

Glyphs Handbook



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1. Edit View

1.1. DRAWING PATHS

Create paths with the Draw or Form tools.

When the Draw tool  is active, click to create straight lines, or click and drag to create curves. Move the curve point by holding down the space bar.

All curve segments are connected smoothly, which is indicated by a green circle. In order to convert curve points into corner points, hold down the Option key while dragging. A blue circle indicates corner points.

1.2. EDITING PATHS

Click and drag to select nodes and handles inside a rect; hold down the Shift key to extend or reduce the selection. Note that unlike in most editors, you can select multiple handles independently of the nodes.

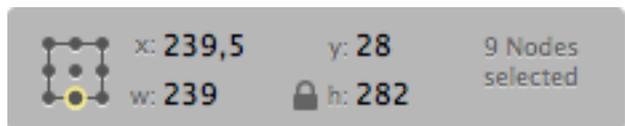
Move the selection using the mouse or the cursor keys. This also works if more than one handle is selected.

Moving nodes will move the attached handles even if they are not selected. Hold down the Option key to move only explicitly selected points.

When moving a handle while holding down the Option key, its angle remains unchanged.

Convert between smooth connection and corners by double clicking or selecting the node and pressing "Enter".

The attributes of the selection are shown in the grey info box.



When more than one node is selected you can alter or move the selection by changing the numbers the info box. Set the origin of the transformation in the field of reference points.

Option-clicking a line segment converts it into a curve.

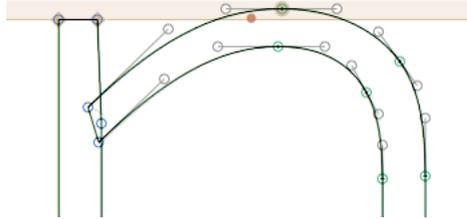
To convert a curve into a line segment, select and delete one or both handles.

1.3. OPENING PATHS AND CORNERS

In order to segment a closed path, select two nodes and select “Reconnect Nodes” in the context menu. To open the context menu right click or Ctrl-click.

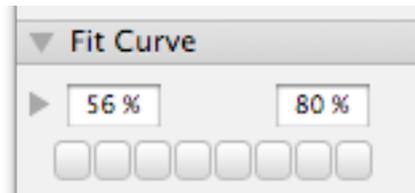
If one node is selected, the option “Open Corner” becomes available, which works in a similar fashion.

1.4. ALIGNMENT ZONES



Nodes located exactly on a vertical metric line (see also Font Info) are highlighted with a brown diamond. Located inside the alignment zones (see also Font Info) the highlighting is shaped circular. This allows for controlling the position of nodes even in small zoom scales.

1.5. FIT CURVES



Tip: In all number input fields in the whole application, you can use the up and down cursor keys. The Shift key increases the value by 10.

The Fit Curve panel helps creating curves with matching curvature. In most instances the one line view is enough. For finer tuning click the little triangle to widen view. Click arrays to alter the curvature of the selected curve segments. When the curvature is adjusted, click the same array to adjust other curve segments (e.g. in other letters of the same font) accordingly. This way you get matching curvature in different curves.

Select percentages as desired by setting the left array to the minimum value and the right array to the maximum value.

The arrays in between interpolate between the two values. The numbers describe the percentage length of the handle, when the distance from curve point to the intersection of the handles equals 100%.

Values between 50% and 80% stood the test, 57% approximately correlate with a circle.

1.6. FILTERS

Glyphs has an expandable plug-in interface. The plug-ins can contain filters, tools, panels and file formats.

You can apply filters to the active layer in the edit view, several selected layers (with the text tool) or in the font view.

The following filters come with Glyphs:

1.6.1. Hatching

Creates hatched letters. Distance, width and angle of the hatching lines can be chosen. Glyphs always uses the background path. When there is no path in the background, a copy of the current path is saved in the background. Alter the appearance of the hatching by changing the background path and applying the filter once again.

1.6.2. Offset Curve

Changes the thickness of stems horizontally and/or vertically.

1.6.3. Remove Overlap

Choose “Remove Overlap” to remove overlaps of all selected paths.

