```
[MAP]
#define param_lines 5
#define param_encoding 10
#define param_info 15
#define param_global 20
#define file_new 100
#define file_open 105
#define file_save 110
#define file_saveas 115
#define file_exit 120
#define edit_del 200
#define edit_copy 205
#define edit_paste 210
#define edit_mark 215
#define edit_unmark 220
#define edit_dup 225
#define pref 300
#define back_bitfont 400
#define back_char 405
#define back_size 410
#define control 900
#define tools 999
#define tool_zoom 1000
#define tool_mark 1001
#define tool_line 1002
#define tool_curve 1003
#define tool_move 1004
#define tool_xy 1005
#define tool_cut 1006
#define tool_mirror 1007
#define tool_stretch 1008
#define tool_spin 1009
#define tool_border 1010
#define tool_hint 1011
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```

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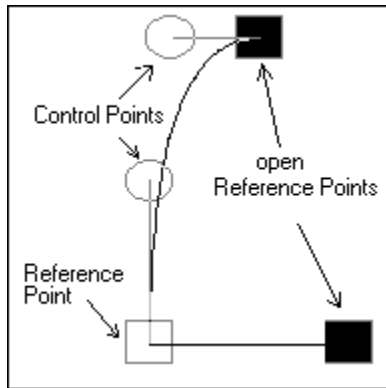
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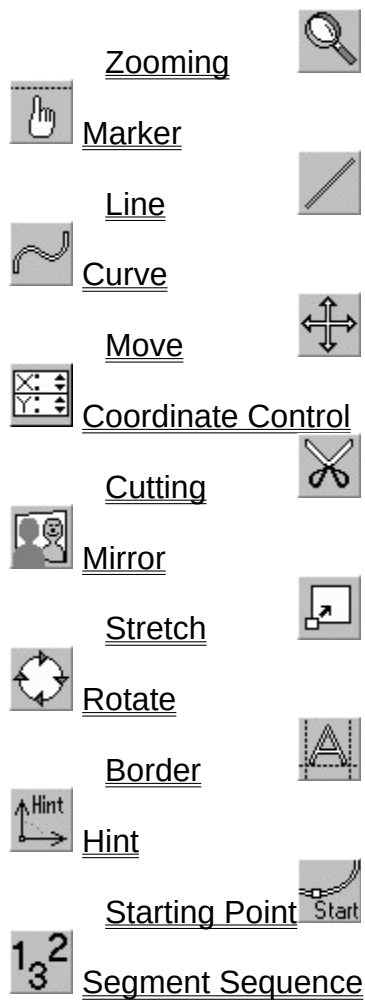
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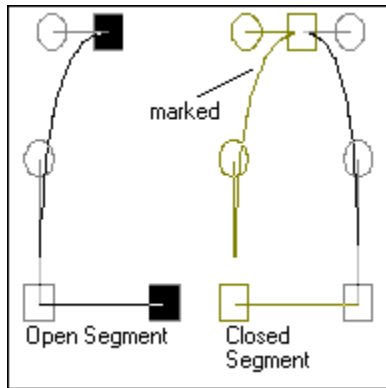Relative

Reference Point

A reference point is the begin or end point of a character element.

Reference points are symbolized by a square. Open reference points, that is, those not connected with other reference points, are drawn in black.

Segment

A segment is a series of connected character elements.

A segment that includes open reference points is referred to as an open segment. Correct characters consist only of closed segments.

Character Element

Characters in a Type1 font are generally described by an outline. Only straight lines and curves (cubical Beziersplines) are used for describing characters.
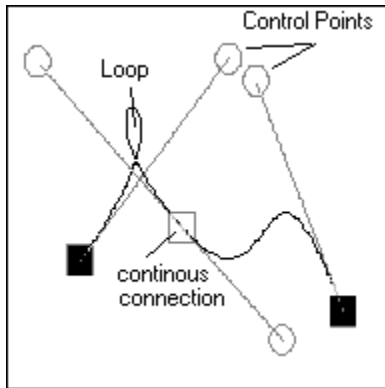The term character element always refers to either a straight line or a curve.
We will use the term character parts to refer to a collection of character elements, either they may be connected or not.
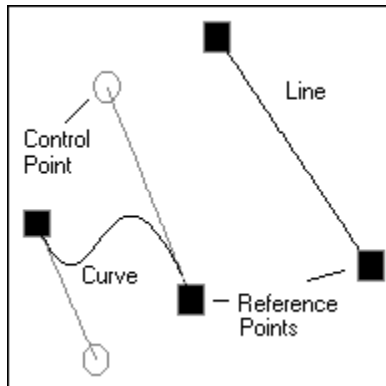
Control Point

You determine the shape of the curve with both its control points.

The curve is "drawn" in the direction of the control points. Note that you should not form loops.

Getting Help

There are several ways by which Type-Designer offers help.

Help Cursor

Whenever the ? cursor appears, press the <u>right mouse button</u> to call up the Help overview.

Menu Selection

Select the topic from the Help menu you would like help for.

- **Index** gives you an overview of help topics.

- **Control Panel** gives you all information on the control panel.

- **Tools** gets you information on (the tools for) character editing.

Dialog Boxes

If you click the Help button in a dialog box, you will get help for those inputs possible in this dialog box.

Tools

If you move the mouse cursor on an Edit menu icon and press the <u>right mouse button</u>, you will get help for this tool.

Caching

Almost all font managers use caching to accelerate the generation of characters on the output device.

Characters which have just been rastered are stored internally (or on the harddisk).

If the character is needed again later, it doesn't have to be rastered again but just taken from memory.

