MakeAFP

MakeAFP Fonter
User's Guide

Version 4.0

This edition applies to the MakeAFP Fonter.

MakeAFP welcomes your comments and suggestions. You can send your comments and suggestions to:

support@makeafp.com

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Chapter 1. MakeAFP Fonter Overview

MakeAFP Fonter is a suite of programs that transform TrueType, OpenType, and Postscript Type 1 outline fonts into fonts that can be used for AFP printing, PDF2AFP, and AFP2PDF transformation, as well as empower you to view and edit the AFP bitmap and outline fonts.

By using MakeAFP Fonter, you can easily create your fonts for AFP printing, enabling you to create fonts with different styles and sizes so that you can print AFP documents and reports with your customized styles.

Functions at a Glance

MakeAFP Fonter provides the following advanced features and functions helping you to create your AFP fonts at ease:

- Converts TrueType, OpenType, and Postscript Type 1 outline fonts to AFP Type 1 outline fonts, encoding by ASCII, EBCDIC.
- Converts TrueType and OpenType outline fonts to AFP CID-keyed outline fonts, encoding by ASCII, EBCDIC, DBCS-PC(BIG5, GBK, HKSCS, KSC, SJIS), DBCS-HOST, and Unicode UTF-16BE.
- Converts TrueType and OpenType outline fonts to Postscript Type 1 or CID-keyed fonts.
- Transforms TrueType, OpenType, and Postscript Type 1 outline fonts to AFP bitmap fonts in 240/300/360/480/600/720 dpi, encoding by ASCII, EBCDIC, DBCS-PC(BIG5, GBK, HKSCS, KSC, SJIS), and DBCS-HOST.
- Transforms legacy AFP bitmap fonts to AFP FOCA outline fonts, and Postscript Type 1 outline fonts for AFP2PDF transformation.
- Instant views and edits AFP font bitmap patterns, outline contours, coded fonts, and codepages, as well as edits Postscript Type 1 and CID fonts.
- Adds and designs own double-byte UDC (User Define Characters) characters.
- Exports AFP FOCA outline fonts as Postscript Type 1 or CID-keyed fonts.
- Imports and transforms character bitmap images into outline glyphs.
- Fully compatible with IBM AFP codepages for ASCII, EBCDIC, DBCS-HOST, and UTF-16BE.
- High-performance font conversion and transformation with superior font quality and small font file size.

MakeAFP Fonter Prerequisites

Here are the prerequisites to run MakeAFP Fonter:

1. Windows 7 or above.
2. Microsoft Visual C++ 2010 Service Pack 1 Redistributable Package.

Starting MakeAFP Fonter

To invoke MakeAFP Fonter:

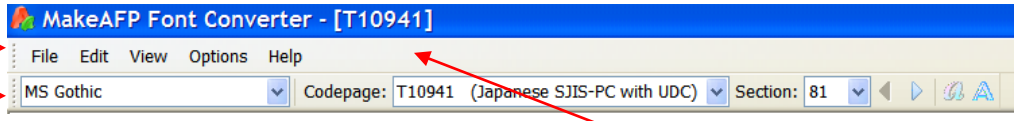
1. Click the **Start** button.
2. Select **Programs**, **MakeAFP Software**, **MakeAFP Fonter,** and then **MakeAFP Font Converter** or **MakeAFP Font Editor.**

MakeAFP Font Converter Interface

MakeAFP Font Converter provides all the tools and options you need to create the AFP fonts.

The following overview identifies some basic features of the MakeAFP Font Converter graphical interfaces.

Top Portion of the Interface

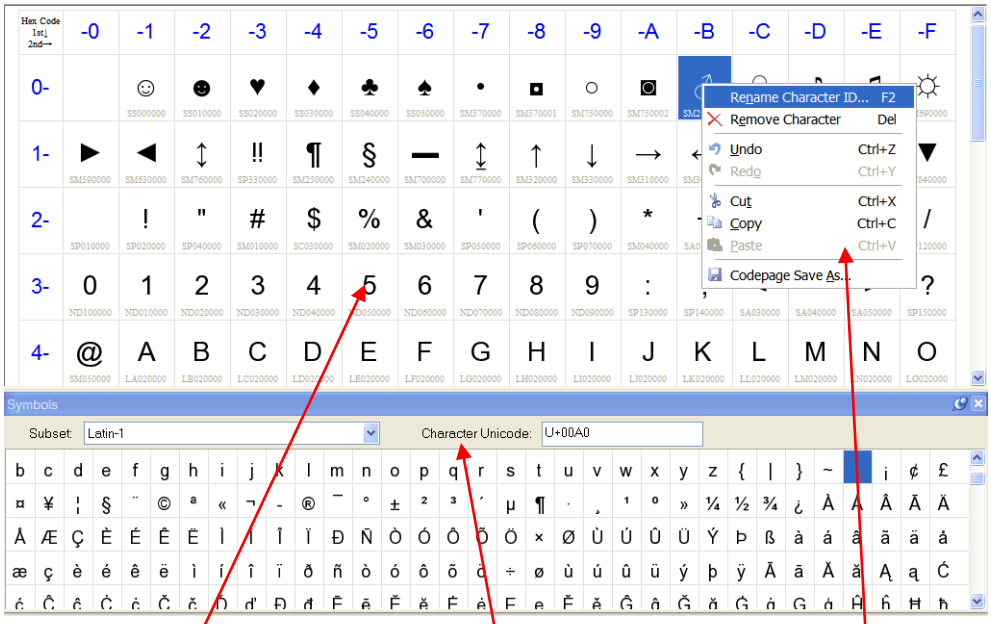


Menu Bar - gives access to most features. Menus are contextual.

Main Toolbar - gives quick access to frequently used functions such as select a TrueType, OpenType font, select an AFP codepage and generate AFP font, etc.

Title Bar - shows the name of the active code page.

Middle Portion of the MakeAFP Font Converter Interface



AFP Code Matrix Pane - shows the AFP characters that are available in the selected font and AFP codepage in 16 rows and 16 columns. The row and column numbers form the code point to which the font character in the corresponding position is assigned.

Symbols Unicode Matrix Pane – shows the characters available from the selected TrueType, OpenType or Postscript Type 1 font.

You may resize or reposition the Symbols pane, or reset it back to the default size and position by double clicking its title bar.

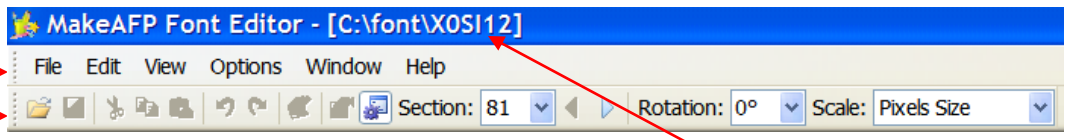
Pop-up Dialog – by right-clicking, shows the options available to handle a character or save AFP codepage.

MakeAFP Font Editor Interface

MakeAFP Font Editor provides all the tools and options you need to edit the AFP fonts.

The following overview identifies some basic features of the MakeAFP Font Editor graphical interfaces.

Top Portion of the Interface

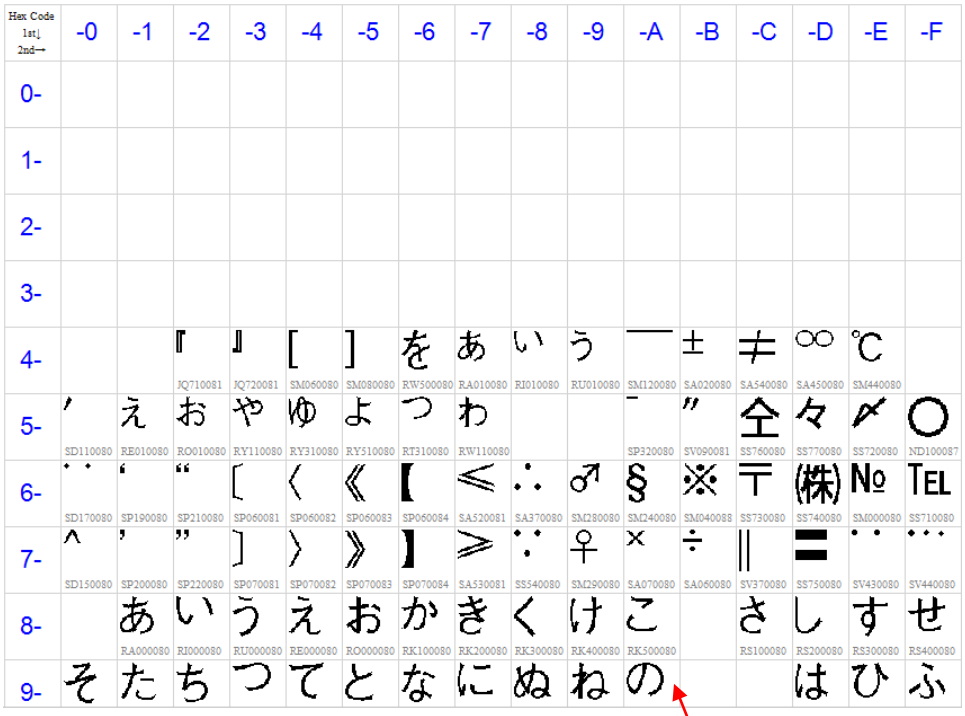


Menu Bar - gives access to most features. Menus are contextual.

Main Toolbar - gives quick access to frequently used functions such as open font, save font, font properties, code matrix display style, etc.

Title Bar - shows the name of editing AFP font.

Middle Portion of the MakeAFP Font Editor Interface



Hex Code 1st↓ 2nd→	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
0-																
1-																
2-																
3-																
4-			『 JQ710081	』 JQ720081	[SM060080	] SM080080	を RW500080	あ RA010080	い RI010080	う RU010080	— SM120080	± SA020080	≠ SA540080	∞ SA450080	℃ SM440080	
5-	′ SD110080	え RE010080	お RO010080	や RY110080	ゆ RY310080	よ RY510080	つ RT310080	わ RW110080			¯ SP320080	″ SV090081	仝 SS760080	々 SS770080	〆 SS720080	○ ND100087
6-	‥ SD170080	‘ SP190080	“ SP210080	〔 SP060081	〈 SP060082	《 SP060083	【 SP060084	≪ SA520081	∴ SA370080	♂ SM280080	§ SM240080	※ SM040088	〒 SS730080	(株) SS740080	№ SM000080	TEL SS710080
7-	^ SD150080	’ SP200080	” SP220080	〕 SP070081	〉 SP070082	》 SP070083	】 SP070084	≫ SA530081	∵ SS540080	♀ SM290080	× SA070080	÷ SA060080	‖ SV370080	〓 SS750080	‥ SV430080	… SV440080
8-		あ RA000080	い RI000080	う RU000080	え RE000080	お RO000080	か RK100080	き RK200080	く RK300080	け RK400080	こ RK500080		さ RS100080	し RS200080	す RS300080	せ RS400080
9-	そ	た	ち	つ	て	と	な	に	ぬ	ね	の			は	ひ	ふ

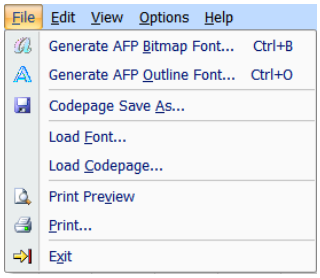
AFP Code Matrix Pane - shows the AFP characters that are available in the opened AFP coded font.

