

## CHAPTER 3

# ARRANGING SHAPES

### In This Section...

- Several techniques for creating guidelines
- Show how to align shapes to the grid
- Note how to reset the grid after it has been resized
- Alignment of shapes
- Creating arrays of shapes
- Using Start Sequence to arrange shapes
- Nesting shapes to minimize wasted media
- Serializing text data using badges

## GUIDELINES






When dragging shapes, guidelines are used for precise alignment. A shape will "snap" to the location when it is dragged over a guideline.



- When there is no selection, right-clicking on the workspace will open the **Edit Guides** dialog.
- Under the **Options** menu, choosing **Guides | Edit Guides** will open the **Edit Guides** dialog.
- Right-clicking a ruler will create a guide.
- For a selected shape, press **[Shift]** and right-click the shape nubs to create guides (not when editing a parametric shape).
- To add guides when node editing, press **[Shift]** and right-click the node.
- When dragging a guide, press **[Shift]** to constrain the guide to the nearest ruler increments.
- To lock guides in place, open the **Edit Guide** dialog and check the **Lock Guides** checkbox.
- To temporarily hide the guides, choose **Options menu | Guides | Use Guides**. The shortcut to toggle guides On/Off is **[Alt + W]**.
- To remove a guide, press **[Shift]** and right-click the guide (when there are no objects selected).

## THE GRID AND ALIGN PALETTE

Press the [Control] key and right-click the workspace to display the **Align Palette**, which is used to align shapes with respect to the grid. Typically, these tools are applied to shape nubs, though they may also be used when node editing.

-  **Set Origin:** Set the grid origin to the selected location.
-  **Resize Grid:** Resize the grid increments based on the distance between the selected location and the grid origin.
-  **Snap to Grid Intersection:** Move the shape, such that the nub is at the nearest grid intersection.
-  **Snap Vertically:** Move the shape, such that the nub is at the nearest horizontal grid line.
-  **Snap Horizontally:** Move the shape, such that the nub is at the nearest vertical grid line.

From the **Options** menu, the **Reset Origin** command will set the grid size according to the **General Preferences** setting. This is useful when the **Set Origin** or **Resize Grid** commands have been used.

## ALIGNMENT HOT KEYS

To align selected shapes quickly, use the following hot keys:



- [Alt + 1] Align shapes along **left** edge of bounds
- [Alt + 2] Center shapes **vertically**
- [Alt + 3] Align shapes along **right** edge of bounds
- [Alt + 4] Align shapes along **top** edge of bounds
- [Alt + 5] Center shapes **horizontally**
- [Alt + 6] Align shapes along **bottom** edge of bounds
- [Alt + 7] Center shapes both **horizontally and vertically**

To align shapes to the sign blank, use the following hot keys:

- **[Alt + Insert]**      Align with **top** edge of sign blank
- **[Alt + Home]**      Center **vertically** along width of sign blank
- **[Alt + Page Up]**      Align with **bottom** of sign blank
- **[Alt + Delete]**      Align with **left** edge of sign blank
- **[Alt + End]**      Center **horizontally** along height of sign blank
- **[Alt + Page Down]**      Align with **right** edge of sign blank


To align shapes to the last object, use the following hot keys.




- **[L]**      **Left** – Align with the left edge of the last object.
- **[R]**      **Right** – Align with the right edge of the last object.

➤ [T]	<b>Top</b> – Align with the top edge of the last object.
➤ [B]	<b>Bottom</b> – Align with the bottom edge of the last object.
➤ [E]	<b>Horizontally</b> – Center horizontally along height of last object.
➤ [C]	<b>Vertically</b> – Center vertically along width of last object.



## ALIGNMENT

From the **Layout** menu, the **Alignment** and **Align** commands are available from the **Arrange and Distribute** flyout. The **Alignment** command is used to change the alignment settings, whereas the **Align** command will apply the most recently used alignment settings.

➤ 	Align to signblank: Shapes are aligned relative to the signblank
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-  Align to grid: Shapes are aligned relative the grid lines
-  Align to last object: For several selected shapes, align the shapes according to the last shape selected in the group
-  Align to selected: For several selected shapes, align the shapes according to the bounding box that is around the selection

When aligning text shapes, the following options are also available:

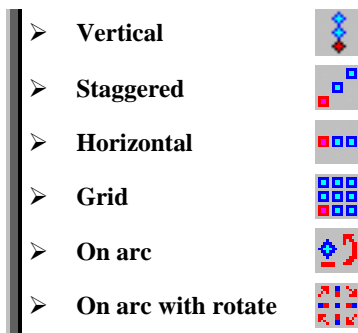
-  Treat Text Line as an Object: Enabled when using equal vertical spacing. For a text paragraph that has multiple lines, this option will cause each line to be aligned separately.
-  Ignore Descenders: Enabled when using equal horizontal spacing. Causes the text descenders to be ignored, such as for letters 'j', 'p', and 'q'. Alignment is performed with respect to the text baseline.