Rasterizer

Because characters in a Type1-Font are saved as outlines, these must first be converted for an output device. This job is done by a program (Rasterizer), which can, for example, be built in a PostScript printer or work like a driver under an operating system   like, for instance, the Adobe Type Manager.
The better an output device is, the finer the raster usually is to which character outlines are imaged.
While monitors have resolutions of approx. 100 dpi (dots per inch), laser exposure devices increase that to over 3000 dpi.
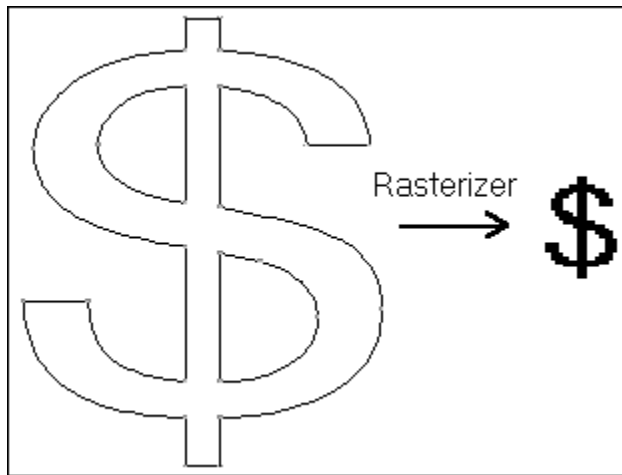
Font

A font refers to a set of characters which belongs to one group of type shape, for instance, *Times Italic*.
Normally, several type shapes comprise one type family. So, for instance, *Italic*, **Bold** and ***Bold Italic*** type shapes belong to the Times type family.

Hints

With hints you will be able to considerably improve the appearance of characters at low resolutions. Hints inform the rasterizer where horizontal and vertical stems are located in a character, and how the characters are to be aligned vertically.

The following options will provide you with detailed information:

Hint

Starting-Point

Segment sequence.

Design Principles

You can design high quality <u>fonts</u> by following the general procedure below.

- Align all characters, which have the same height, at the top and   bottom at the same level. <u>Guide lines</u> can be of great help in this.
- <u>Character elements</u>, which determine the width of equivalent bars, should always be exactly equally spaced.
- <u>Reference points</u> should always lie at extreme points, that is, on outermost points.
- Try using as few character elements as possible.
- <u>Segments</u> should never overlap.
- Curves should not form loops.
- Use <u>hints</u> with all characters, especially the same hints with the same partial characters.
- Copy partial characters from characters already designed if they are needed again.

Deleting of character parts

Use menu option Edit Delete or the key combination

      `<Shift><Del>`

to delete parts of characters.

Mark those character parts which are to be deleted with the <u>marker tool</u>.

If the entire character is to be deleted, you may also use either <u>Edit Mark All</u> or `<Ctrl A>` to mark.

The deleted character parts are saved to the clipboard and can be inserted into other characters with the <u>Edit Paste</u> or `<Shift><Ins>` command.

Copy to Clipboard

Use menu option Edit Copy or both

`<Ctrl><Ins>`

keys to copy character parts.

Mark those character parts which are to be copied with the <u>marker tool</u>.
You may also use either <u>Edit Mark All</u> or `<Ctrl A>` to mark if the entire character is to be copied.

The marked character parts are saved in the clipboard and can be inserted into other characters with either the <u>Edit Paste</u> or `<Shift><Ins>` commands.

Paste from Clipboard

With menu option Edit Paste or the key combination

    <Shift><Ins>,

you can paste character parts or import a background image from the clipboard.

Character parts must first be copied with <u>Edit Delete</u> or <u>Edit Copy</u> to the clipboard.

Import of Background Image

If you want to import a <u>background image</u> from the clipboard, then note the following:

The following formats are supported:

- DIB (Device Independent Bitmap)

- black and white bitmap

Background images requiring more than 64 kBytes of memory cannot be used. You can determine the size of the background image using the menu option <u>Background Size</u>.

Mark All

Use the Edit Mark All or

        `<Strg A>`

command to mark the entire character.

This is useful, for instance, if the entire character is to be deleted, duplicated, rotated, mirrored or moved.

You can undo the marking of single character elements with the <u>marker tool</u>. Using the <u>Edit Delete Markers</u> command will delete all markers.

Delete Markers

Use the Edit Delete Markers or

```
<Ctrl U>
```

command to delete all character markers.

You can set or delete the marker of single character elements or segments with the marker tool. Use the Edit Mark All command to mark all character elements.

Duplicate Character Parts

Use the Edit Duplicate command or

      `<Ctrl D>`

command to duplicate parts of characters.

Note that only marked elements will be duplicated.

Use the <u>marker tool</u> or the <u>Edit Mark All</u> command to set markers.

After duplicating you can use the <u>move tool</u> to move the duplicated character parts to other positions.

New Font

Use menu option File New to create a new font.

Enter a <u>file name</u> which does not yet exist.

Symbol Sets

Choose the symbol set which should comprise your new font. The following settings are possible:

<u>Roman</u>

Comprises all Roman character names also supported by the Original Adobe fonts.

<u>Symbols</u>

Contains all character names of the Adobe symbol font.

<u>Other Characters</u>

Comprises only the character name .notdef, which must exist in every font. All other character names are to be defined with the <u>control panel</u> option <u>New</u>.

FontInfo

You will be automatically taken to the <u>FontInfo menu</u> where you specify required font information.