Chapter 2. Getting Started with MakeAFP Font Converter

The MakeAFP Font Converter graphical interface is similar to most Microsoft Windows-based software interfaces. Additional features are available and their purposes are outlined in the following narrative.

Using the Menu Bar

Available options and shortcut keys are displayed adjacent to the item, and menu options are context-sensitive.

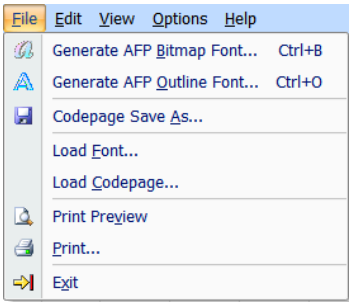


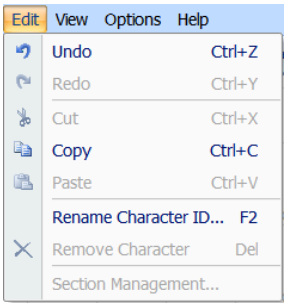
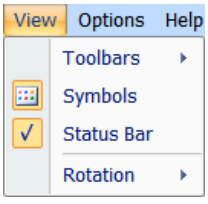
You can also access an item in the Menu Bar by **ALT +** the underscored letter in the Menu Bar. For example, ALT+F brings up the File Menu.

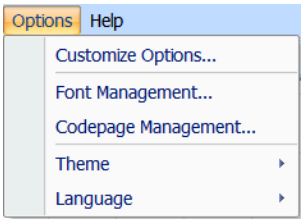
Options Under the Menu Bar

Most of the options under the Menu Bar should be self-explanatory to any experienced computer user.

The Menu Bar and options are listed in the following tables sequentially:

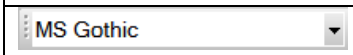
Menu Option	Functions
File	**File Menu** appears as in the following figure: 

Menu Option	Functions
File	The **File Menu** options available are: **Generate AFP Bitmap Font** – generates AFP bitmap fonts. **Generate AFP Outline Font** – generates AFP outline Type 1 or CID-keyed outline fonts. **Generate AFP Outline Font** – generates AFP outline Type 1 or CID-keyed outline fonts. **Codepage Save As** – saves user custom codepage. **Load Font** – loads a TrueType and Postscript Type 1 font from the font file. **Load Codepage** – loads an AFP codepage from the user's codepage file. **Print Preview** – Previews the printing of matrix table(s) of AFP codepage. **Print** – Prints the matrix table(s) of AFP codepage to a Windows printer. **Exit** - closes the active window.
Edit	The Edit Menu offers these options:  **Undo** - takes you one step back in the order of the operations you have performed. **Redo** - takes you one step forward in the order of the operations you have performed. **Cut** - removes an AFP character code point. **Copy** - makes a copy of AFP character code point. **Paste** - takes a copy of AFP character code point in memory and places it in is the AFP codepage matrix. **Replace Character** – replaces a character in AFP codepage. **Remove Character** – removes a character from AFP codepage. **Section Management** – manages the DBCS bitmap font sections.
View	The View Menu offers these options:  **Toolbars** – displays the standard toolbars. **Symbols** – displays the pane of symbols of selected TrueType/

	OpenType, or Postscript Type-1 fonts. **Status Bar** – displays the status bar at the bottom. **Rotation** – rotates the display of the characters.
Options	The Options Menu allows you to customize the default options.  **Customize Options** - defines the default options to customize your font converter. **Font management** – adds and manages the user's Postscript Type 1 and TrueType/OpenType fonts. **Codepage Management** – adds and manages user's own AFP code-pages. **Theme** – chooses a color theme for your GUI. **Language** – chooses a preferred language for the User's Interfaces, as well as creates new language file and edits/updates a language file.

Using Standard Toolbar

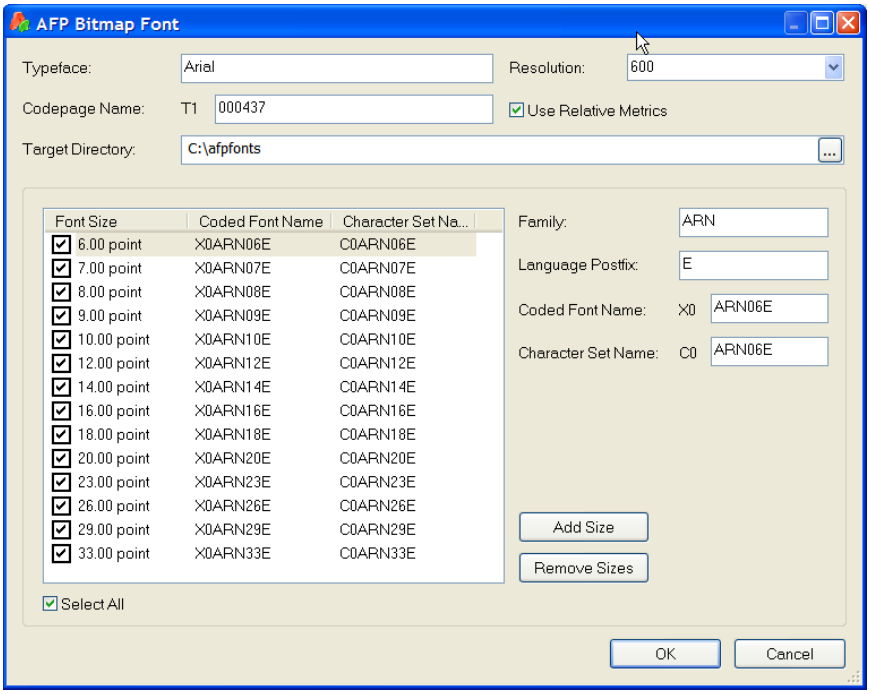
MakeAFP Font Converter contains a user-friendly graphical interface to help you create AFP fonts at ease. The main tools are arranged on toolbars for convenient access. Many of them are also available on the menus.

Tool	Function
 **Font List Select Panel**	Let's select a Windows installed outline font.
 **AFP Codepage Select Panel**	Let's select an AFP ASCII/EBCDIC/ DBCS-PC/DBCS-HOST codepage to be used for AFP font creation.
 **DBCS Section**	Let's select a DBCS font section quickly if the current AFP codepage selected is a DBCS codepage.

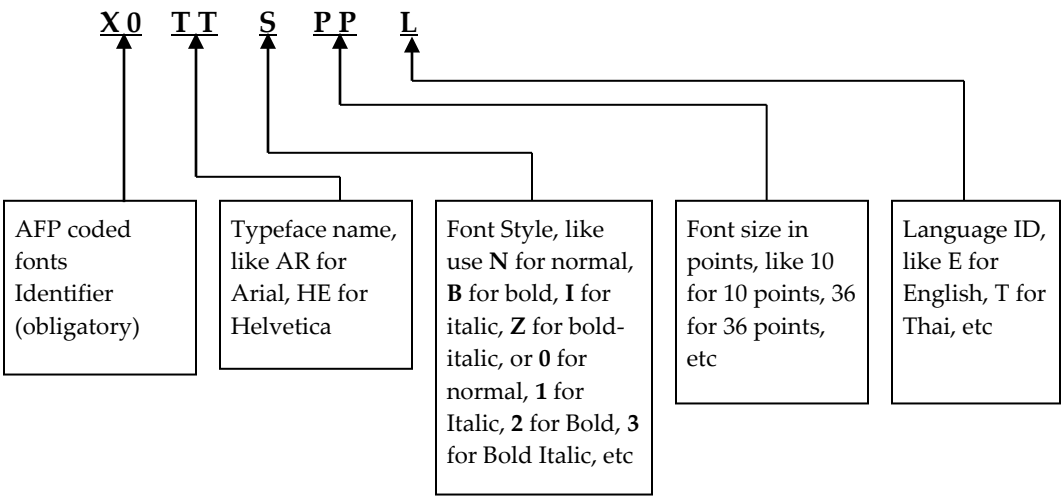
Generate AFP Bitmap Font	Let's generate AFP bitmap fonts.
Generate AFP Outline Font	Let's generate AFP outline fonts.

Generating AFP Bitmap Fonts

MakeAFP Font Converter provides a user-friendly GUI (see its picture on the next page) for defining and generating AFP bitmap fonts quickly, with which you can define the AFP bitmap font naming convention, font sizes, AFP output directory, and select a font resolution at ease.