1.6.4. Round Corners

Apply this in order to round all selected corners. To only round the outside corners simply select nothing. Apply “Visual Corrections” to adjust the radius of different corner angles and create a more consistent appearance.

1.6.5. Transformations

Apply “Transformation” to horizontally and vertically move, scale and tilt glyphs. Fix the origin when scaling and tilting. Tilt without or with optical correction by choosing “Slant” or “Cursify”. Optical correction requires correctly set vertical and horizontal stems (see also Font Info > Master).

1.6.6. Background

Use “Background” to interpolate between front and background paths. The paths need to be compatible.

1.6.7. Metric

Use “Metric” to set the width of a letter and the absolute or relative side bearing.

1.7. ANCHOR AND CLOUDS

Characters built out of components are handled in a special way.

Accented or marked letters, built from a base letter and a mark, automatically inherit the spacing from the base glyph. The mark is positioned according to the anchor positions. The accented letters are always in sync with the base letter, even if spacing or anchor positions are changed.

Anchors are added to most glyphs automatically with the command `cmd+U`; you only need to refine their position. An anchor in the base glyph is connected with the anchor in the mark glyph by sharing the same name and additional underscore prefix, e.g. a “top” anchor in the base glyph and a “_top” anchor in the mark are used to place the mark glyph in the compound glyphs.

Select an anchor in the base glyph to get a preview of the most common accents that may attach to this glyph. Similarly, select an anchor in the mark glyph and this accent is shown on all other glyphs that happen to be in the same edit view.

Sometimes you need more than one “top” anchor. This is the case for Arabic ligatures. In this case, add an underscore and a number to the anchor name. Then choose in the compound glyph to what anchor the mark component should attach. The same applies if there is more than one anchor that would fit.

When building letters from several base glyphs, the components are set next to each other using the spacing and kerning for this combination. For example when building a fraction out of `one.numr`, `fraction`, `two.dnom`, the fraction will look like the letters have been typed individually.

1.8. BACKGROUND LAYER

The background layer is useful for storing a path temporarily. To activate the background press Cmd+B. Cmd+K replaces the current content of the background with the active selection; this works in reverse while the background is active. Cmd+Opt+K adds the current selection to the background without clearing it first.

1.9. EXCHANGING OUTLINES WITH ILLUSTRATOR

1.9.1. Preparation

Find the right scale for the drawing in Illustrator. One point unit in Illustrator corresponds to one unit in Glyphs. An element that is 1000 pt high will end up at 1000 units height in Glyphs.

To get the right scale, first draw a rectangle with the height of the capital letters in Glyphs, copy paste it to Illustrator and scale the drawings to fit their size to the box.

You also might start with an Illustrator file of 1000 pt height. It is important that both ascender and descender are within the 1000 points bounds.

1.9.2. Set the Page Origin

If you set the page origin to the intersection of base line and LSB, the paths will have the right position.

In Illustrator up to CS4, set the origin of the page with dragging the white area in the top left corner between the rulers.

In Illustrator up to CS5 set the origin of the page in the Artboard Options.

1.9.3. Copy the Paths.

Copy paste the outlines.

There might be a dialog. This should prevent you from copying something far outside the bounds. It will move the path next to the origin of the glyph.

2. Font View

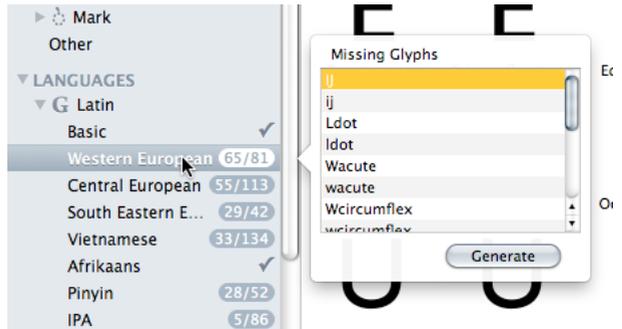
2.1. ADDING GLYPHS

There are several ways to add glyphs:

Font > New Glyph (Cmd+Opt+Shift+N) adds an empty glyph.