Load Font

Use the menu option File Load to load a font for editing.

Simply select the file to be edited from the list given in the dialog box.

Standard Directory

The standard font directory can be set through the menu item <u>Preferences</u>. This is then automatically selected when fonts are loaded.

Editing Original Fonts

Note that the original fonts from Adobe, ITC etc. are copyrighted font programs. These may be used only with attention to licensing conditions.

Also, these original fonts contain special commands which are either ignored or simplified by Type-Designer. If you load such a font and then save it again, it will normally use more space on your harddisk. Also, when displaying fonts in small sizes quality loss may occur.

Low-cost fonts, on the other hand, do not include hints but rather, in many cases, some design errors and can be greatly improved (e.g Image Club) qualitatively with Type-Designer.

Save Font

Use the menu option File Save to save a font to disk

Additional Files

Additionally, you may have Type-Designer create the following files:

PFM File   (**P**rinter **F**ont **M**etric), which supplies all Windows programs with information on character widths. This file is almost always necessary but needs only to be created when you save a font for the first time, or when character widths or encoding have changed.

AFM File   (**A**dobe **F**ont **M**etric), which contains information on character widths and font encoding. This file is seldom needed, for example, by some utility programs which create width tables for special desktop publishing programs. This file is also only to be created when character widths or encoding has changed.

Updating Initialization Files

WIN.INI   Select the option Update WIN.INI if you are outputting in PostScript and saving the font for the first time. Type-Designer then adds an entry to your WIN.INI file so that your newly-created font is made available to your printer. Then re-start Windows for this change to take effect.

ATM.INI   Select the option Update ATM.INI if you are using the Adobe Type Manager and saving the font for the first time. Type-Designer then adds an entry to your ATM.INI file so that your newly-created font is   made available to the Adobe Type Manager. Then re-start Windows for this change to take effect.

Backup Copies

Type-Designer automatically creates a file with the name
                (Name).`~FB`
which contains the previous version of the font.

Adobe Type Manager Support

If you are using the Adobe Type Manager a window will open after you save the font, in which you will see 12 dummy fonts.

This is necessary since it is not possible at this time to inform the Adobe Type Manager

that a font has changed.

Enter 64 kByte as cache size in the ATM control panel as long as you are designing fonts, otherwise errors in the Adobe Type Manager may occur.

Future versions of the Adobe Type Manager will very likely provide (according to Adobe Developers Association Europe) direct support for editing fonts.

Save Font as

Use the menu option File Save As to save a font under another name.

The same dialog box will appear as with the menu item <u>File New</u>.

First type in the <u>file name</u> for the font. Follow the same procedure as with File New.

You will then have the option, as with <u>File Save</u>, to create additional files and to have the Windows initialization file updated.

If the file with the new name already exists, you will be asked if you want to overwrite the file.

Exit

With this menu option you will quit Type-Designer.

If fonts have been changed and not yet saved, you can do this now.
The same dialog box as that of <u>File Save</u> will appear.

File Names

File names for Adobe Type1 fonts usually consist of a two-letter abbreviation that describes the type family, as well as other letters which provide additional information; I, for instance, might stand for *Italic* and B for **Bold**.

Fill unused character spaces with an underscore "_" and always use `.PFB` as an extension.

In general, use a name by which fonts can be easily identified.

Guide Lines

Use the menu option Parameter Guide Lines to define guide lines for creating characters.

These guide lines are especially useful in aligning similar characters in the same way.

Note: Because guide lines are also saved in the Type1 font and used by the Rasterizer, note the following:

- The first field always describes the baseline alignment. If, for instance, characters like "O" extend below the baseline,then the lowest point of the letter "O" is taken as the Y-value. For the height, enter the distance from this point to the baseline.
- Use all other inputs of the first block only for aligning upper character parts, such as, for example, the upper part of the haracter "Q".
- Use the second block only for aligning lower parts of letters, such as, for instance, the lower part of the letter "g" or the middle part of the number "9".

Input Error

If you give the wrong input, you will get an error message and be asked to correct the value.

Guide Line Display

You can turn guide lines on or off by activating or deactivating the Guide Line option of the <u>control panel</u>.

Encoding

With menu item Parameter Encoding you can determine which single characters are to be assigned which code (key).

In the table to the **left** you will find the following information:

- **Key**
  which corresponds to the code number in the Windows ANSI character set.

- **Code**
  a number between 0 and 255 used for positive identification.

- **Name**
  of the character which is assigned to the code.

The table to the **right** lists all character names used in the font.

Standard Encoding

Activate the Standard Encoding option for standard PostScript encoding.

This should always be used when creating a Roman font not intended for private use only. Note that you must then also use the standard PostScript character names.

If you use a font with standard encoding under the Adobe Type Manager, then you will get Windows ANSI encoding rather than PostScript standard encoding.

Individual Encoding

An individual character assignment is only possible if the option Standard Encoding is deactivated. Proceed as follows:

- Position the black bar in the left table onto the code to be assigned. Select the name with which to assign the code by positioning the bar in the right table.
- Finally, click the arrow in the middle.

You will immediately see how the assignment has changed.

Both bars are moved down one position automatically, so that a simple click on the arrow will result in sequential assignments.

FontInfo

With menu item Parameter Info you can determine required and informative font descriptions.

The following settings are possible:

- **Name**
  Here you set the name under which the font can be accessed. Note that the name cannot contain blanks.

- **Full Name**
  This field is purely informative. Here you can specify additional information on the font. Blanks are allowed.