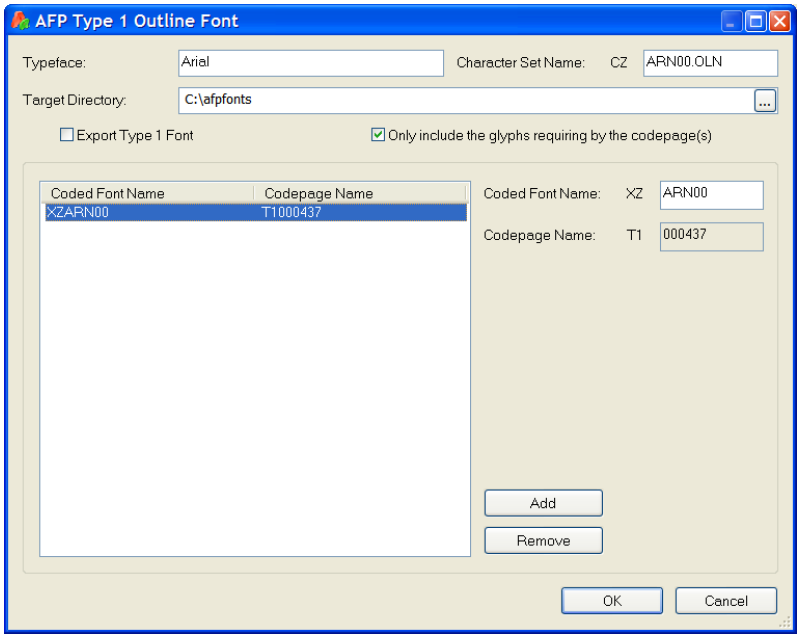


The following font naming convention is recommended for the AFP ASCII/EBCDIC bitmap coded fonts:



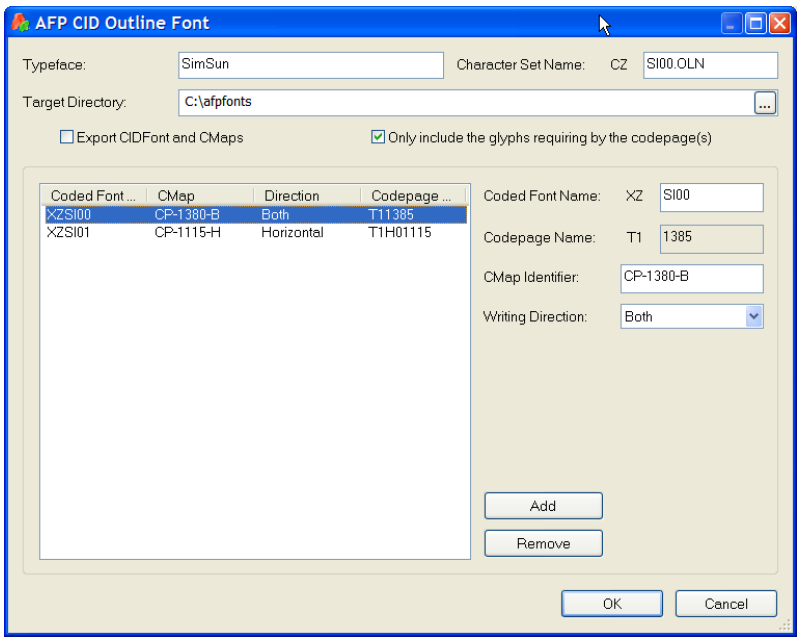
Generating AFP Outline Fonts and Postscript fonts

AFP Type 1 outline font can be generated if an AFP 1-byte ASCII/EBCDIC codepage is selected.



You may add more ASCII/EBCDIC codepages and coded fonts if you need to put more glyphs in an AFP character set that supports multiple languages.

AFP CID-Keyed outline font can be generated if an AFP DBCS codepage is selected for the DBCS-PC/DBCS-HOST/UTF-16BE encoding.

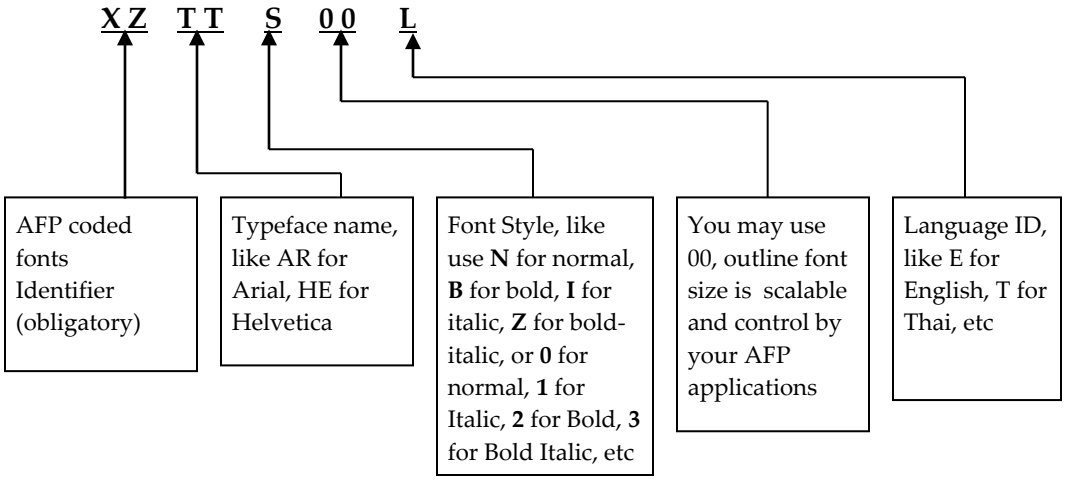


AFP CID outline font is able to support both SBCS and DBCS coded points in one character set, you may add more SBCS codepage(s) and coded font(s) if required.

With the option “Only include the glyphs requiring by the codepage(s)”, you can generate a smaller AFP character set that only includes the glyphs required by your codepage(s).

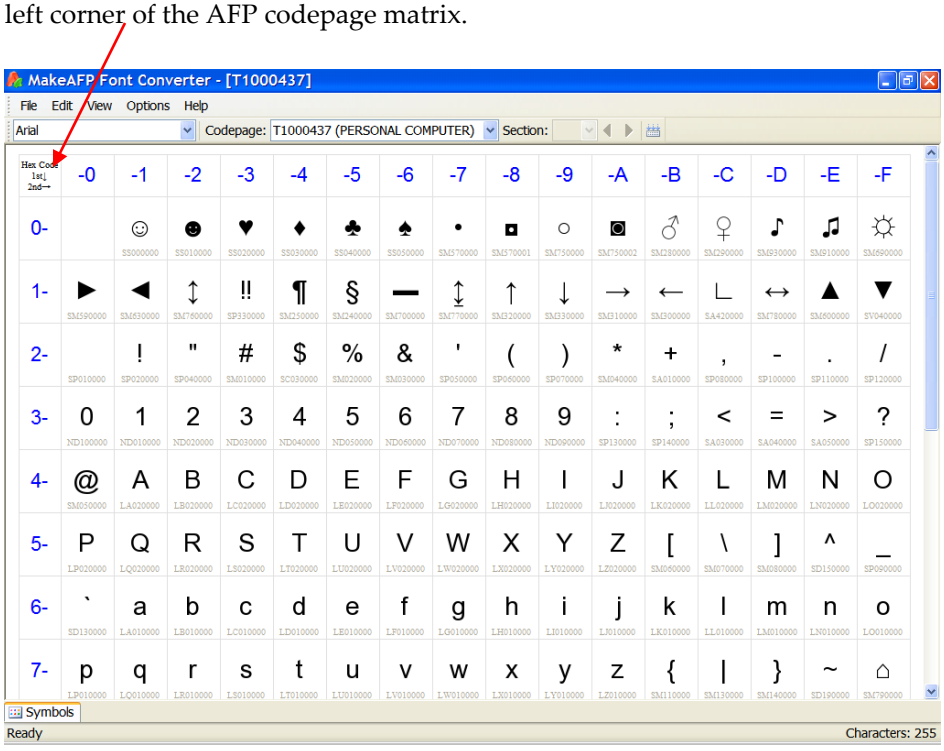
With the option "Export Type 1 Font" or “Export CIDFont and CMaps”, you can also generate a Postscript font in Adobe Type 1 PFB or CID-Keyed font format if you need such Postscript font to be used directly by your PDF or AFP2PDF applications, like IBM and InfoPrint AFP2PDF Transforms.

The following font naming convention is recommended for AFP outline coded fonts:



Changing AFP Codepage Matrix Display Order

MakeAFP Font Converter provides a flexible user-friendly interface, with which you can quickly switch the display order of the AFP codepage matrix, by double-clicking the top-left corner of the AFP codepage matrix.



Changing AFP Codepage Mapping

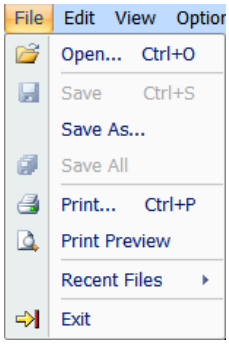
MakeAFP Font Converter empowers you able to change AFP codepage mapping at ease, by the cut/copy/paste/undo/redo edit features, as well as drag/drop a character within the codepage matrix, or copy/drag a character from the Unicode Symbols pane and then paste & drop to the codepage matrix pane.

Chapter 3. Getting Started with MakeAFP Font Editor

The MakeAFP Font Editor graphical interface is similar to most Microsoft Windows-based software interfaces, with which you can view and edit AFP SBCS/DBCS bitmap font patterns, outline glyphs, and codepages at ease.

Using the Menu Bar

Available options and shortcut keys are displayed adjacent to the item, and menu options are context-sensitive.

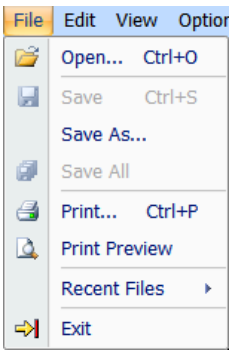


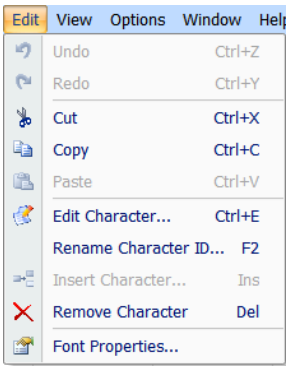
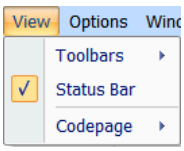
You can also access an item in the Menu Bar by **ALT +** the underscored letter in the Menu Bar. For example, ALT+F brings up the File Menu.

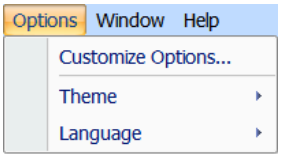
Options Under the Menu Bar

Most of the options under the Menu Bar should be self-explanatory to any experienced computer user.

The Menu Bar and options are listed in the following tables sequentially:

Menu Option	Functions
File	The **File Menu** options available are: 

Menu Option	Functions
File	**Open** - opens an AFP character-set/coded-font, or a Type 1 or CID font. **Save** - saves the edited font. **Save As** - saves the edited font under a new name. **Save All** – saves all the edited fonts. Font Editor supports to edit multiple font files simultaneously. **Print Preview** – previews the printing of matrix table(s) of patterns, glyphs, or AFP codepage. **Print** – prints the matrix table(s) of AFP codepage to a Windows printer. **Recent Files** – shows the recently accessed files. **Exit** - closes the active window.
Edit	The Edit Menu offers these options:  **Undo** - takes you one step back in the order of the actions you have performed. **Redo** - takes you one step forward in the order of the actions you have performed. **Cut** - removes a character and puts it on the clipboard. **Copy** - makes a copy of a character and keeps it in the clipboard. **Paste** - takes a copy of the character from the clipboard. **Edit Character** – let's edit a character's pattern or contours. **Rename Character** ID – Let's rename a character's ID. **Insert Character** – let's insert a character. **Remove Character** – Let's remove a character. **Font Properties** – allows you to view and edit the properties of AFP font, as well as add the sections for the DBCS bitmap fonts.
View	The View Menu offers these options:  **Toolbars** – displays the standard too bars. **Status Bar** – displays the status bar at bottom. **Codepage** – loads an AFP codepage.