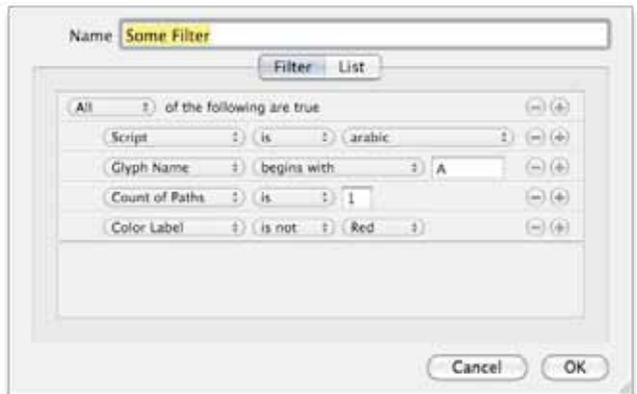
Font > Duplicate (Cmd+D) duplicates the currently selected glyph(s).

Font > Add Glyphs (Cmd+Shift+G) opens a window where you can insert a list of glyph names. As far as information about components is available, the glyphs will be built from them.



Some entries in the sidebar of the font view have a number badge. Right-click it to get a list of all glyphs missing in this category.

2.2. FILTERING AND SORTING



Filters help you to get an overview over the glyphs in the font. There are predefined letter type and language categories. In addition, you can define your own filters, e.g. query filters, similar to smart play list in iTunes, or list filters.

You can add a Filter with the button in the lower left corner. Set up the query with these properties:

- *name*
- *script (like Latin or Arabic)*
- *number of paths*
- *compatibility of masters*
- *glyph to be exported*
- *first master made up from components*
- *color label*

Select more than one of these filters by holding down the Cmd key.

2.3. NAMES AND UNICODE

2.3.1. Readable or Nice Names

Glyphs contains a glyph info database that holds information about, names, Unicode, components, anchor and so on. Not all glyphs that are defined in the Unicode database have official glyph names. For these, one would typically use names like “unio42F” or “afii10049”, which are hard to memorize.

It uses the Unicode description and appends a script suffix, e.g. “CYRILLIC CAPITAL LETTER A” becomes “A-cy”.

To name ligatures, the names of the components need to be joined with an underscore. The script suffix will be appended only once (e.g. “lam_alef-ar”). Variation suffixes are only added once, as well. They define the role of the whole ligature. A ligature formed of “lam-ar.init” and “alef-ar.medi” would be called “lam_alef-ar.init”.

If you set the glyph name, all other values will be set automatically. If necessary, even the name will be changed.

Glyphs accepts three different types of input values.

The actual name (“Ia-cy”)

The Unicode value in hex form with a “uni” prefix (“unio42F”)

The Unicode character as typed from the keyboard (“Я”)

This automatism can be deactivated on a font basis. In this case, however, other automatic functions like components and feature generation, will not work well.

Window > Glyph Info shows all entries in the internal database.

3. Font Info

3.1. FONT

3.1.1. Family name

Family name as it will appear in the InDesign font menu.

3.1.2. Units/em square

Number of units per em square (UPM). 1000 is the default. Increasing the upm value improves the representation of subtle details. The OpenType allows values up to 16000 but values greater than 5000 can lead to problems in InDesign and Illustrator. If you need higher precision, it might be better to deactivate the grid (see Other settings > Grid). Click on the double arrow next to the text field to scale the entire font.

3.1.3. Other entries

The circular arrow next to the copyright entry updates the entry based on designer name and date.

3.1.4. Custom parameters

Use entries to specify more parameters.

When generating the font, Glyphs considers particular entries:

```
postscriptBlueScale  
postscriptBlueShift  
openTypeOS2WeightClass  
openTypeOS2Panose  
openTypeOS2UnicodeRanges  
openTypeOS2VendorID  
trademark  
openTypeNameDescription  
openTypeNameLicense  
openTypeNameLicenseURL  
openTypeNameSampleText  
openTypeNameWWSFamilyName  
openTypeNameWWSsubfamilyName
```

These names are adopted from the UFO/Robofab specifications. See: unifiedfontobject.org

3.2. MASTERS

While information about the designed masters (the input) is set under “Masters”, the Instances tab contains information about each instance that will be generated when fonts are exported (the output).