- **Family Name**
  Enter here the name of the type family.

- **Weight**
  Weight determines how black a font will be, which can range from **Ultra Thin** to **Ultra Black**. A font is considered **fat** from **Semi Bold** onwards.

- **Italic Angle**
  Enter here the angle at which the characters are italicized. Input a negative angle for characters inclining to the right. A font is considered cursive if the angle is other than zero.

- **Notice**
  This is an informal input which usually serves to record a copyright clause.

- **ID Number**
  ID numbers are assigned by Adobe Systems Inc. and serves to effectively cache fonts for different print jobs. Within a controlled application environment (for instance, a department's local network) you can use ID numbers ranging from **4,000,000** to **4,999,999**. Otherwise, always use a value of **0** unless you are assigned a number by Adobe.

- **Underline Position**
  Enter here the Y-coordinate of the top border of the underline. Use the underscore character "_" as an example.

- **Underline Thickness**
  Here you can determine how thick the underline should be.

- **Proportional**
  Activate this option if your font is proportional, that is, each letter has its own individual width.

- **Force Bold**

  Activate this option only if your designed font should also appear bold in smaller sizes. Whether the font is bold or not is determined independently from the entry in this field with the weight setting. Activating this option usually only makes sense for weight from Demi to Bold.

- **Special Font**

  Activate this option only if you have designed fonts or characters which are not originally Roman, such as, for instance, Chinese characters.

Global Change

With menu item Parameter Global you can change the appearance of all the characters within a font.

The following options are possible:

- **Enlarge**
  If you enter here a value other than 100% the entire font will be accordingly enlarged or reduced.

- **Rotate**
  Enter here the angle at which the entire font should be rotated clockwise.

- **Italicize**
  Entire here the angle at which the font should be italicized. A positive angle causes slanting to the right.

Combinations

You can, of course, combine all of the options described above with one another. That is, a font can, for instance, be enlarged and italicized simultaneously.

Checking

After starting Global Change you will be shown for checking which characters are being changed and what percentage has already been changed.

Preferences

You can use menu option Preferences to define the work area and the standard directories.

The settings done here are saved in a file called TYPEDSGN.INI . Starting Type-Designer will automatically load the settings from this file. You will therefore not be required to type them in again.

Work Area

Determine the maximum editing area using the inputs for **left**, **right**, **top** and **bottom**. For Roman fonts note the following:

The distance between the uppermost point of a "X" and the lowermost point of a "p" should total approx. 9000 points. If you use accented characters, then a correspondingly larger work area must be chosen.

Select the left and right boundary of the work area so that all characters can still be seen together as a whole.

If you load a font that requires a larger work area, the work area automatically adjusts to the new requirements.

Directories

PFB Directory: Enter here the directory you normally use to save your Type1 fonts. The standard setting is **C:\PSFONTS**.

PFM Directory: Enter here the directory in which the Printer Font Metric files for Type1 fonts are to be stored. The standard setting is **C:\PSFONTS\PFM**.

AFM Directory: Enter here the directory for the Adobe Font Metric files. The standard setting is **C:\PSFONTS\AFM**.

HPSoft Directory: Enter here the directory that normally contains the bitmap fonts to be used as background patterns. The standard setting is **C:\PCLFONTS**.

If you choose a directory that does not exist, you will receive an error message.

Background

With Type-Designer you will be able to use bitmap graphics and fonts as models.

Bitmap Images

You can simply paste bitmap graphics from the clipboard with the <u>Edit Paste</u> or `<Shift><INS>` command.

Bitmapfonts

Using the command <u>Background Bitmapfont</u> you will be able to use existing bitmap fonts as the basis for developing your own Type1 fonts.

Use the command <u>Background Character</u> to select a character as background after loading a bitmap font.

Bockground Size

You can use the <u>Background Size</u> command to specify the scaling factors for the background.

Display of Background

Note that the background will only be displayed if the <u>control panel's Background option</u> is selected.

It is even recommended for certain operations to briefly turn off the background because the Windows system function for displaying bitmaps may take quite a while to set up the screen display.

Background Bitmapfont

Using the command Background Bitmapfont you will be able to use existing bitmap fonts as the basis for developing your own Type1 fonts.

After selecting a bitmap font from the dialog box it will be loaded. If the font cannot be completely read or contains errors, you will receive an error message.

Though it is not impossible to load very small or very large bitmap fonts as background images, you should note the following:

- Sizes up to 24 points are normally too coarse to allow recognition of the actual structure.

- Sizes over 48 points may require a lot of memory and especially time to be scaled to the screen (especially with more detailed views).

Supported Formats

HP softfont	Uncompressed softfonts for the most widely-used laser printers (HP-Laserjet II).
WITEX laser	Compressed and uncompressed laser printer fonts of the scientific word processor WITEX (Version 3.x to 4.x).

Scaling

The scaling of softfonts for background masks is done automatically on the basis of size information saved in the bitmap fonts. Unfortunately, though, this is not always specified correctly (especially in the case of public domain fonts).

You can, therefore, use the Background Size command to specify the scaling factors for the background.

Background Character

Use this command to select a character as background after loading a bitmap font.

Note that the selected character is displayed only if you activate the <u>control panel's Background option</u>.

Background Size

Use this command to change the scaling factors of a background image.

The larger the factors chosen for x- and y-values, the larger they will appear on the screen.

Note that a 40-point font will require approximately factors of around 60.

You can, of course, also change the size of a created character later using the stretch tool.