Options	The Options Menu allows you to customize the default options.  **Customize Options** – Let's customize the options. **Theme** – chooses a color theme for your GUI. **Language** – chooses a preferred language for the Menu, edits the language files.

Using Standard Toolbar

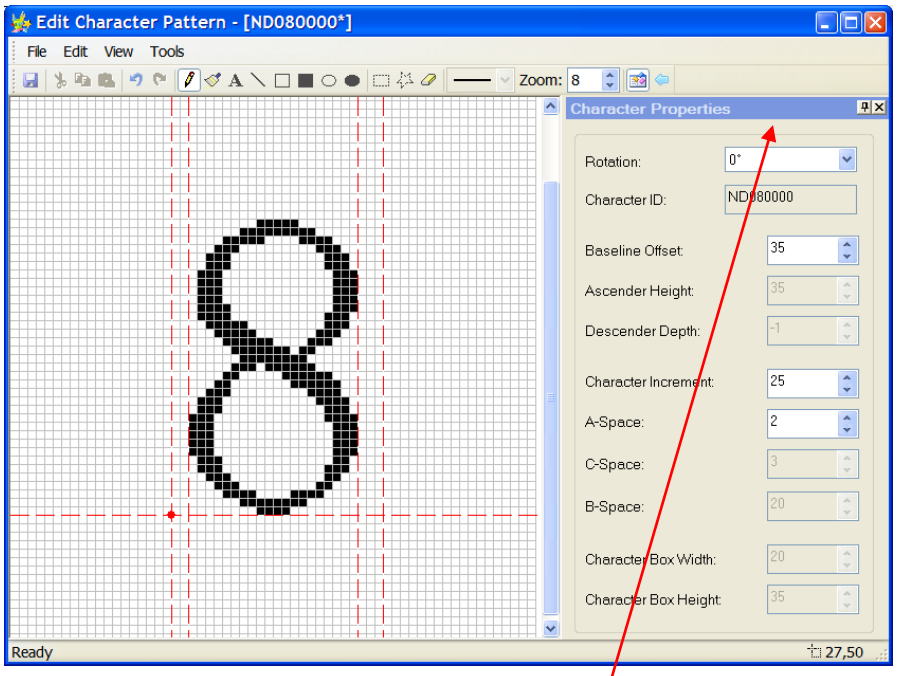
MakeAFP Font Editor contains a user-friendly graphical interface to help you to edit AFP fonts at ease. The main tools are arranged on toolbars for convenient access. Many of them are also available on the menus.

Tool	Function
Open Font	Let's open an existing AFP font.
Save Font	Let's save the current edited AFP font.
Cut	Let's cut a character and put it on the clipboard.
Copy	Let's make a copy of a character and keep it on the clipboard.
Paste	Let's take a copy of the character from the clipboard.
Undo	Let's take one step back in the order of the actions you have performed.
Redo	Let's take one step forward in the order of the actions you have performed.
Edit Character Pattern	Let's edit the character pattern, you can do it also by double-clicking the character on the main codepage matrix pane to open the "Edit Character Pattern" window directly.

Font Properties	Let's view and edit the font properties of an AFP font.
Style: Codepage Matrix **Matrix Style**	Let's select a matrix style of display window.
Section: 44 **Section**	Let's quickly switch to a section of DBCS font.
Rotation: 0° **Rotation**	Let's switch the display rotation of AFP characters.
Scale: 200% **Scale**	Let's quickly scale the display size of the bitmap font, if a bitmap font is opened.
Font Size: 14 **Font Size**	Let's quickly change the display size of the outline font, if an outline font is opened

Editing Bitmap Character Pattern

By double-clicking a bitmap character on the main Codepage Matrix or Pattern Matrix pane, you can modify its bitmap pattern and properties by using the window of Edit Character Pattern.



You may resize or reposition the Character Properties pane, or reset it back to the default size and position by double click its title bar.

Drawing Tools for Edit Bitmap Pattern

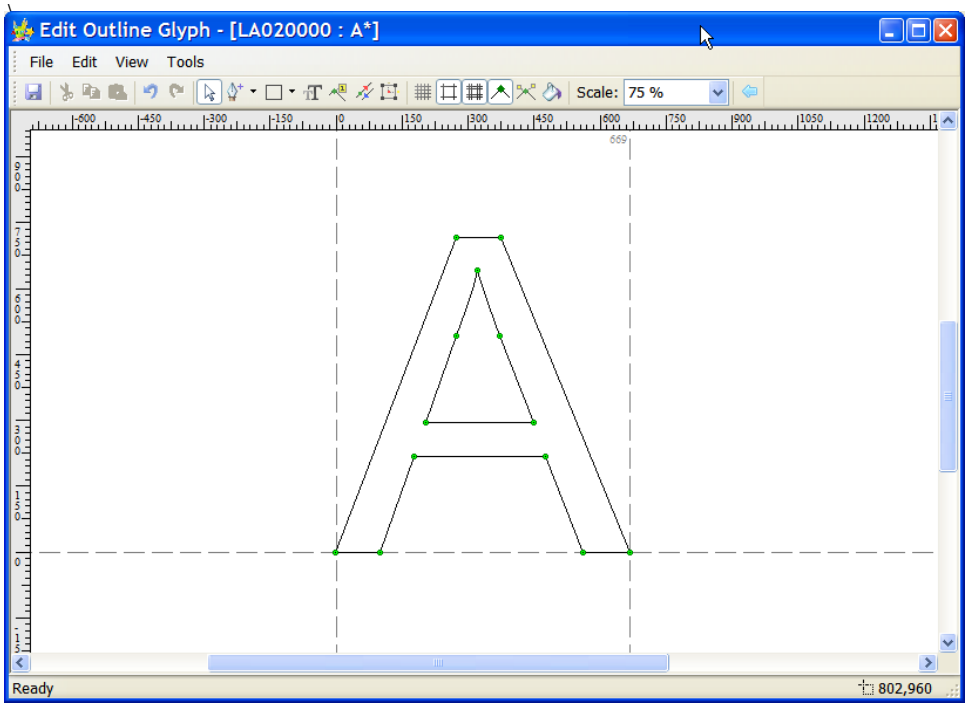
Drawing tools are provided to empower you to quickly edit, draw, copy, paste and move bitmap patterns.

Tool	Function
Save	Let's save the current edited bitmap pattern.
Cut	Let's Cut the selection and put it on the clipboard.
Copy	Let's Copy the current selection to the clipboard.
Paste	Let's Paste the last item on the clipboard into the current pattern drawing window
Undo	Let's reverse the last action.
Redo	Let's reverse Undo.
Pencil	Let's draw or erase (by right-click) bitmap pattern dot-by-dot precisely.
Brush	Let's draw or erase (by right-click) bitmap pattern with dots.
Character Pattern	Let's quickly create a character pattern by taking the bitmap pattern from an existing outline font.
Line	Let's draw or erase (by right-click) a Line.
Rectangle	Let's draw or erase (by right-click) a Rectangle.
Filled Rectangle	Let's draw or erase (by right-click) a Filled Rectangle.
Ellipse	Let's draw or erase (by right-click) an Ellipse.
	Let's draw or erase (by right-click) a Filled Ellipse.

Filled Ellipse	
Rectangle Selection	Let's select a rectangle area of the pattern to copy, cut, delete, or move.
Irregular Selection	Let's select an irregular area of the pattern to copy, cut, delete, or move.
Erase	Let's erase bitmap patterns freehand.
Dot Size	Let's select dot size for the tools of Line, Rectangle, Ellipse, Erase.
Zoom: 14 **Zoom**	Let's select the zoom level.
Character Properties	Shows the properties of the character.
Close	Closes the window of Edit Character Pattern.

Editing Outline Glyph

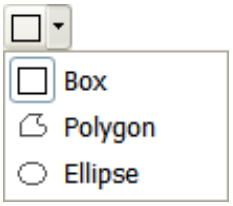
By double-clicking an outline character on the main Codepage Matrix or Pattern/Glyph Matrix pane, you can modify its vector outline glyph and properties by using the window of Edit Outline Glyph. While pressing **Shift** or **Ctrl** key, you can select all or part of the nodes by left-clicking.



Drawing Tools for Edit Outline Glyph

Drawing tools are provided to empower you to quickly edit, draw, copy, paste and move bitmap patterns.

Tool	Function
Save	Let's save the currently edited outline glyph.
Cut	Let's Cut the selection and put it on the clipboard.
Copy	Let's Copy the current selection to the clipboard.
Paste	Let's Paste the last item on the clipboard into the current pattern drawing window
Undo	Let's reverse the last action.
Redo	Let's reverse Undo**.**
Selection	Let's select nodes or contours, multiple nodes or contours can be selected while pressing CTRL or SHIFT key, or by a selection rectangle. To deselect all nodes click the left mouse button somewhere in the free space of the editing field. You can return to Selection mode anytime by pressing the ESC key.
Pen Tool	Let's add a curve control node to the current contour or convert node. Corner nodes may exist between any types of segments (straight or curve). If possible, you should convert a corner node between two curve segments into a curve node, and a corner node between a curve segment and a straight segment into a tangent node.

 **Contour Tool**	Let's select a drawing tool to plot the contour, such as draw rectangle, ellipse, and point-by-point polygon drawing with easy combination of straight segments and curves. Contours can be of two types: black or white. They can also be of two directions: clockwise or anti-clockwise. The basic rule that applies to Type 1 or CID fonts is simple: clockwise-directed contours are white and anti-clockwise contours are black. You can control contour direction by selecting Tools --> Reverse Contour, then right-click contour to select pop-up option Reverse Contour or double-click the contour.
 **Character Glyph**	Let's quickly draw a character glyph by taking contours from an existing outline font.
 **Set Startpoint**	Let's manually change the start point of contours and re-arrange contours.
 **Reverse Contour**	Let's manually reverse the direction of a single contour.
 **Transform**	Let's scale, rotate or skew the selected portion of the outline.
 **Grid Lines**	Let's control whether display grid lines, which are useful to align the outline.
 **Guide Lines**	Let's control whether display the horizontal and vertical guidelines, which are useful to align the outline. You can insert a new guide line by dragging the mouse in the horizontal or vertical ruler area.
 **Hints Lines**	Let's control whether display the Postscript Type 1 hints lines, if your font includes such hints information. You can insert a new hints lines by dragging the mouse and pressing CTRL key in the horizontal or vertical ruler area. You can move a single hints line by pressing CTRL key.