3.2.1. Proportions – Width and Weight

The values in these two text fields affect only the tool bar icons. The values for the actual interpolation are set under “Instances”. More information about this in the chapter about Multiple Master.

3.2.2. Metric

The vertical metrics have an impact on the line height, and serve as a guideline in the editing window.

3.2.3. Stems, Alignment Zones and Hinting

Standard stems and alignment zones are necessary to optimize the font’s rendering on screen, where these characteristics may be represented by only a few pixels. Small deviations in the drawing can - after rounding to the pixel grid - result in considerable differences. Stems should have a uniform thickness; alignment zones help create an even vertical alignment by overshoot suppression.

<http://blog.linotype.com/2011/09/die-darstellung-digitaler-schrift-teil-3-von-5-hinting/?lang=de>

<http://typophile.com/node/59506>

3.2.4. User Parameters

The following values are exported:

postscriptUnderlinePosition

postscriptUnderlineThickness

Both values are interpolated correctly if defined for all masters.

3.3. INSTANCES

Use the + and – buttons to add and remove instances.

3.3.1. Style name

This is the style name as it will appear in InDesign.

3.3.2. Weight and Width

These settings affect the order of fonts in the font menu. Sorting occurs first by width, then by weight, e.g.:

- *Light Condensed*
- *Condensed*
- *Bold Condensed*
- *Light*
- *Regular*
- *Bold*
- *Light Extended*
- *Extended*
- *Bold Extended*

3.3.3. Style Linking

MS Windows applications support only the “basic 4” styles per font family, i.e. “Regular”, “Italic”, “Bold” and “Bold Italic”. They are accessed via the “B” and “I” buttons in the toolbar.

If a font family is not style linked at all then each style appears individually in the font menu. In that case, clicking the “B” or “I” buttons creates a synthetic Bold or Italic. Based on these conditions, the following strategy is recommended:

- *Italic styles should always be linked to their upright counterparts, i.e. share the same family name.*
- *The Bold style should always be linked to the Regular.*
- *Larger font families require a carefully devised linking strategy.*

Linking the SemiBold to the Light is sometimes practiced. If you choose to do so, only the Light will appear in the font menu and many users are unaware that they can access the SemiBold style by selecting Light + “B”.

However, if you want to link SemiBold to Light, enter the name of your Light style in the “Linked style” text field of your SemiBold instance settings and check “is Bold”.

3.3.4. Interpolation

The Weight and Width settings apply to the “design space” spanned between the Masters. For further details see chapter on Multiple Masters [was?].

3.3.5. Custom Parameters

The following values are being considered during export.

- TypoAscender
- TypoDescender
- TypoLineGap

- winAscent
- winDescent
- openTypeNameLicense (is given precedence to the same option in Font-Info)
- openTypeNameLicenseURL (is given precedence to the same option in Font-Info)
- openTypeOS2WeightClass (overwrites all above weight settings)
- openTypeOS2WidthClass (overwrites all above width settings)
- There are some special settings.
- Scale to UPM
- Scales the font immediately after interpolation to avoid unnecessary rounding errors

Filter

You can apply a filter after the glyphs are interpolated and the overlap is removed. So far only the “Round Corners” filter is supported. Add “Filter” on the left column and “GlyphsFilterRoundCorner; Radius; Visuell Corection”, e.g. “GlyphsFilterRoundCorner; 30; 1”

3.4. FEATURES

Find on the left all information about font classes and features. Put all information that needs to stand outside a feature in the prefix.

Glyphs automatically generates most of the common features, click the circular arrow in the corner to initiate that. The feature generator is based on certain name conventions and suffixes. E.g. all letters with names ending on “.sc” are being located in the small caps feature. Letters described with more than one letter name joined by underscores are being recognized as ligatures. Find a complete list of the suffixes in the appendix.

To write features manually remove the “Automatic” check or create a new feature by clicking the bottom far left button. Edit the name of the feature (or class) directly in the list. Glyphs uses Adobe FDK syntax. Find details at http://www.adobe.com/devnet/opentype/afdko/topic_feature_file_syntax.html

3.5. OTHER SETTINGS

3.5.1. Grids

The grid width defines how coordinates get rounded. Standard is the value 1. Set to 0 rounding doesn't happen. Higher values are helpful when creating a pixel font.