Control Panel

The control panel is located between the menu bar and edit window. It displays important information and facilitates the efficient selection of editing options.

The control panel is composed in the following way:

Get, Save and Undo

To the very left you will find the keys with which characters can be <u>loaded</u> into and <u>saved</u> from the edit window, as well as an <u>Undo button</u>.

Preview Window

Beside these keys you'll find the <u>preview window</u>, which enables you to select the characters to be edited. The mouse buttons can be used in this window to leaf through a font, as well as to switch to a different font.

Font and Character Names

The names of the <u>current font</u> and of the <u>character</u> currently displayed in the preview window are located to the right.

You can add <u>new characters</u>, <u>delete characters</u> or <u>change character names</u> with the controls at the bottom.

Cursor Position

The <u>position</u> of the mouse cursor in the edit window is displayed below.

General Options

You can select <u>display and editing options</u> in the little box to the right.

Direction Options

You can set the <u>direction of movement</u> to horizontal, vertical or arbitrary in the little box to the very upper left.

Curve Type

You can set the <u>curve type</u> with the <u>curves tool</u> in the little box.

Other Options

You can set an option that allows a 1:1 view of characters in the preview and edit window in the very upper right box.
The other option in that box allows stretching   and rotating relative or absolute.

Get Character

Press the Get button to load the character from the <u>preview window</u> into the edit window. You can then edit the character.

Before you load a character into the edit window, don't forget to <u>save</u> the character currently displayed in the edit window.

If you hold down the **Shift-Key** while pressing the Get button, the entire character in the edit window will not be destroyed. This option is useful for combining various characters.

Save Character

Press the Save button to save the character in the edit window.

It overwrites the character in the underline preview window.

If the character in the edit window belongs to another character name, then you will be asked if the character in the preview window should be overwritten.

UNDO

Press the UNDO button of the control panel to undo the last change made to the character in the edit window.

This undo function is nested **10** times, that is, you can undo the last 10 editing steps.

If you want to retrieve the original character, just press the Get button.

Preview Window

The preview window displays the character which you can load into the edit window with the <u>Get button</u>.

If you move the mouse cursor into this window, you will be able to leaf through the fonts with the mouse buttons:

left mouse button	Displays the previous character
right mouse button	Displays the next character
both mouse buttons	Changes the font

Note that you can edit **two fonts** simultaneously.

Pressing **both** mouse buttons in the preview window lets you switch back and forth between fonts.

Displaying the Font Name

If no font has yet been loaded or created, then the font name field is empty.

If you want to change the font name, you can only do so with the Parameter Info command.

Character Name Display

The name of the current character (the character in the <u>preview window</u>) is displayed below the <u>font name</u>.

Character Selection

Press the arrow to the right of the character name to display a list of all the character names of the font.

You can directly select a current character from this list.

Changing the Name List

You can <u>insert</u>, <u>delete</u> or <u>change</u> a character name with the buttons below the name field.

Delete Character

Delete the current character from the font with the Delete button in the control panel.

So that you don't inadvertantly delete a character, after pressing the Delete button you will be asked if you really want to delete the character.

New Character

Add a character to the font using the New button in the control panel.

Enter a name which does not yet exist in the font.

If you create a roman font, then you can also select a new name from the optional list (by pressing the arrow).

If the name already exists, you will be asked to choose another name.

Change Character Name

Change the name of the current character with the Edit button from the control panel.

Also type in a name which does not yet exist in the font.

If you type in a name that is already in use in the font, an error message will appear.

Cursor Position

The position of the mouse cursor in the edit window is displayed to the lower right beside the preview window.

If the option <u>Round Off</u> is switched **ON** the cursor position will be rounded off to a multiple of 10.

Display and Editing Options

You can select general options in the little box right to the Font Name display.

The following selections are possible:

Snap

If the Snap option is switched on, open reference points are automatically joined when reference points are moved and lines and curves are drawn if the moved open reference point touches another one.

Two reference points count as touching each other when their black squares meet.

If the Snap option is switched off, two open reference points must meet on exactly the same coordinates in order to be joined.

Borders

If you switch on this option, you will see the borders of the character in the edit window as horizontal and vertical lines. These can be changed with the border tool.

Guide Lines

Activating this option displays guide lines in the edit window. These can be set with menu option Parameter Guide Lines.

Background

If you have loaded a bitmap font or a bitmap image as background, you will be able to turn this background mask **ON** and **OFF**.

Round Off

If this option is switched **ON**, the position of the mouse cursor in the edit window and all changed character coordinates are rounded off to a multiple of **10**.

This option should always be switched on unless you need very small structures in a character.

Note that coordinates which are not rounded off require around three times more memory in the font file.

Moving Options

You can set the direction for various editing functions in the framed boxes with the two vertical and horizontal switches in the control panel.

Only one of the two options can be activated at any one time. Pressing the switch again deactivates an option.

The following tools are affected by the setting of the switches:

[Line](#)
[Move](#)
[Mirror](#)
[Stretch](#)
[Rotate](#)
[Hint](#)

Curve Type

You can set the curve type with the underline curve tool in the framed box with the two Continuous Curve and Elliptical Curve switches.

Only one of the two options can be activated at any one time. Pressing the button again deactivates an option.

1:1 View

By activating the 1:1 option characters in the preview and edit window will not be shown distorted, that is horizontal and vertical scaling will be the same.

You should use a 1:1 view, if you want to design characters from scratch.