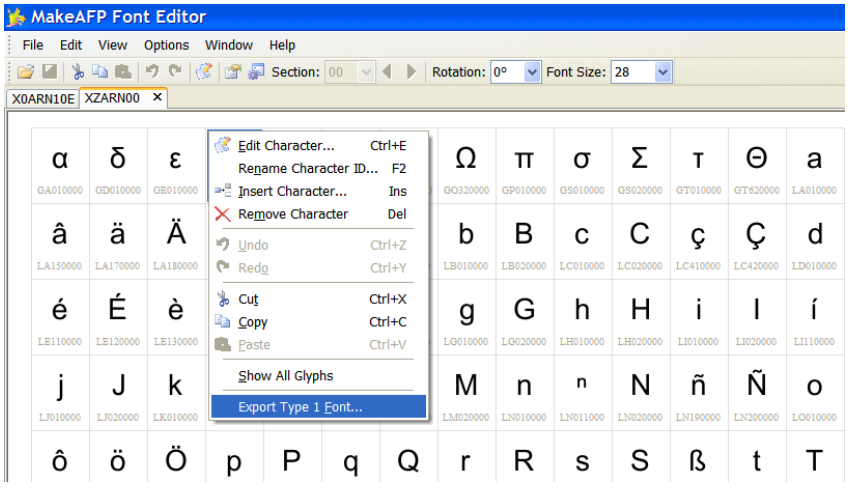
Nodes	Let's control whether display the curve control nodes. You can move node position either by mouse or by arrow keys.
Control Vectors	Let's set whether display the curve control vectors. PostScript Type 1 curve is Bezier type curve, that needs two additional sub-nodes called Bezier control points (BCPs) and the vectors that connect the control points with the curve's ends are called control vectors.
Filling	Let's control whether the glyph shape should be filled or not.
Scale: 100 % **Scale**	Let's quickly scale the display size of the outline glyph.
Close	Closes the window of Edit Outline Glyph.

Loading Codepage

By option **View** --> **Codepage** --> **Load Codepage**…, you can load an AFP codepage while you are viewing and editing a coded font or character set, and then you can select **File** --> **Save As** … to save your change as another coded font.

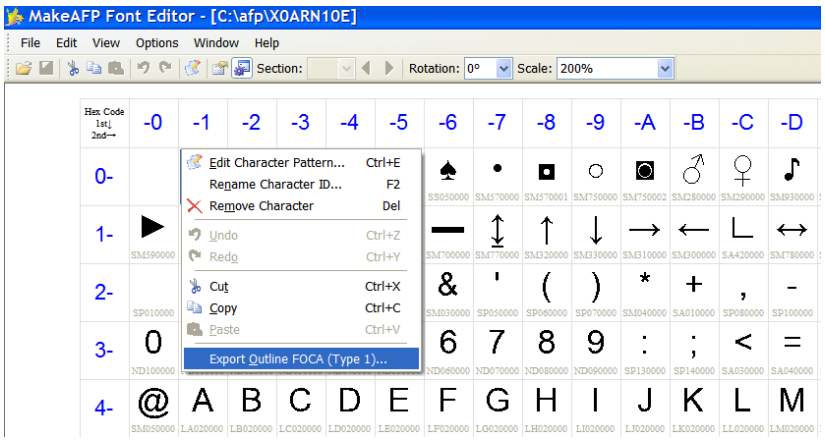
Exporting Type 1 or CID-Keyed Font

While on the **Glyph Matrix** panel, you can open the "**Export Type 1 Font…**" or "**Export CID Font …**" pop-up dialog by a right-click, and then export the outline font as a Postscript Type 1 or CID-keyed font.

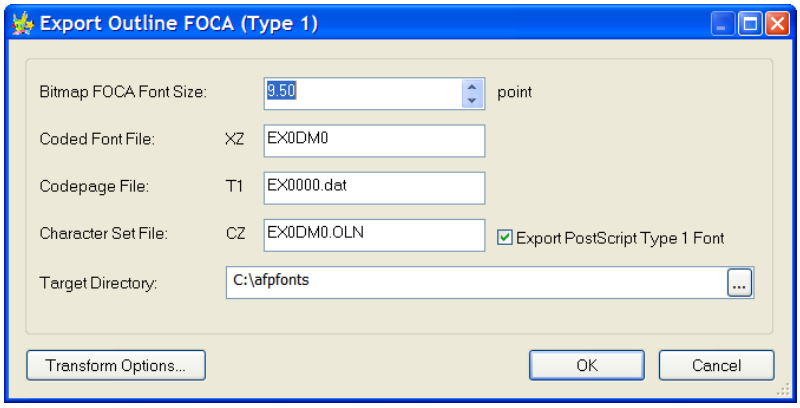


Transforming AFP Bitmap Font to FOCA Outline and Postscript Type 1 Font

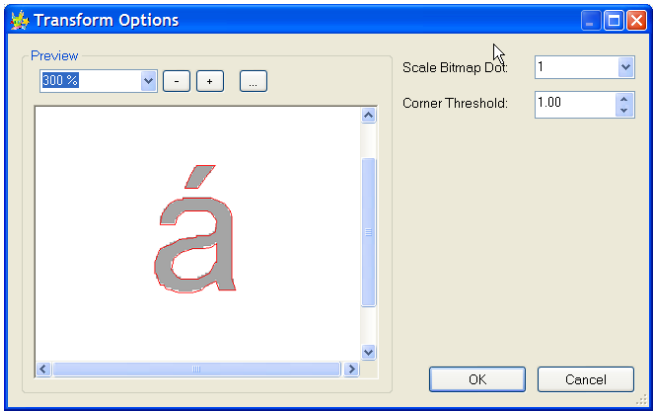
While on the **Codepage Matrix** panel, you can open the "**Export Outline FOCA (Type 1)** …" pop-up dialog by a right-click, and then export the transformed outline font as an AFP FOCA outline font and a Postscript Type 1 font.



On the Export Outline FOCA dialog, you have to make sure the value of Bitmap FOCA Font Size is correct as some AFP software may generate the wrong font size value.



With bitmap to outline Transform Options dialog, you can select a character bitmap pattern, and then preview the output quality of contours in real-time while adjusting the options.



High resolution and big point-size AFP bitmap fonts are recommended to be used for such a bitmap to outline transformation, and you may need to use MakeAFP Font Editor or a professional outline font editor to manually improve the quality of outline glyphs.

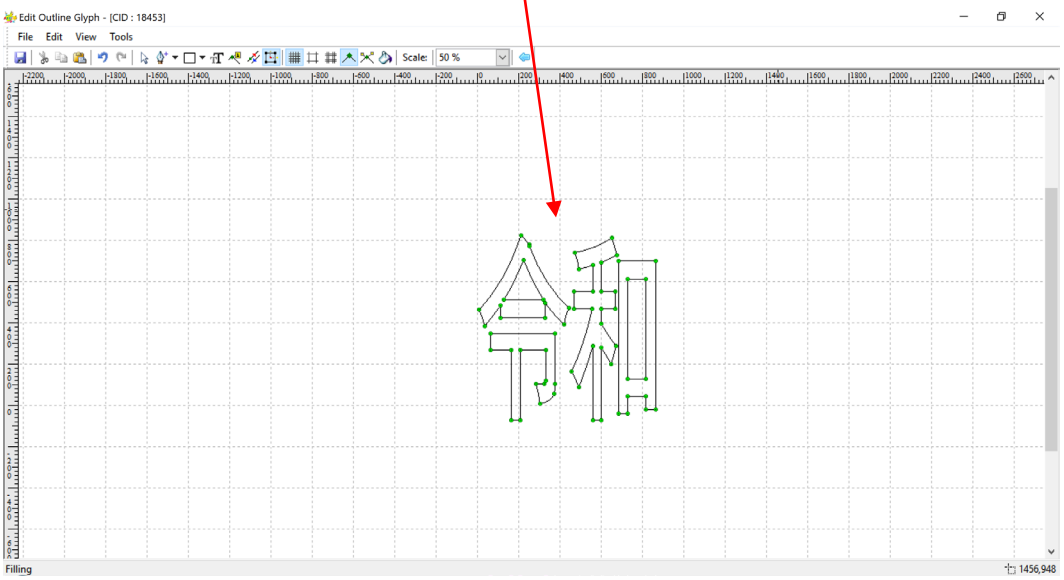
Adding a New Character to FOCA DBCS Outline Font

While on the **Glyph Matrix** style panel, right-click on a blank cell and select **Insert Glyph** pop-up option, to insert a new CID index number for adding the new glyph.

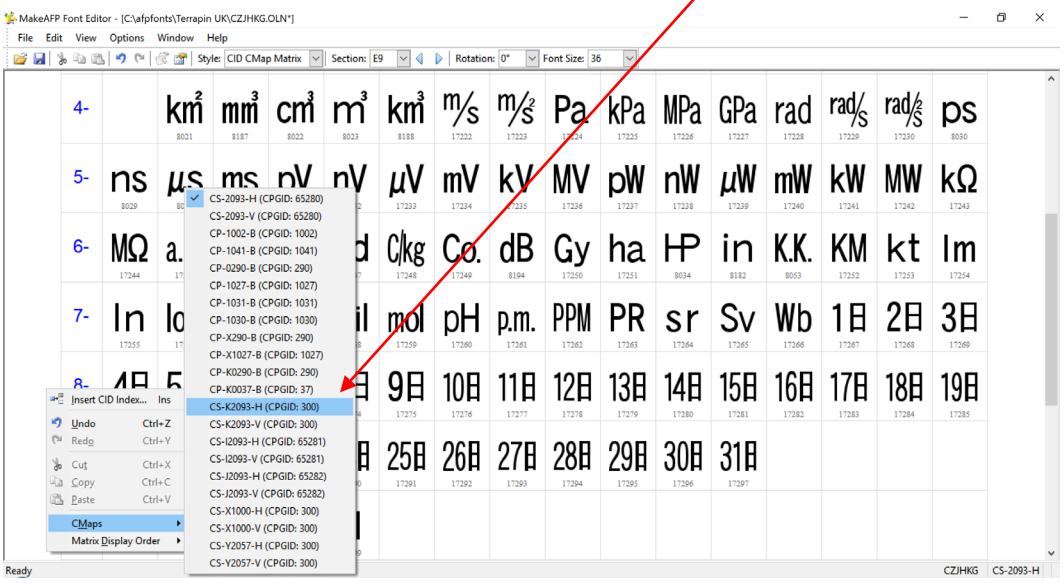
A new CID index number is being created, you need to remember this new CID number just assigned.

You can copy and transform an existing glyph or contours, and then paste to the cell of a new glyph for the creating of the new glyph, or copy more contours from the existing glyphs.