3.5.2. Don't use nice Names

This option prevents the automatic replacement of glyph names. This might be of importance where special workflow requirements apply. The option is set in all fonts imported from .OTF-files and .UFOs that are opened with Glyphs for the first time. Deactivating this option does not immediately activate the automatic replacement of names. To activate the automatic replacement click Font > Update Glyph Info. This might also invalidate the feature code.

4. Kerning and Spacing

4.1. SPACING AND KERNING

Spacing is the process of adjusting the side bearings to get an even rhythm of the text. There are no “rules” for that. However, the same shapes should have the same side bearing. An “H” sits in the middle, a “D” has the same LSB as the “H” but the RSB is more like the “O”.

There are keyboard shortcuts to change the spacing. Hold down the Ctrl key and use the left and right Arrow keys to change the LSB, Cmd+arrow keys changes the RSB. The Shift key increases the change to 10 units.

Most glyphs fit well next to each other but some need specific adjustment, e.g. “T” in combination with “o”. To define these kerning pairs, switch to the Text Tool, type both glyphs in the edit view and place the cursor between them. The bottom left field (labeled “K:”) in the info box will show the kerning value for this combination. Just set a value there.

Or use the keyboard shortcuts for much greater convenience. Similar to the metrics keys, Ctrl+Opt+(Shift)+Arrow keys changes the kerning to the letter on the left side, while Cmd+Opt+(Shift)+Arrow keys change the kerning to the letter on the right. The selected letter (with its name in the info box) is part of two kerning pairs. Set the kerning for both sides with the respective key combinations without moving the cursor.

The predefined sample texts cover the most important combinations in Latin fonts. Select “Font > Select Sample Text...” and choose one line. Use the Arrow keys to move the cursor and the Enter key to close the dialog.

You can define you own texts in the preferences.

4.2. KERNING CLASSES

Many glyphs look similar and need the same kerning values. Kerning classes capture these similarities and help you reduce the number of pairs that need to be set manually. Kerning then applies not to glyphs but to classes, in the sense of kerning all glyphs that look like an “A” or like a “T” etc.

In Glyphs, kerning classes are not edited as glyph lists. Instead, the class membership is defined as a glyph property.

For example, put “O” in the left kerning group field for all glyphs that look like an “O” on the left (like “C”, “Ccedilla”, “G”, “Odieresis” and “O” itself).

Add a value to each glyph, even if it remains the only glyph in its group.

Switch to list mode to have a better overview.

4.3. METRICS LINKS

Metrics links work in a very similar way as kerning classes: Put in the name of the glyph you want to link to in the side bearing field and it will adopt the respective side bearing.

Note that this is not updated automatically. You need to select the glyphs that need updates and select Layer > Update Metrics. Or update by clicking in one of the metric fields in the info box and then clicking somewhere else.

5. Multiple Master

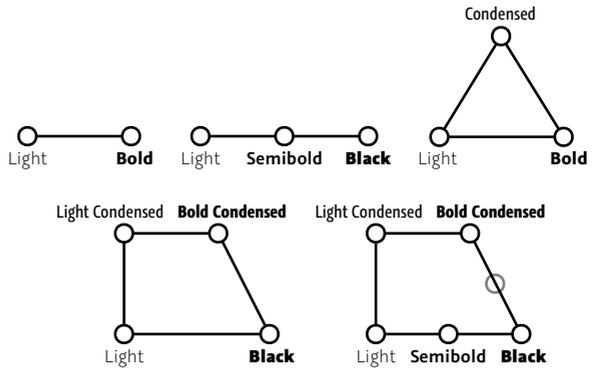
5.1. OVERVIEW

With Multiple Masters you only draw the extreme styles of a font family and then interpolate the styles in between.

It is not advisable to store all single styles of one family in one file, especially not upright and italic styles.

In Glyphs you can interpolate between up to five masters.

They can be arranged like this:



The relations of the masters are defined by “coordinates”, i.e. the width and weight properties. In addition, you can define other dimensions. The masters span a design space in which the instances can be placed.