Deactivation of this option is often useful for working with <u>background images</u>.

Relative

This option is only important for the <u>stretching</u> and <u>rotating tool</u>.

If this option is deactivated, the reference point for stretching and rotating is the reference point of the entire character.

By activating this option you select the midpoint of all marked character elements as the reference point. This is most useful for doing local changes.

Tools

You will see those tools you'll need for editing characters as icons to the left beside the edit window.

Select a tool by moving the mouse cursor to the icon and pressing the **left** mouse button. The icon will then be displayed inverted.

For verification, each tool has its own cursor. You will see it if you move the mouse to the edit window.

Help

You will receive help with a tool by moving the mouse cursor to an icon and pressing the **right** mouse button.

Zooming

Use the zooming tool if you want to view details of a character.

Viewing Details

- Move the center of the mouse cursor to the upper left corner of the section you want to view.

- Press the left mouse button and keep it pressed.

- Now move the mouse down to the right until the rectangle frames the section you want to view.

- Release the mouse button.

- The selected section now appears in the edit window.

Viewing the Entire Character

If you are viewing a detail of the character and want to switch back to a total view, then

- move the mouse cursor into the edit window,

- press the left mouse button and then

- release it immediately.

- The total view of the character will appear in the edit window.

Marking Character Parts

Use the marker tool to mark character parts.

Character parts must be marked for the following operations:
Copying to the clipboard
Duplicating character parts
Moving character parts
Mirroring
Stretching
Rotating

Marking Single Elements

- Move the mouse cursor near the character element which is to be marked.

- Click the left mouse button and release it immediately.

- The character element will now be displayed in another color and is then marked.

Marking Segments

- Move the mouse cursor near the segment, which is to be marked.

- Dobbleclick the left mouse button.

- The segment will now be displayed in another color and is then marked.

Marking Entire Characters

Use the Edit Mark All or <Ctrl A> command to mark the entire character.

Delete Markers

If you do the above with character elements already marked, the markers on the character elements will be deleted.

All markers of a character can be deleted with the Edit Delete Markers or <Ctrl U> command.

Drawing Lines

Use the lines tool to draw lines.

Depending on how <u>Direction</u> is set in the control panel, you can create horizontal, vertical or arbitrary lines.

Drawing lines

- Move the center of the mouse cursor to the position where the line should begin.
- Press the left mouse button and keep it pressed.
- Move now the cross to the position where the line should end.
- Release the mouse button.

Snap Support

If the <u>Snap setting</u> of the control panel is activated, then open segments will be joined when drawing lines as soon as open reference points touch.

Setting Snap to OFF will only join elements if they meet on exactly the same coordinates.

Drawing Curves

Use the curves tool to draw curves.

Depending on how the curve type is set in the control panel, you can create continuous, elliptical or arbitrary curves.

Drawing Curves

Depending on the type of curve, there are different procedures to follow for creating curves.

Note that when setting end points they might automatically be joined to an open segment (i.e. they connect upon touching with Snap ON or must be exactly matched with Snap OFF).

If this occurs this end point can no longer be moved. The program then proceeds either to or with the next control point, or drawing of the curve is finished.

Arbitrary Curves

- Move the center of the mouse cursor to the position where the curve is to begin.
- Press the left mouse button and keep it pressed.
- Now move the cross to the position where the curve should end.
- Release the mouse button (or an open segment is joined).
- Move the control point to the desired position.
- Press the left mouse button and release it immediately.
- Move now the second control point to the desired position.
- Press the left mouse button and release it immediately.

Continuous Curves

Continuous curves differ from arbitrary curves in that they are "evenly" connected to neighbouring curves or lines.

The procedure for drawing continuous curves is the same as for drawing arbitrary curves.

In contrast to arbitrary curves, though, direction of movement is limited when setting control points (which lie on connecting lines).

This is, however, only possible if there is a connection established with an open segment when setting end points. Otherwise, the control point can be set as desired.

Elliptical Curves

Control points are automatically set when drawing elliptical curves in such a way as to create 1/4 of an ellipsis.

The ellipsis is set counterclockwise.

- First set the starting point by pressing the left mouse button.
- Keep it pressed and move the mouse cursor simultaneously to the end point of the ellipsis.
- Release the mouse button.

Moving

Use the move tool to move <u>reference points</u>, <u>control points</u> or <u>character parts</u>.

Moving Control and Reference Points

- Position the tip of the mouse cursor ⊥⊦ to the control point to be moved.

- Press the left mouse button.

- Move the cursor to the new position.

- Release the mouse button

If <u>Direction</u> in the control panel is set to vertical or horizontal, then the corresponding point can also only be moved in this direction.

Continuous Moving

Use the **right** mouse button instead of the left to move reference or control points continuously, that is, by connecting evenly.

Otherwise, proceed as described above.

When moving points continuously they will be moved regardless of the direction set in the control panel.

Moving Character Parts

Before you can move entire character parts you must mark them with the <u>marker tool</u>, <u>Edit Mark All</u> or <Ctrl A>.

- Move the tip of the arrow ⊥⊦ to a reference point positioned between two marked character parts, or to a control point of a marked curve.

- Press the left mouse button.

- Move the cursor to the new position.

- Release the mouse button.

Note that results also depend on how the direction of movement in the control panel is set, and that, when moving, the junctures between marked and unmarked character parts are retained.

Coordinate Control

Use the coordinate control tool to change the coordinates of <u>reference</u> or <u>control points</u> directly.