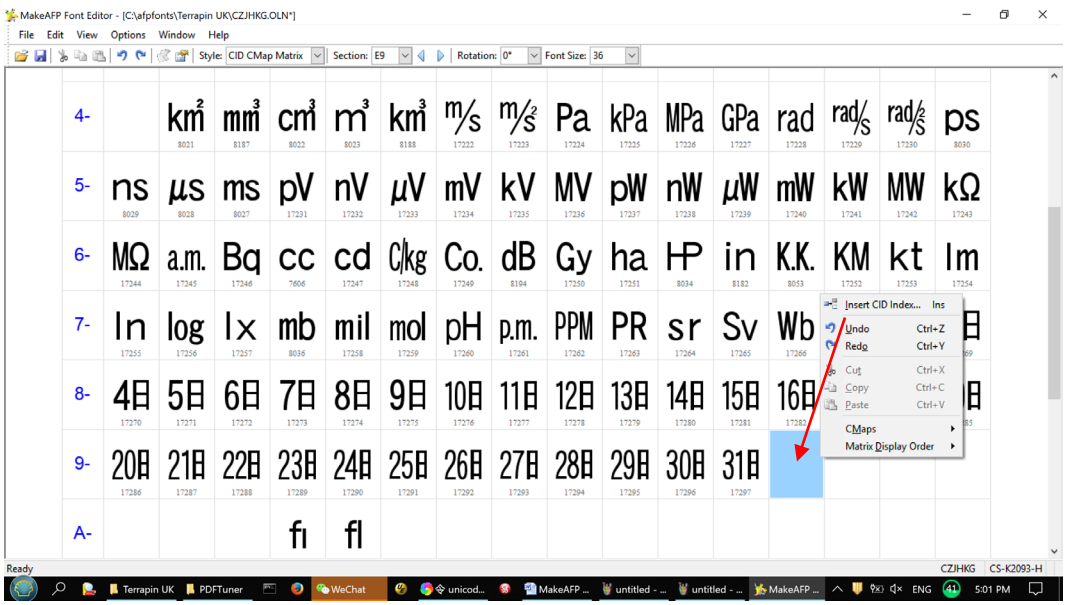
For example, the following new Japanese Era glyph is being created, by the transforming and coping from the existing two Japanese glyphs:



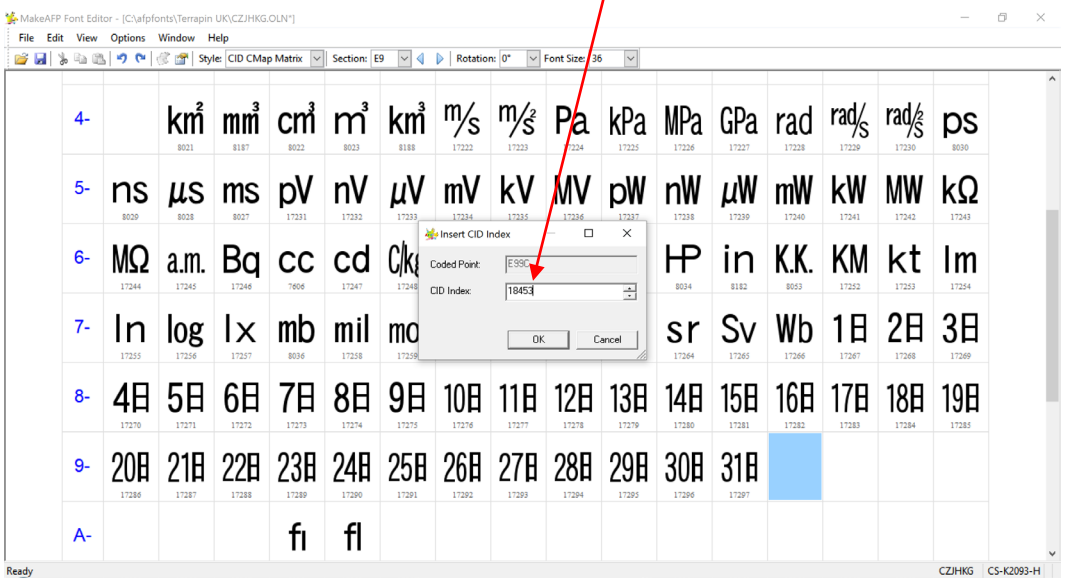
After new glyphs were created, switch to the **CID CMap Matrix** style panel, right-click on the panel and select the **CMap** pop-up option, to select the name of CMap related to your AFP DBCS codepage.



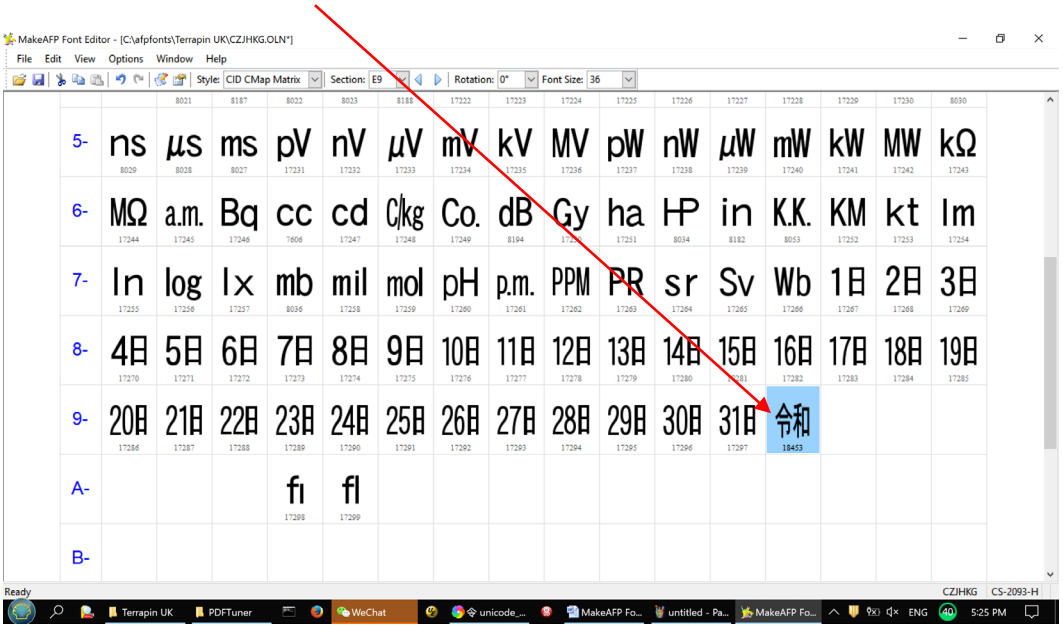
Select the DBCS section where you need to assign your new glyph, right-click on the cell of new glyph and select the **Insert CID Index…** pop-up option.



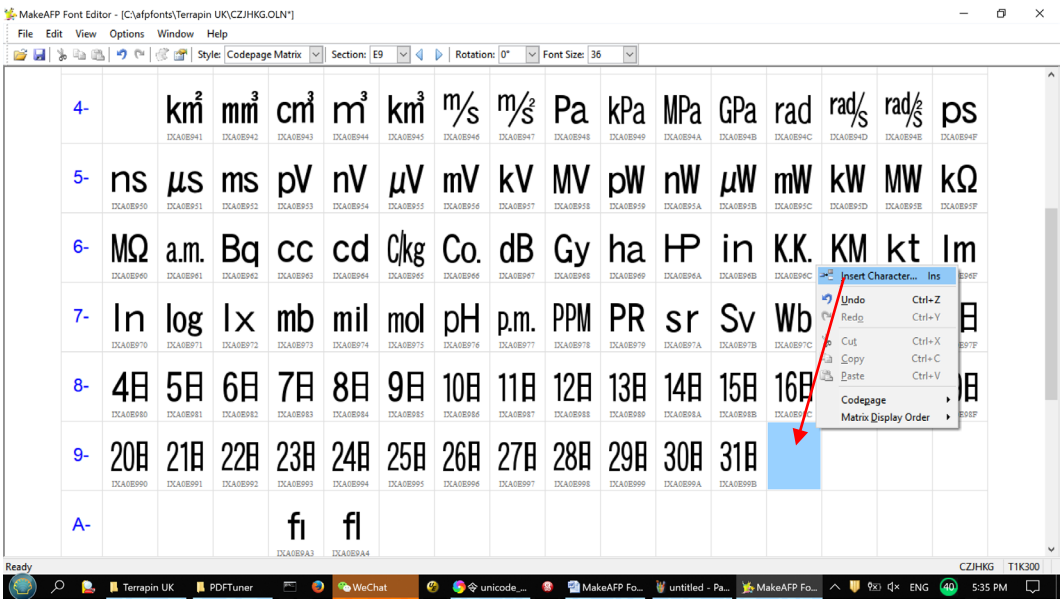
On the pop-up Insert CID Index dialog, type the CID index number that was previous assigned to the new glyph.



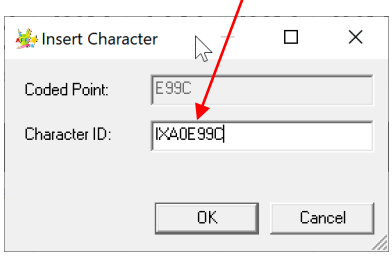
Now you can see the new glyph on the CID CMap Matrix panel.



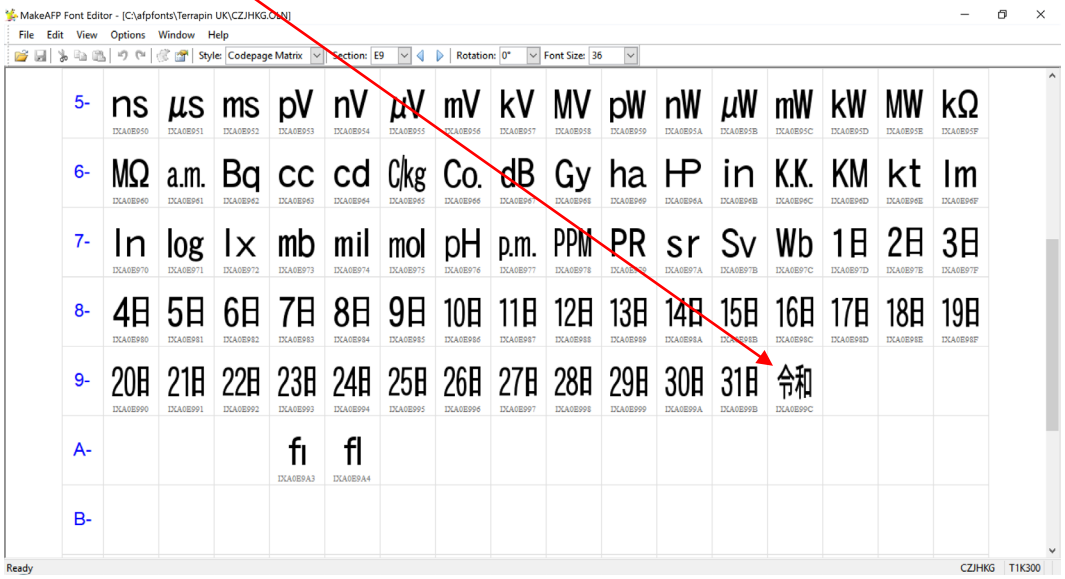
Switch to the **Codepage Matrix** style panel, load the AFP DBCS codepage related with the CMap previous selected on the CID CMap Matrix panel, then right-click on the cell that is to be assigned the new AFP character.



