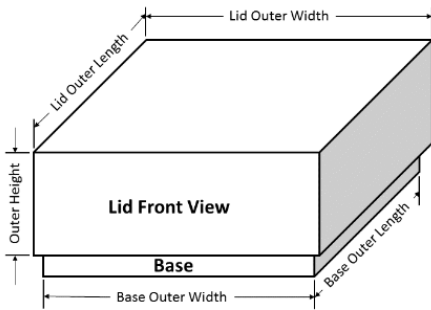
9. **Finger Joint Cycles per Side:** The Finger Joint Cycle Controls determine how many finger joints will be along the width, length and height edges. For example, a cubical box may have them all equal while a non-symmetrical box would have more finger joints along the longed edge versus the shortest edge. This is easiest seen when running the program via the main screen display.



10. **Art Template:** The art layout templates have tabs that can be folded around the edge of the lid and base. The width of the tabs is the thickness of the material plus the “Tab Width” parameter. If the tab width is set to 0 then the tabs will shrink to only the thickness of the box material.



11. Outer Dimensions: The outer dimensions are provided to aid the box designer in estimating costs and layout. A .txt file is created with all the outer dimensions and is stored in the ArtData folder along with the LidArt and BaseArt vector files.

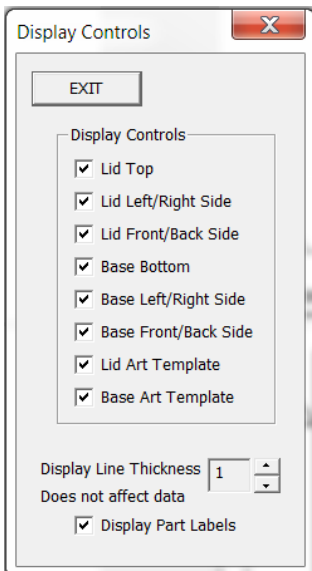


```
Finger Joint Cycles along width = 2, length = 5, height = 2
PARAMETERS IN MILLIMETERS
BASE: INSIDE width = 50.800000, Length = 101.600000, Height = 25.400000, Material Thickness = 3.175000
BASE: OUTSIDE width = 57.150000, Length = 107.950000, Height = 28.575000
LID: OUTSIDE width = 65.532000, Length = 116.332000, Height = 25.400000, Air Gap = 2.032000
LID: Finger Edge Height = 6.350000, Finger Slot Diameter = 5.080000
LASER PARAMETERS IN MILLIMETERS
LASER: Beam Diameter = 0.279400, Joint Gap = 0.000000
BOX AREA IN SQUARE METERS
Area Total = 0.032467, Lid Area = 0.016862, Base Area = 0.015605
PARAMETERS IN INCHES
BASE: INSIDE width = 2.000000, Length = 4.000000, Height = 1.000000, Material Thickness = 0.125000
BASE: OUTSIDE width = 2.250000, Length = 4.250000, Height = 1.125000
LID: OUTSIDE width = 2.580000, Length = 4.580000, Height = 1.000000, Air Gap = 0.080000
LID: Finger Edge Height = 0.250000, Finger Slot Diameter = 0.200000
LASER PARAMETERS IN MILLIMETERS
LASER: Beam Diameter = 0.011000, Joint Gap = 0.000000
BOX AREA IN SQUARE INCHES
Area Total = 50.323898, Lid Area = 26.136398, Base Area = 24.187500
```

DISPLAY MENU

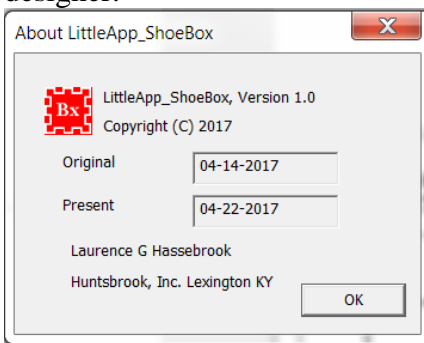
The display dialogue has controls for displaying the different box components as well as controlling the displayed line thickness and the component labeling. None of the Display controls affect the actual values in the data vectors.

1. The Display Controls are self-explanatory and turn on and off the component display. The display partitions are automatically scaled and positioned to fill the screen so more detail is shown when only one partition is turned on.
2. The Display Thickness controls the pixel width of the displayed lines. A 0 is a single line of pixels, a 1 yields a line width of 3, a 2 yields a line width of 5, etc. $\text{Line width} = 2 \times \text{Thickness} + 1$.
3. The Display Part Labels is self-explanatory and turns the labels on and off.



HELP MENU

The help menus contains the About dialogue which indicates the version of the Little App. The remaining help menus may change with future upgrades but would include written and graphical information that should help the designer.



LICENSE MENU

The license menu has two items that we call the “Plain English” version and the “Legal Speak” version of the licensing agreement. Of course the “Legal Speak” version supersedes anything else we say but the Plain English version conveys the spirit of what we are trying to do with Little Apps.



- ▲ License Agreement In Plain English – Huntsbrook, Inc. License for "LittleApp_ShoeBox" executable program © 2017 All Rights Reserved Huntsbrook, Inc..
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I Accept I Decline