The nodes of the outlines are not automatically linked between the masters. You can insert nodes in one master while all other masers stay untouched. Note that for the final interpolation, the masters need to be compatible, though.

5.2. SET-UP



Defining the coordinates of the masters sets up the design space. For the weight coordinate, it is recommended to use the stem width of a representative character such as the “n”. This makes it easier to define the stem widths of the instances. The weight coordinate is entered in the text field. Use the pop up list to set the name of the master and the icon in the toolbar. This setting is not used for the style of the exported font; it is a rough guideline that allows for convenient buttons. The styles of the final fonts are defined in the instances.

5.3. MERGING TWO FILES

You can merge two or more open files into one Multiple Master File.

To do so, activate the lighter font, go to Font Info > Masters and click “Add” in the bottom left corner. Select the other font in the upcoming dialog and click “Okay”. Repeat this for all files you want to add, then set weight and width for all masters.

5.4. FIX COMPATIBILITY

When merging masters, Glyphs does not automatically fix incompatible outlines. If necessary, this can be done manually. Letters with incompatible outlines are marked with a red triangle in the font view.

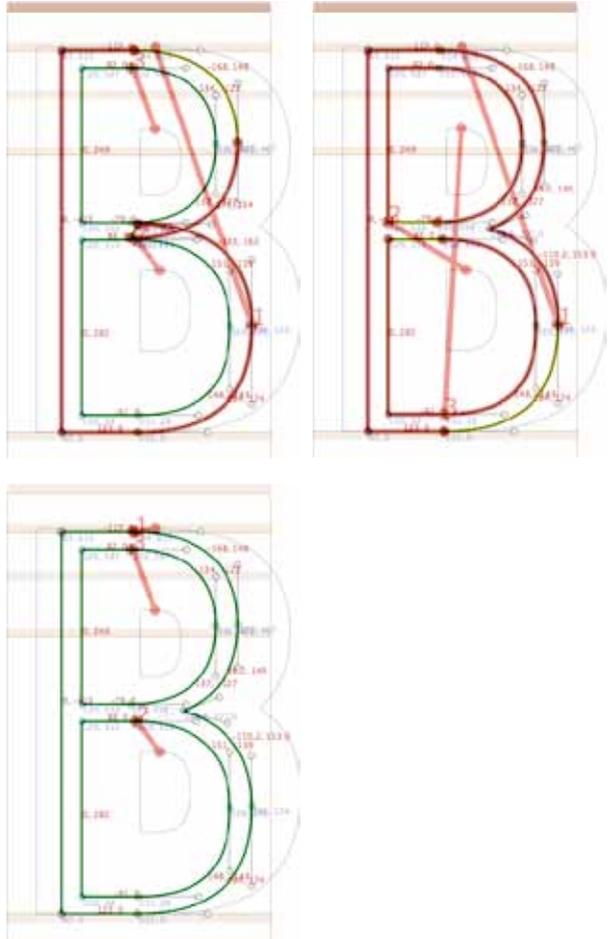
During editing, it is possible to work with incompatible paths but for interpolation, they need to be compatible. Specifically, this means that the order of the paths as well as number and structure of nodes must correspond.

The measuring tool gives the following information: The red lines connect the corresponding nodes in all masters. If the picture looks as wild as here then something is fundamentally wrong.

The two slightly bigger red numbers number the starting points of all paths and there is a straight red line that connects the starting points of all masters. When comparing outlines, you always start at the start node of the paths and follow them in the direction that is indicated by the small triangle at the first node.

The colored segments indicate the compatibility of the segments. Red means that there is a line in one master and a curve in the other. This will not interpolate at all. Yellow means that the paths are from the same type but have a different angle. This will interpolate but will have an unexpected result. Green segments are fully compatible.

Exampe:



In the foreground you see colored light master and in background the bold masters' paths. The foreground have an overlaid, other than in the background. Remove overlaps to get the second picture.

The outlines seem to fit now. The red lines connecting the starting points in all masters are running across the letter. The starting nodes have to be at the same position. Either

correct that manually by right clicking the node and choose “Make node first” or use the command “Layer > Correct Path Direction” on all masters.