## ARRAY

From the **Layout** menu, the **Array** command is used to arrange multiple copies into rows, columns, or arcs.

For shapes arranged on an arc, specify the arc radius and the range of angles over which the copies are spread.

When creating an array, the copies can be automatically rotated. The **Spin Each** option will rotate each subsequent copy by the **Spin Amount**. The **Total Spin** option will progressively rotate each copy, such that the final copy is rotated by the **Spin Amount**.





## START SEQUENCE

From the **Layout** menu, the Start Sequence commands are available from the **Sequence** flyout: **Start Sequence**, **Start Sequence by Vector**, and **Start Sequence by List**.

The **Start Sequence** command has two uses. The first usage is to arrange the database order of the shapes, which determines the order in which the shapes are output to a printer or cutter. The second usage is to arrange shapes graphically on-screen.

### Creating a Sequence

1. Select the first shape.
2. From the **Layout** menu, choose **Sequence**, and **Start Sequence**.
3. Click each subsequent shape, one-by-one. A connecting line is drawn as each shape is clicked.
4. Click on an empty portion of the workspace to finish editing.



The **Start Sequence by Vector** command is similar to the **Start Sequence** command, except that multiple shapes are added to the sequence by drawing a line.

### Creating a Sequence by Vector

1. Select the first shape.
2. From the **Layout** menu, choose **Start Sequence by Vector**.
3. Click and drag the cursor to form a line. All shapes that are intersected by this line will become part of the sequence.
4. Click on an empty portion of the workspace to finish editing.

Both the **Start Sequence** and **Start Sequence by Vector** commands can be used to arrange shapes. Repeat steps (1-3), and then right-click and drag the shapes across the workspace.

The **Start Sequence by List** command will open the **Sequence by List** dialog, which provides a visual list of all the shapes that are on the workspace. Shapes at the front of this list will appear above other shapes, and shapes at the back will appear below. The mouse can be used to drag shapes within this list. Alternatively, select a shape and use the **To Front**, **To Back**, **Forward One**, and **Back One** buttons. To use the **Reverse Order** button, at least two shapes must be selected.

- Holding the **[Shift]** key will align the shapes according to their lower-left bounding box corner.

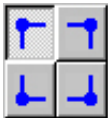

- Holding the **[Control]** key will constrain the shapes either vertically or horizontally.







## NESTING

From the **Arrange** menu, the **Nesting** command is used to rearrange shapes into the minimum area necessary for printing or cutting the shapes. In this manner, the amount of wasted media required to output the shapes is minimized. Nesting may also be used to rearrange shapes across a non-rectangular area, such as leftover media.




To nest the individual letters of a sentence, the **Text to Graphics** command must be used first. Otherwise, the entire sentence will be nested without rearranging the individual letters.



-  **Specify Corners:** Choose the corner from which rearranged shapes will be placed. Nesting will begin in that corner and extend across the sign blank.
-  **Directions:** The direction in which shapes will be nested across the material.

-   Degrees **Rotation:** Allow rotation of shapes by the specified maximum number of degrees. If 20 degrees, then shapes will be rotated in increments of 20 degrees to find the optimum placement.
-   inches **Nesting Border:** The minimum distance to maintain from the material edge.
-   inches **Clearance Between Objects:** The minimum distance between shapes.
-   inches **Error Factor of Clearance:** For expert SignLab users, a value that is used to adjust nesting based on the average shape sizes.
-  **Allow Mirrored Parts:** Allow objects to be flipped horizontally or vertically during the nesting process.
-  **Keep Groups Intact:** If this option is off, then grouped shapes will be separated during the nesting process.



-  **Block Nesting and True Shape Nesting:** Note that each shape has a rectangular bounding area. Enabling this option will prevent the bounding areas from overlapping (Block Nesting). If this option is OFF, then nested shapes will ignore the bounding areas (True Shape Nesting).
-  **Nest Inner Contours:** Allow shapes to be nested within the inner contours of other shapes.
-  **Select a Shape:** By default, shapes are nested across the Blank Size. Click this option to select a different shape for nesting.



## Error Factor of Clearance

During the nesting process, approximations are made that are based partly on the magnitude of the shapes being nested. Setting a small Error Factor will produce more consistent spacing between the shapes, but at a cost of more processing time. The following chart provides suggested **Error Factor** values, which are qualified by the broad categories of **Fine**, **Medium**, and **Coarse**. The table is based on the average dimension (inches or millimeters) of the shapes being nested.