On the pop-up Insert Character dialog, type the name of AFP Character ID. You can copy and paste an existing character ID and then modify its name for the new character.



Now your new AFP character was created.



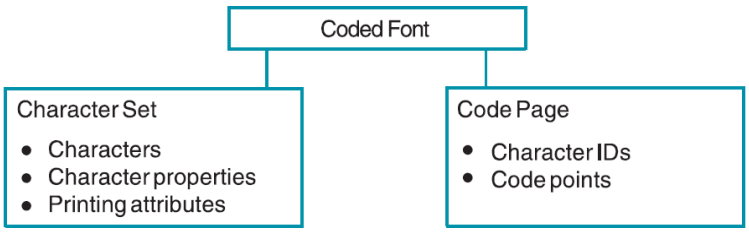
Appendix A. AFP Font Basic Concepts

This appendix introduces some basic AFP font terminology, structure and how characters are represented in digitized presentation type.

AFP Font Structure

In AFP font terminology, an AFP font has three components:

- Coded font
- Character set
- Codepage



Coded Font

AFP coded font is a font file that associates the AFP character set with AFP codepage.

A bitmap coded font consists of two parts:

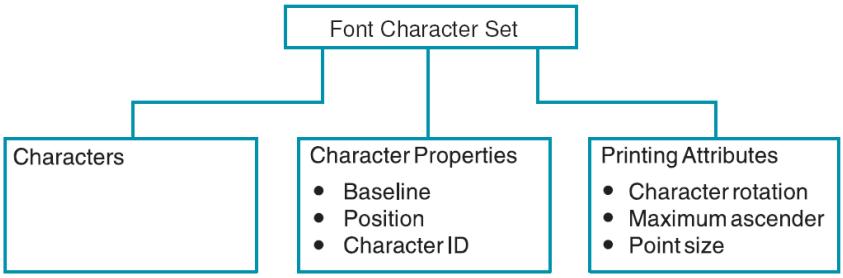
- References to specific character sets
- References to specific codepages

An outline coded font consists of three parts:

- References to specific character sets
- References to specific codepages
- References to point size

Character Set

AFP character set consists of a finite set of characters. It contains information about a font type family, typeface, and point size, and also includes each character's properties and its printing attributes, such as baseline positioning, rotation, ascenders, descenders, etc.



Characters

Characters are the letters, numerals, marks, and symbols of a font.

Character Properties

Character properties detail how a character is positioned relative to the characters around it. Some character properties include the following:

- The baseline of a character showing its general alignment
- The dimensions of space in which the character is printed
- The position of the character within that space
- The identifier of the character (the character ID)

One of the character properties is the character ID, named GCGID (graphic character global identifier). Each character is assigned a unique 8-character GCGID; for instance, the character uppercase A is assigned the GCGID LA020000 registered by IBM.

For a list of GCGIDs, each character represents, and the codepages where the characters are found, refer to *IBM AFP Fonts: Technical Reference for Codepages (S544-3802-02)*.

Printing Attributes

The printing attributes define how the character set will be printed, such as baseline positioning, rotation, ascenders, descenders, and point size, etc.

Single-byte and Double-byte Character Sets

A single-byte character set (SBCS) is a font character set to be used with a single-byte codepage. The maximum number of characters in a character set is 256.

A double-byte AFP bitmap font consists of multiple sections of double-byte character sets (DBCS), to be used with CJK (Chinese, Japanese, Korean).

Bitmap Format of Character Set

AFP font character sets in bitmap format can be in 240/300/600 dpi, some printers and AFP print servers may support character sets in 360/480/720 dpi also. The character positioning values in the bitmap character set can be expressed in either fixed-metric or relative-metric.

Outline Format of Character Set

AFP outline character sets can be in SBCS outline format (by Adobe Postscript Type 1 outline font encapsulated in AFP font architecture wrappers), or DBCS outline format (by

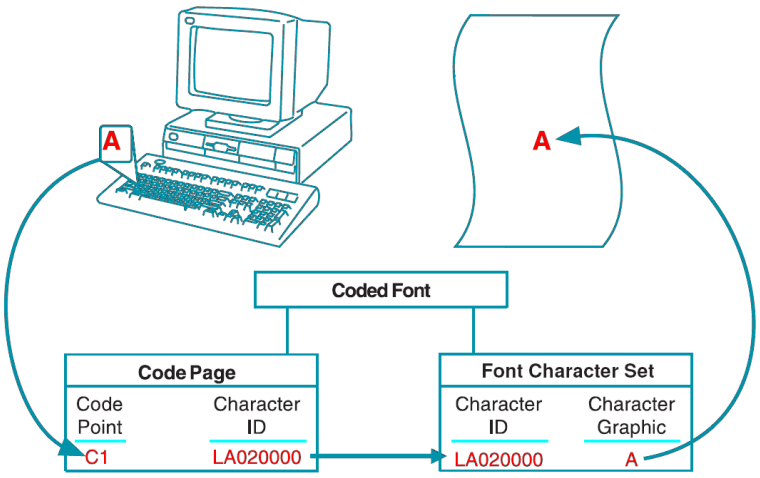
Adobe Postscript CID-keyed outlines font encapsulated in AFP font architecture wrappers). The character positioning values in the outline character set are expressed in relative-metric.

Codepage

AFP codepage maps each character of text to the characters in an AFP character set. As you enter your text on your keyboard, each key in character is translated into a hexadecimal code point. When the text is printed, each hexadecimal code point is matched to a GCGID on the AFP codepage you specified. The GCGID is then matched to the AFP bitmap pattern or outline vector pattern of the character in the AFP character set you specified. The character pattern in the character set is being finally used for the printing of your character.

The following picture shows an example with AFP EBCDIC codepage T1V10037 for IBM mainframe USA English.

When the IPDS printer receives EBCDIC hexadecimal code point C1, it prints an uppercase A, whose GCGID is LA020000.



An SBCS codepage contains up to 256 one-byte code points. SBCS codepages are good enough for languages with alphabetic writing systems, such as English, Latin, Greek, Thai, and Arabic, etc.

A DBCS codepage can contain up to 65536 double-byte code points for CJK (Chinese, Japanese and Korean) languages.

For bitmap DBCS AFP fonts, AFP treats DBCS codepage as a collection of single-byte codepages, a double-byte is split into two parts, the first byte indicating the section number of the codepage and the second byte indicating a code point within the section.

For outline DBCS AFP fonts, AFP treats DBCS codepage as a single large codepage. Each DBCS character has a 2-byte code point.

AFP Font Naming Convention

Each AFP component's name is only allowed up to 8 characters. The following list shows the prefix of the AFP font naming convention and the type of font component represents.

AFP Font Name Prefix	Font Component
C0	The character set of AFP bitmap font
CZ	The character set of AFP outline font
T1	AFP codepage
X0	Coded font of AFP bitmap font
XZ	Coded font of AFP outline font

Appendix B. ASCII/EBCDIC AFP Codepages Summary

Name	Description	CPGID	Encoding
T1000038	US-ASCII Character Set	38	EBCDIC
T1000259	Symbols, Set 7	259	EBCDIC
T1000260	Canadian French - 116	260	EBCDIC
T1000276	Canada (French) - 94	276	EBCDIC
T1000286	Austria/Germany F.R., Alt (3270)	286	EBCDIC
T1000287	Denmark/Norway, Alternate (3270)	287	EBCDIC
T1000288	Finland/Sweden, Alternate (3270)	288	EBCDIC
T1000289	Spain, Alternate (3270)	289	EBCDIC
T1000290	Japan (Katakana)	290	EBCDIC
T1000293	APL (USA)	293	EBCDIC
T1000310	Graphic Escape APL/TN	310	EBCDIC
T1000361	International Set 5	361	EBCDIC
T1000363	Symbols, Set 8	363	EBCDIC
T1000367	ASCII	367	ASCII
T1000382	Austria, Germany, Japan	382	EBCDIC
T1000383	Belgium	383	EBCDIC
T1000384	Brazil	384	EBCDIC
T1000385	Canada (French)	385	EBCDIC
T1000386	Denmark/Norway	386	EBCDIC
T1000387	Sweden/Finland	387	EBCDIC
T1000388	France, Japan	388	EBCDIC
T1000389	ITALY, Japan (Italian)	389	EBCDIC
T1000390	Japan (Latin)	390	EBCDIC
T1000391	Portugal	391	EBCDIC
T1000392	Spain/Philippines	392	EBCDIC
T1000393	Latin America (Spanish)	393	EBCDIC
T1000394	U.K., Austral., IRE., H.K., N.Z.	394	EBCDIC
T1000395	United States, Canada (English)	395	EBCDIC
T1000420	Arabic Bilingual	420	EBCDIC
T1000423	Greece - 183	423	EBCDIC
T1000424	Israel (Hebrew)	424	EBCDIC
T1000437	Personal Computer	437	ASCII
T1000803	Hebrew Character Set A	803	EBCDIC
T1000808	PC, Cyrillic, Russian with euro	808	ASCII
T1000813	Greece - ISO/ASCII 8-Bit	813	ASCII
T1000819	Latin1 ISO/ANSI 8-BIT	819	ASCII
T1000829	Math Symbols	829	EBCDIC
T1000836	Peoples Republic of China (PRC)	836	EBCDIC
T1000838	Thai - EBCDIC	838	EBCDIC
T1000848	PC, Cyrillic, Ukraine with Euro	848	ASCII
T1000849	PC, Cyrillic, Belo Russian Euro	849	ASCII
T1000850	PC Multilingual	850	ASCII
T1000851	Greek - Personal Computer	851	ASCII