Displaying Coordinates

- Move the tip of the mouse cursor to the point whose coordinates are to be changed.

- Press the left mouse button and then release it.

- A window will appear to the right below the point clicked on, in which the coordinates of the points are displayed.

Changing Coordinates

Click one of the arrows to the right of the coordinates to change them. Pressing the arrow will increase the value, pressing the arrow will decrease it.

If the option <u>Round Off</u> is activated, then the coordinates will be changed by multiples of **10**.

The new coordinates can also be directly typed in as numbers.

Marked Character Parts

If the selected point belongs to a marked character part, then all other marked parts will also be moved the same distance.

Several Windows

Up to four coordinate windows can be displayed simultaneously. If you attempt to open a fifth window, the first opened window will be closed.

Cutting

Use the cutting tool to insert new <u>reference points</u> into already existing <u>character parts</u>.

Single Cutting

- Move the tip of the mouse cursor near the character element into which control point is to be inserted.

- Press the left mouse button and keep it pressed.

- Now move the mouse so that the line which runs from the starting point to the tip of the knife crosses the character element to be separated.

- Release the mouse button.

- A reference point is thereby inserted.

Multiple Cutting

If the line running from the knife intersects several character elements, a reference point will be inserted into each of these elements.

Mirroring

Use the mirror tool to mirror character parts.

Note the setting of <u>Direction</u> in the control panel when mirroring.

Also, only those character parts already marked by the <u>marker tool</u> or <u>Edit Mark All</u> will be mirrored.

Arbitrary Mirroring

When mirroring arbitrarily, use two points to define a line at which the marked character parts are to be mirrored.

You will often be able to use <u>reference points</u> for this purpose. To facilitate the task, activate the option <u>Snap</u> in the control panel. The starting and end points of the line then "stick" to the reference points.

- Move the center of the mouse cursor to the position where the mirroring line should begin.

- Press the left mouse button and keep it pressed.

- Move now the mouse so that the line running from the starting point to the center of the cross is where you want it.

- Release the mouse button.

- The marked characters are thereby mirrored.

Horizontal or Vertical Mirroring

You can also use the Snap option when mirroring on horizontal or vertical lines in order to align the mirroring axis with reference points.

- Press the left mouse button and keep it pressed.

- Now move the mouse so that the horizontal or vertical line is at the position where you want to mirror.

- Release the mouse button.

Stretching

Use the stretch tool to enlarge or reduce characters or character parts.

Note that stretching is also affected by how <u>direction</u> and <u>relative</u> is set in the control panel.

Also, only those characters marked with the <u>marker tool</u> or <u>Edit Mark All</u> will be distorted.

Procedure

- Move the top of the arrow to a <u>reference point</u> between two marked <u>character parts</u>, or to a <u>control point</u> of a marked curve.

- Press the left mouse button.

- Move the cursor until you have reached the desired size. Distortion factors will be displayed in the upper left corner of the edit window for checking.

- Release the mouse button.

Rotate

Use the rotate tool to rotate or italicize characters or character parts.

When rotating, take note of the <u>Direction</u> setting in the control panel (i.e. characters can be *italicized* if direction is set to horizontal). Rotation is also affected by the setting of the <u>relative</u> option.

Only those character parts marked with the <u>marker tool</u> or <u>Edit Mark All</u> will be rotated.

Procedure

- Move the tip of the arrow to a <u>reference point</u> between two marked <u>character parts</u>, or to a <u>control point</u> of a marked curve.

- Press the left mouse button.

- Move the cursor until you reach the desired angle. The angle of rotation will be displayed in the upper left corner of the edit window for checking.

- Release the mouse button.

Borders

Use the border tool to set the borders of characters.

These include the <u>left</u> and <u>right</u> borders, the <u>baseline</u> and the <u>height</u> of a character (only of interest for vertical character output).

When selecting this tool character borders will be displayed as horizontal and vertical lines, regardless of how the <u>border option</u> of the control panel is set.

A window will also open in the upper left corner which displays the values of all settings.

Moving Lines

To change the borders of a character, move the corresponding lines on the monitor:

- Move the tip of the arrow   near the border line to be moved.

-     Press the left mouse button and keep it down.

-     Move the cursor until it reaches the desired position. For checking, the change will also be displayed as a number.

-     Release the mouse button.

Changing the Value

You can also directly change the corresponding value to reset the border of a character.

Each change of the value will also be visualized by moving the corresponding line.

Hint

Use the hint tool to considerably improve the presentation of characters at small resolutions.

General

With hints you inform the rasterizer where horizontal and vertical stems are located in a character.

The rasterizer uses this information to accurately display stems of similar width. It would not look nice, for instance, if the two stems in the letter "H" were to have different widths.

Hints are also important for aligning characters vertically. The letter "I" has, for example, no horizontal stems. However, giving a corresponding hint to this character would align the top and bottom borders exactly as in the letter "Z".

Appearance of Hints

Hints which can be used in a character are symbolized by a thick line, the starting point of the hint by a black circle.

Equivalent Hints

Vertical and horizontal hints affecting the same area are equivalent. The hint needs, therefore, only to be set once.

Only when hints overlap is there an exception to this.

Overlapping Hints

If hints overlap horizontally or vertically in a character, use the starting point tool and segment sequence tool to inform the rasterizer when which hints are to be used.

Setting Hints

Hints can only be set by starting from a reference point.