In Image 3, the start points are at the same position in both masters and all outlines are green.

Tip: Switch between masters with Cmd+1, Cmd+2 etc.

5.5. LAYERS PANEL

The Layers Panel shows all layers of the selected glyph. The master layers are shown on top. You can copy them to save a working state. Select the layer in the list and click the “Copy” button. When clicking an entry in the list, the selected layer is activated in the current glyph only. This is helpful to simultaneously see different layers of one glyph.

To change view between layers use the tool bar buttons. Also there is the shortcut Cmd+1, Cmd+2 .., that is Cmd and the number of the respective master.

6.Import and Export

6.1. FROM FONTLAB

If you have the UFO tools installed, the easiest way is to export the font as .ufo files. And open that in Glyphs. FontLab uses a non-standard format for storing kerning and kerning classes. Glyphs detects this and converts it to its own system. To do so, it only works if you have a common prefix for left and right kerning classes like “_l” for left side and “_r” for right side. You have to tell Glyph about that in the preferences.

There is also a script available to export .glyphs files directly from within FontLab. You can download it from [github.com/schriftgestalt/Glyphs-Scripts/blob/master/Glyphs Export.py](https://github.com/schriftgestalt/Glyphs-Scripts/blob/master/Glyphs%20Export.py) To install, copy it to this folder: /Users/[your user name]/Library/Application Support/FontLab/Studio 5/Macros/Glyphs Export.py

After restarting FontLab, it will become available in the macro toolbar.

6.2. TO FONTLAB

FontLabs data structure is very different from the official UFO specification and Glyphs files. To export a file from Glyphs to FontLab, generate an instance and choose Export > ufo. Select the “Save for use in FontLab”. The .ufo does not store any information if a kerning class is for the left or right side so we need to add a suffix the class names. You can define the suffixes in the preferences.

In FontLab, you need to go to the classes panel and set the checkboxes for left or right side.

6.3. ROBOFAB TOOLS

Glyphs can read and write .ufo files. Unfortunately, .ufo files cannot contain more than one master. File -> Export allows exporting a Multiple Master Glyphs font as several .ufo files.

7. Appendix

7.1. FEATURE-SUFFIXES

| | | |
|------|-------------------------|---|
| liga | Ligature | Join the glyph names of the components with a „_“. The common ligature with „f“, „i“ and „l“ are placed in the liga feature, all other got to dlig. |
| dlig | Discretionary Ligatures | Join the glyph names of the components with a „_“. The common ligature with „f“, „i“ and „l“ are placed in the liga feature, all other got to dlig. |
| smcp | Small Capitals | Add „sc“ suffix to the glyph name. |
| sup | Superscript | Add „sup“ or „superior“ suffix to the glyph name. |
| sub | Subscript | Add „sub“ suffix to the glyph name. |
| sinf | Scientific Inferiors | Add „sinf“ or „sub“ suffix to the glyph name. |
| dnom | Denominators | Add „dnom“ suffix to the glyph name. |
| numr | Numerators | Add „numr“ suffix to the glyph name. |
| onum | Oldstyle Figures | Add „osf“ (for proportional oldstyle figures) or „tosf“ (for tabular oldstyle figures) to the glyph name. |
| tnum | Tabular Figures | Add „tf“ (for tabular figures) or „tosf“ (for tabular oldstyle figures) to the glyph name. |
| pnum | Proportional Figures | Add „osf“ (for proportional oldstyle figures) or „lf“ (for proportional lining figures) to the glyph name. |
| lnum | Lining Figures | Add „lf“ (for proportional lining figures) or „tf“ (for tabular figures) to the glyph name. |
| hist | Historical Forms | Add „hist“ suffix to the glyph name. |
| frac | Fractions | The frac feature is generated from a build in list of glyphs. |
| locl | Localized Forms | Add a „locl“+the three letter Language Code to the glyph there. And there is a build in list of glyphs, that are added to the feature. |

ssXX Stylistic Set XX Add „ssXX“ suffix to the glyph name, for example „sso1“ or „xx12“.

Add “Name:” plus the Features descriptive name to the font note. This will generate the feature name entries for stylistic set names. Or add the hole featureNames definition to the note