Shape Dimension	Fine	Medium	Coarse
0 < Size < 100	0.1	0.2	0.5
100 < Size < 1000	0.2	0.5	1.0
1000 < Size < 3000	0.5	1.0	2.0
Size > 3000	1.0	2.0	5.0



## Selecting a Shape for Nesting

1. Create and resize a rectangle shape to match the area that shapes will be nested within. (Any vector shape is fine. We are using a rectangle as part of this example).
2. Select the shapes that will be nested. However, do not include the rectangle as part of the selection.
3. From the **Arrange** menu, choose the **Nesting** command. The **Nesting** dialog will open.
4. In the **Nesting** dialog, click the **Select a shape** button. The **Nesting** controls will now remain unresponsive until either the rectangular shape from step (1) is selected, or the **Select a shape** button is clicked again.
5. Click the rectangular shape.
6. The **Nesting** controls will become active again. Adjust the other **Nesting** controls, and then click **OK** to continue.

## BADGES

From the **Layout** menu, the **Badges** command is used to serialize text data. For example, badges are used to create name plates for doors, identification cards for employees, and adhesive labels for schematics.

From the **Badge Setup** dialog, the **Blank** fields indicate the **Width**, **Height**, and **Margins** that will be used when distributing the badges across the sign blank. The **Spacing** fields, **Vertical** and **Horizontal**, indicate the amount of space to maintain between badges.

The **Page Preview** shows how the badges will be distributed across the sign blank. Badges can be arranged either vertically (top-to-bottom), or horizontally (left-to-right).

The **Use Score Lines** option is used to insert score lines between each badge, so as to improve the ease of separating the badges after production. Use the **Color** picker to set the score line color.



Enabling the **Use Plate** option will limit each badge to a single sign blank page. If the **Use Plate** option is enabled, then the margins will be cleared to zero.

Where badges are distributed over more than one sign blank, then the **Paging Tool** is used to browse the additional sign blanks. The **Paging Tool** is at the bottom-right corner of the workspace.





## Tips when Setting Plate Size and Margins

- When routing or engraving, it is recommended that the **Height** and **Width** be set to the exact dimensions of the plate.
- When rendering a vinyl sign, set the **Height** and **Width** to match the page size of the plotter.
- When cutting or plotting, set the margins equal to the cuttable area of material, not necessarily the actual size.

The **Number of copies** indicates the total number of badges to be created. The **Total Number of Pages** indicates the number of sign blanks that are required to display the badges, and **Max copies per page** indicates the number of badges that can be displayed per sign blank.

If the badge text has been applied with text compression, then the **Compress Equally Over Copies** option is available. Enabling this option will cause all badges to be evaluated to determine the maximum amount of text compression required (if any) to fit replacement text within the badge margins. For consistency, all badges will then be applied with an equal amount of text compression.



The **Replaceable Items / Text** list displays all text shapes that are available for substitution. The text of each item will correspond to the text that had been entered on the workspace. Select the text objects that will undergo substitution. If a text shape is not selected within this list, then no substitution for that text will take place.

The **Replacement Data File** contains the text that will be substituted for each badge. The order of fields in the **Replacement Data File** should correspond to the order of text shapes on the SignLab workspace. This will allow the **Badge Setup** dialog to substitute text in the correct order.

## Replacement Data File

Any text editor may be used to create the Replacement Data File. Within the text file, each line represents a set of data for one badge. If the badge has multiple fields, then each field must be separated by a delimiting character, such as a comma, a space, or a tab character. For example, tab-delimited data might appear as follows:

Text Field 1 [TAB] Text Field 2 [TAB] Text Field 3

Next to the **Browse** button, the drop-down list may be used to choose the delimiting character that is used in the text file.

If there are more badges being created than there are sets of data, then the extra badges will be filled with empty data.

## BADGES – TEXT SUBSTITUTION

From the **Badge Setup** dialog, click **OK** to continue. If one-or-more text fields were selected within the **Replaceable Items / Text** list, then the **Text Substitution** dialog will open. Each column represents one of the items from the **Replaceable Items / Text** list. If a **Replacement Data File** had been specified, then the column entries will be filled using data from that file. To type text, select a cell and type within the **Edit Text** field.

Within the **Text Substitution** dialog, a column (or range of cells within a column) can be serialized. For example, click a column header to select all the cells within that column. The **Serialize** dialog will open, which is used to indicate the **Start** value for the series, the **Increment** value between each cell, and whether **Number** or **Character** values will be used.



The **Start** value may be either numeric, alphabetic, or alphanumeric. For alphabetic series, the ASCII character set is used. When badges have incremented through the entire ASCII character set, then subsequent badges will continue from the beginning of the set.



## Serializing Data – Set Base

When serializing badge data, the **Start** field is used as the base value, to which the **Increment** is added for each subsequent badge. By highlighting only part of the **Start** field data, the selection will be incremented, and unselected portions will remain constant. For example, suppose a series of booth labels must be created for a trade show.

Serialise

Start : Booth A

Increment: 1

Type

☐ Number

☒ Character

OK

Cancel

Set Base

Hint: Select the part to serialize in Start box and press Set Base button

As in the screen shot, the value “Booth A” is typed. Using the mouse, only the ‘A’ was highlighted, and then the **Set Base** button was clicked. This indicates that the word “Booth” will remain constant, while the highlighted portion will be incremented for each badge.