Even if hints should normally end at the x- or y-value of an opposite-lying reference point, this doesn't have to be the case (see example with "I").

In most cases, you will probably only want to set horizontal or vertical hints. Setting the direction of movement in the control panel correspondingly will make the task easier.

Switch on the Snap option in the control panel so that the hint to be set ends exactly on a x- or y-value of a reference point. The hints will "stick" to the coordinates of the reference points.

- Move the center of the cross to the reference point where the hint should begin.

- Press the left mouse button and keep it pressed.

- Move the cursor until it is at the desired position.

- Release the mouse button.

Deleting Hints

To delete a hint,

- move the mouse cursor to the reference point where the hint begins,

- press the left mouse button and then release it immediately.

Starting Point

Use the starting point tool to set the starting point of a <u>segment</u> or the location where a hint is to be replaced.

This is necessary so as to inform the <u>rasterizer</u> when it can use which hints when hints overlap.

This is done by defining the location where old hints are replaced by new ones.

Orientation of Segments

When defining the starting points or locations of hint replacements you will have to consider how rasterizing will take place, that is, how it will be carried out, for example, by the Adobe Type Manager.

Each segment is, beginning with its starting point, imaged onto the output raster subject to its orientation.

The <u>orientation</u> of segments is such that, visually tracing the segments, the black part would always be on the left side.

Starting Point with Overlappings in a Segment

If, while tracing a segment, you come across a hint that overlaps the hint of the segment being traced, you should use this or a previous location for hint replacement.

If, when tracing a segment, you reach a location where a <u>replaced hint is needed again</u>, then you should use it there again otherwise the rastered character will can appear assymmetrical.

Try to set the starting point in such a way that will require as few   multiple hints as possible.

Starting Point with Overlapping in Separate Segments

First define the <u>segment sequence</u>.

Make each starting point of an overlapping segment the location of a hint replacement.

Set Starting Points

After you select the starting point tool you will see the segment number displayed to the right of a segment 's starting point.

Note that only the starting points of closed segments can be changed.

To make a reference point a new starting point,

- move the mouse cursor Start to the point which is to be defined as the new starting point.

- Press the left mouse button and then release it.

- The segment number will now be displayed beside the new starting point.

Define Hint Replacement Locations

Hint replacement locations are marked by a "R" to the left of the reference point.

The procedure for setting hint replacement locations is the same as for setting starting points. Use the right mouse button instead.

Clicking a hint replacement location again will delete it.

Note that the hint, which begins from the starting point, belongs to the last reference point of the segment.

Segment Sequence

Use the segment sequence tool to define the order of <u>segments</u> of a character.

If <u>hints overlap</u> within a character comprised of several segments, not only the starting points but also the sequence of segments must usually be defined.

A sequence should be chosen so that segments <u>linked by hints</u> lie one behind the other.

Defining Sequence

After you select the starting point tool, you will see the segment number displayed to the right beside the starting point of a segment.

Note that only the segment number of   a closed segment can be changed.

- Move the tip of the mouse cursor 1^2 near the segment to be designated the first segment.

- Press the left mouse button and then release it.
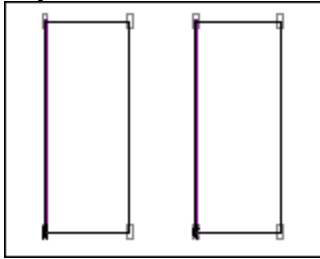
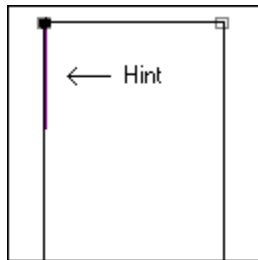- Repeat these three steps for the other segments.

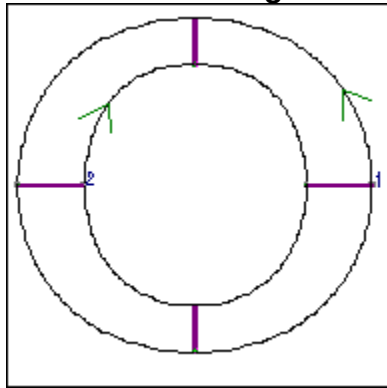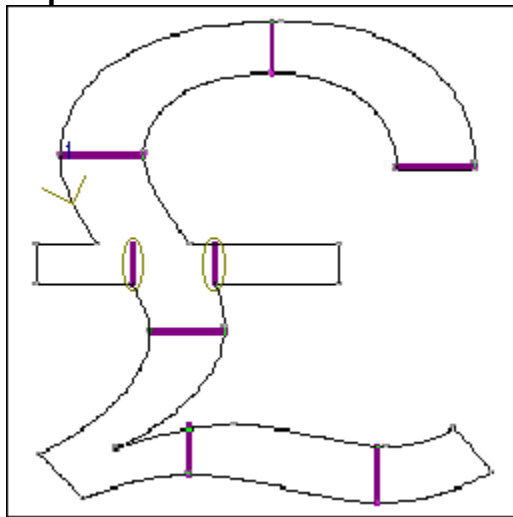## Overlapping Hints
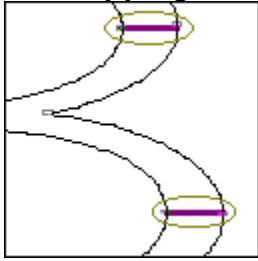
'H' without Hint

Equivalent Hints

'I' with Hint

Orientation of Segments

Repeated Hint

Segment Sequence with linked Segments