T1000852	Latin2 Multilingual PC	852	ASCII
T1000853	Latin3 Personal Computer	853	ASCII
T1000855	Cyrillic - Personal Computer	855	ASCII
T1000856	Hebrew - Personal Computer	856	ASCII
T1000857	Latin5 PC	857	ASCII
T1000858	PC - Multilingual with euro	858	ASCII
T1000860	Portugal - Personal Computer	860	ASCII
T1000861	Iceland - Personal Computer	861	ASCII
T1000862	Hebrew - Personal Computer	862	ASCII
T1000863	Canadian French - PC	863	ASCII
T1000864	Arabic - Personal Computer	864	ASCII
T1000865	Nordic - Personal Computer	865	ASCII
T1000866	Cyrillic #2 - Personal Computer	866	ASCII
T1000867	Israel - Personal Computer	867	ASCII
T1000869	Greece - Personal Computer	869	ASCII
T1000870	Latin2 Multilingual	870	EBCDIC
T1000872	Cyrillic PC with Euro	872	ASCII
T1000874	Thai - Personal Computer	874	ASCII
T1000875	Greece	875	EBCDIC
T1000876	OCR-A ASCII	876	ASCII
T1000877	OCR-B ASCII	877	ASCII
T1000880	Cyrillic Multilingual	880	EBCDIC
T1000889	Thailand	889	EBCDIC
T1000892	OCR - A	892	EBCDIC
T1000893	OCR - B	893	EBCDIC
T1000897	Japan PC #1	897	ASCII
T1000899	Symbols, Set 7 ASCII	899	ASCII
T1000901	PC, Baltic - Multilingual w Euro	901	ASCII
T1000902	8-bit Estonia with euro	902	ASCII
T1000903	Peoples Republic of China - PC	903	ASCII
T1000904	Republic of China (ROC) - PC	904	ASCII
T1000905	Latin3 Multilingual	905	EBCDIC
T1000910	APL ASCII	910	ASCII
T1000912	Latin2 ISO/ANSI 8-BIT	912	ASCII
T1000913	Latin 3, ISO/ASCII	913	ASCII
T1000914	Latin4 ISO/ANSI 8-BIT	914	ASCII
T1000915	Cyrillic ISO/ASCII 8-Bit	915	ASCII
T1000916	Hebrew ISO/ASCII 8-Bit	916	ASCII
T1000920	Latin5 ISO/ANSI 8-BIT	920	ASCII
T1000921	PC, Baltic - Multilingual	921	ASCII
T1000922	Estonia PC	922	ASCII
T1000923	Latin 9	923	ASCII
T1000924	Latin 9 EBCDIC	924	EBCDIC
T1001002	DCF REL 2 Compatibility	1002	EBCDIC
T1001003	U.S. Text Subset	1003	EBCDIC
T1001004	IBM PC Desktop Publishing	1004	ASCII
T1001008	Arabic ISO/ASCII 8-Bit	1008	ASCII
T1001025	Cyrillic Multilingual	1025	EBCDIC
T1001026	Latin5	1026	EBCDIC
T1001027	Japanese (Latin) Extended	1027	EBCDIC
T1001028	Hebrew Publishing	1028	EBCDIC
T1001029	Arabic Extended ISO/ACSII 8-Bit	1029	ASCII
T1001032	MICR, E13-B Combined	1032	EBCDIC
T1001033	MICR, CMC-7 Combined	1033	EBCDIC
T1001038	Symbols, Adobe ASCII	1038	ASCII
T1001039	GML List Symbols	1039	EBCDIC
T1001041	Japanese Extended - PC	1041	ASCII

T1001042	Simplified Chinese Extended - PC	1042	ASCII
T1001043	Traditional Chinese Extended PC	1043	ASCII
T1001046	Arabic Extended ISO/ASCII 8-Bit	1046	ASCII
T1001068	Text With Numeric Spacing	1068	EBCDIC
T1001069	Latin4 EBCDIC	1069	EBCDIC
T1001087	Symbols, Adobe	1087	EBCDIC
T1001091	Symbol Set 7, Modified	1091	EBCDIC
T1001092	Symbol Set 7, Modified - PC	1092	ASCII
T1001093	IBM LOGO	1093	EBCDIC
T1001110	Latin2 Multilingual	1110	EBCDIC
T1001111	Latin2 ISO/ANSI 8-BIT	1111	ASCII
T1001112	Baltic - Multilingual, EBCDIC	1112	EBCDIC
T1001122	Estonia, EBCDIC	1122	EBCDIC
T1001123	Cyrillic, Ukraine EBCDIC	1123	EBCDIC
T1001124	Cyrillic, Ukraine ISO-8	1124	ASCII
T1001125	PC, Cyrillic Ukrainian	1125	ASCII
T1001129	Vietnamese ISO-8	1129	ASCII
T1001130	Vietnamese EBCDIC	1130	EBCDIC
T1001131	PC, Cyrillic, Belo Russian	1131	ASCII
T1001132	Lao EBCDIC	1132	EBCDIC
T1001133	Lao ISO-8	1133	ASCII
T1001139	Japan Alphanumeric Katakana	1139	ASCII
T1001140	USA, Canada ECECP	1140	EBCDIC
T1001141	Austria, Germany ECECP	1141	EBCDIC
T1001142	Denmark, Norway ECECP	1142	EBCDIC
T1001143	Finland, Sweden ECECP	1143	EBCDIC
T1001144	Italy ECECP	1144	EBCDIC
T1001145	Spain, Latin America ECECP	1145	EBCDIC
T1001146	UK ECECP	1146	EBCDIC
T1001147	France ECECP	1147	EBCDIC
T1001148	International ECECP	1148	EBCDIC
T1001149	Iceland ECECP	1149	EBCDIC
T1001153	Latin2 Multilingual with Euro	1153	EBCDIC
T1001254	Windows Turkish	1254	ASCII
T1001257	Windows Baltic Rim	1257	ASCII
T1001258	Windows Vietnamese	1258	ASCII
T1001275	Apple Latin 1	1275	ASCII
T1001276	Adobe PS Standard	1276	ASCII
T1001277	Adobe PS ISO Latin 1	1277	ASCII
T1001280	Apple Greece	1280	ASCII
T1001281	Apple Turkey	1281	ASCII
T1001282	Apple Central Europe	1282	ASCII
T1001283	Apple Cyrillic	1283	ASCII
T1001300	GENERIC BAR CODE/OCR-B	1300	EBCDIC
T1005346	Latin 2 – Windows	1250	ASCII
T1005347	Cyrillic – Windows	1251	ASCII
T1005348	Latin 1 – Windows	1252	ASCII
T1005349	Greece – Windows	1253	ASCII
T1005350	Turkey – Windows	1254	ASCII
T1005351	Israel – Windows	1255	ASCII
T1005352	Arabic – Windows	1256	ASCII
T1005353	Latin 4 – Windows	1257	ASCII
T1005354	Vietnamese – Windows	1258	ASCII
T1V10037	USA/Canada - CECP	37	EBCDIC
T1V10273	Germany F.R./Austria- CECP	273	EBCDIC
T1V10274	Belgium - CECP	274	EBCDIC

T1V10275	Brazil - CECP	275	EBCDIC
T1V10277	Denmark/Norway - CECP	277	EBCDIC
T1V10278	Finlandd/Sweden- CECP	278	EBCDIC
T1V10280	ITALY- CECP	280	EBCDIC
T1V10281	Japan (Latin) - CECP	281	EBCDIC
T1V10282	Portugal - CECP	282	EBCDIC
T1V10284	Spain/Latin America - CECP	284	EBCDIC
T1V10285	UNITED KINGDOM - CECP	285	EBCDIC
T1V10290	Japan (Katakana)	290	EBCDIC
T1V10297	France - CECP	297	EBCDIC
T1V10500	International #5	500	EBCDIC
T1V10871	Iceland - CECP	871	EBCDIC

Appendix C. SBCS/DBCS/UTF-16BE AFP Codepages Summary

Name	Description	Encoding
T1H00037	Traditional Chinese EBCDIC	EBCDIC
T1H00290	Japanese Katakana Extended	EBCDIC
T1H00833	Korean EBCDIC	EBCDIC
T1H00836	Simplified Chinese EBCDIC	EBCDIC
T1H01002	Japanese DCF Rel 2 Compatibility	EBCDIC
T1H01027	Japanese Latin Extended	EBCDIC
T1H01030	Japanese Katakana Extended with Box Characters	EBCDIC
T1H01031	Japanese Latin Extended with Box Characters	EBCDIC
T1H01041	Japanese PC Extended	ASCII
T1H01043	Traditional Chinese PC	ASCII
T1H01114	Traditional Chinese PC BIG5 with Euro	ASCII
T1H01115	Simplified Chinese PC (GB)	ASCII
T1H01126	Korean PC	ASCII
T1H01150	Korean EBCDIC with Box Characters	EBCDIC
T1H01151	Simplified Chinese EBCDIC with Box Characters	EBCDIC
T1H01152	Traditional Chinese EBCDIC with Box Characters	EBCDIC
T1H01159	Traditional Chinese EBCDIC with Euro	EBCDIC
T1H01252	Simplified Chinese PC (GB18030)	ASCII
T1HK0037	Japanese English	EBCDIC
T1HK0290	Japanese Katakana	EBCDIC
T10300, T1I300, T1J300, T1K300	Japanese DBCS-HOST	DBCS-HOST
T10834	Korean DBCS-HOST (Small Set)	DBCS-HOST
T10835	Traditional Chinese DBCS-HOST	DBCS-HOST
T10837	Simplified Chinese DBCS-HOST (GB2312)	DBCS-HOST
T10941	Japanese SJIS-PC	DBCS-PC
T10947	Traditional Chinese BIG5-PC	DBCS-PC
T10951	Korean KSC-PC (Small Set)	DBCS-PC
T11200	Unicode UTF-16 Big-endian	UTF-16BE
T11362	Korean KSC-PC (Big Set)	DBCS-PC
T11374	Traditional Chinese HKSCS-PC	DBCS-PC
T11376	Traditional Chinese HKSCS-HOST	DBCS-HOST
T11380	Simplified Chinese GB2312-PC (Small Set)	DBCS-PC
T11385	Simplified Chinese GBK-PC (Big Set)	DBCS-PC
T1K834	Korean DBCS-HOST (Big Set)	DBCS-HOST
T1K837	Simplified Chinese DBCS-HOST (GB18030)	DBCS-HOST

Appendix D. Transferring AFP Resources

Make sure FTP is in **binary** mode if you need to transfer AFP resources across multi-platforms.

For uploading of AFP resources to z/OS, z/VSE and z/VM, you may need to use IBM AFP Reblocking Utility, more information and downloads are available at IBM webpage for AFP software.

For uploading AFP resources to OS/400, refer to Appendix D of IBM *Advanced Print Utility User's Guide* (S544-5351) or *AS/400 Guide to Advanced Function Presentation and Print Services Facility* (S544-5319) for more information.