Bar Code Label Design and Printing from mySAP™ Business Suit via

SAP® Smart Forms™

Zebra® Printers and SAP Smart Forms

June 30, 2005

Rev 3

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Upgrading Smart Forms for Bar Coding

Support Packs

SAP's Smart Forms design tool now supports native bar code design and industrial bar code printing. These features can be enjoyed by users of mySAP™ Business Suite 4.6c onwards. Support Packs are available direct from SAP AG for enabling this technology. For more information on this upgrade, please refer to **SAPnet notes 750002 and 750772**.

Smart Forms Bar Code Rendering Library (BRL)

The Bar Code Rendering Library allows SAP to render (draw) bar codes for print preview and output purposes. SAP AG has licensed this BRL from Zebra, which allows Smart Forms to generate bar code output, as bitmap graphics, on PDF documents and PCL®-, PostScript®-, and Prescribe-compatible printers. SAPWin is also supported via SAPlpd although not recommended for mission-critical printing.

Note: Bar codes are downloaded as bitmap graphics to all of the above "page" printers. The only true bar code "label" printer language supported in Smart Forms is the Zebra Programming Language (ZPL II). Bar codes are NOT downloaded to ZPL II printers as graphics, they are sent as ZPL II commands—providing greater performance and bar code validation!

Smart Forms Industrial Bar Code Printer Support (ZPL II)

SAP AG has, for the first time, added "true" support for native bar code printers in mySAP Business Suite. This printer support, along with the BRL, now allows SAP users to easily implement industrial mission-critical bar code label printing without the additional cost of middleware. Bar coding support is added in the form of the Zebra Programming language (ZPL II). Refer to www.zebra.com for more information on bar code label printers.

SAPscript Users

SAPscript users may also continue to use Zebra's **BAR-ONE**® *for mySAP™ Business Suite*. Refer to www.zebra.com/sap for more information.

SAP GUI Print Preview

SAP NetWeaver™ 04 is required for SAP GUI WYSIWYG Print Preview. All other versions will simply represent bar codes with a series of thin vertical lines.

Smart Forms and Zebra Device Types

One of the following device types **must** be uploaded to mySAP Business Suite before you can drive Zebra printers from Smart Forms. These device types will also ship with SAP NetWeaver 05. Smart Forms only supports the Zebra Programming Language (ZPL II).

IBM® CodePage 850 - CG Triumvirate Bold Condensed Font (Scaleable)
Zlzeb6.pri   All 600 dpi ZPL-II printers
Zlzeb3.pri   All 300 dpi ZPL-II printers
Zlzeb2.pri   All 203 dpi ZPL-II printers

The above device types are primarily designed to work with Zebra's preloaded Scaleable Font - CG Triumvirate Bold Condensed. This font contains most characters needed for the **Americas and Western Europe.** Additional TrueType™ fonts are supported with this device type but they will also be driven via IBM Codepage 850.

Unicode™ UTF-8 – Swiss Scaleable Fonts
Zlzebs6.pri   All 600 dpi ZPL-II printers
Zlzebs3.pri   All 300 dpi ZPL-II printers
Zlzebs2.pri   All 203 dpi ZPL-II printers

The above device types are primarily designed to work with Zebra's preloaded Swiss Scaleable Font (EMEA Only). Containing 936 characters, this font includes support for **Baltic, Central European, Cyrillic, Greek, Turkish, Arabic, Hebrew** and **Western.**

Unicode UTF-8 - Andale Monospaced Scaleable Fonts
Zlzebu6.pri   All 600 dpi ZPL-II printers
Zlzebu3.pri   All 300 dpi ZPL-II printers
Zlzebu2.pri   All 203 dpi ZPL-II printers

The above device types are primarily designed to work with Zebra's optional Andale Scaleable Font. This font contains most of characters needed for the **Asia Pacific**, Americas, Western/Central/Eastern Europe and the Middle-Eastern regions. This font is delivered on a 32mb Linear PMCMCIA card. Four flavors of this font are available; each contain the same number of characters but are tailored to the Japanese, Koran, Simplified Chinese or Traditional Chinese markets.

All of the above files (device types) are available to download directly from SAP AG or from the Zebra Web site www.zebra.com/sap.

Zebra Part Numbers for the four flavors of the Optional Andale Font:
   48303 Andale Japanese on a 32 MB PCMCIA Linear Card
      48304 Andale Korean on a 32 MB PCMCIA Linear Card
      48305 Andale Simplified Chinese on a 32 MB PCMCIA Linear Card
      48306 Andale Traditional Chinese on a 32 MB PCMCIA Linear Card

Installation of mySAP Business Suite Zebra Device Types

The next series of steps outline the import procedure of the device type definition file, i.e., *ZLBZEB2.PRI* to the mySAP Business Suite printing system. First, execute the Program Execution transaction SA38 by keying in */nSA38* at the command line:

Press the *<Enter>* key or click once on the box adjacent to the command line text box.
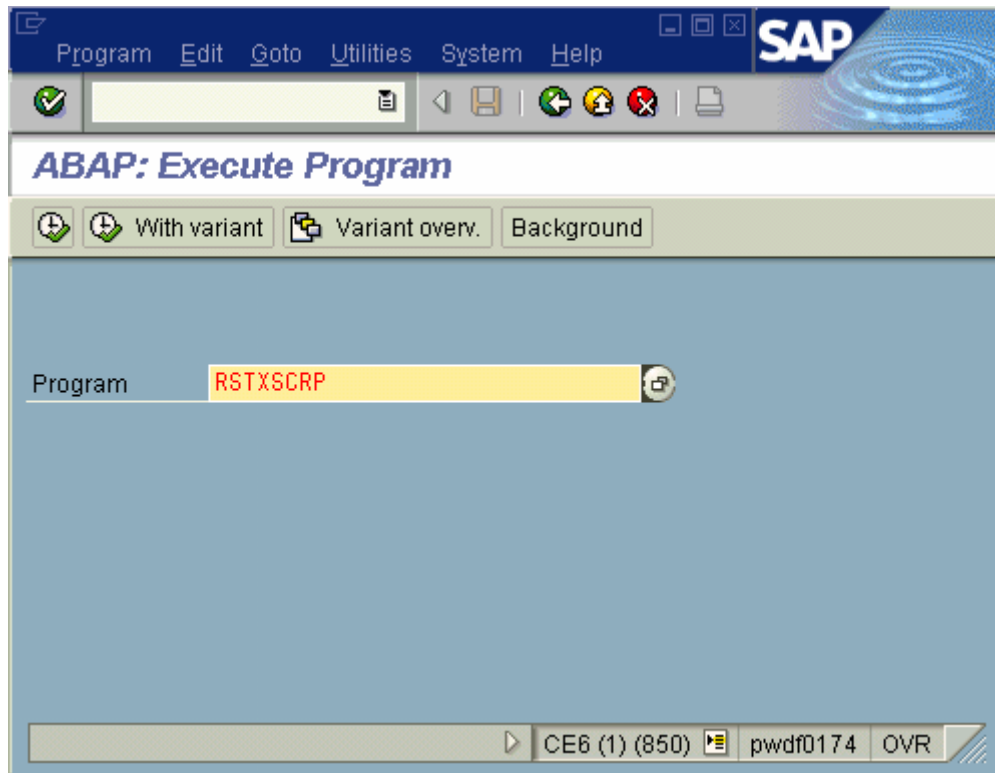
At the window *"ABAP/4: Execute Program"*, like the screen above, type in *RSTXSCRP* in the **Program** text box then click the execute button or press <F8> to execute the device type definition import program.

At the next window titled "SAPscript Export to Dataset / SAPscript Import from Dataset", similar to the screen below, do the following:

1) Select the **Device type** option
2) Enter the device type name that you plan to use, e.g. "ZLZEB2" for **Object name**
3) Type in "IMPORT" for **Mode (EXPORT/IMPORT)**
4) Select **From/on frontend** (or **File system: GUI** on older releases)

When all the required fields above are entered correctly, click on execute button or press <F8> to start the import process. <u>Ignore all other options</u>.
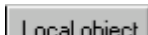
Allocate a Development Class

The user must either allocate a development class to the device type or make it a local object. The development class is only required if the customer wishes to transport this device type to other mySAP Business Suite systems. Local object device types can't be transported to other mySAP Business Suite systems. This is done from the screen below:

You may enter a **Development class** and press the save ⊟ button. Alternatively you can skip the **Development class** and press the local object [Local object] button.

Note: You will not see the above step if the device has already been uploaded.

Select the local driver.
The pop-up dialog text box labeled "*Import from a Local File*" prompts for the device type definition file and its location. Use the browse ![button] button to locate the file, e.g., ZLB_ZEB.PRI and then click the OK button to start the upload process.
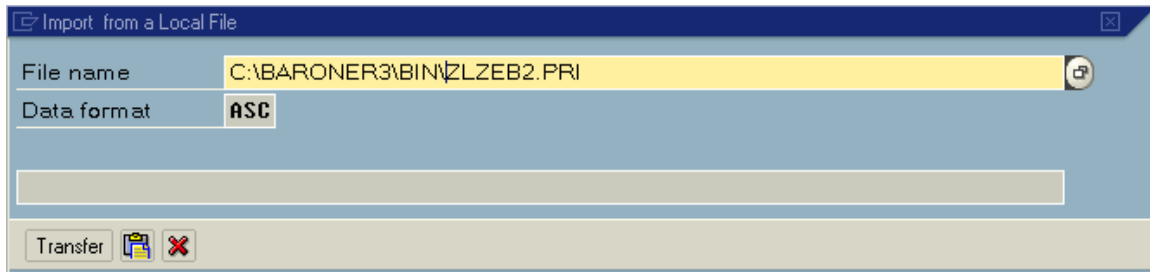
When the process is complete, update messages will be displayed in the window below.
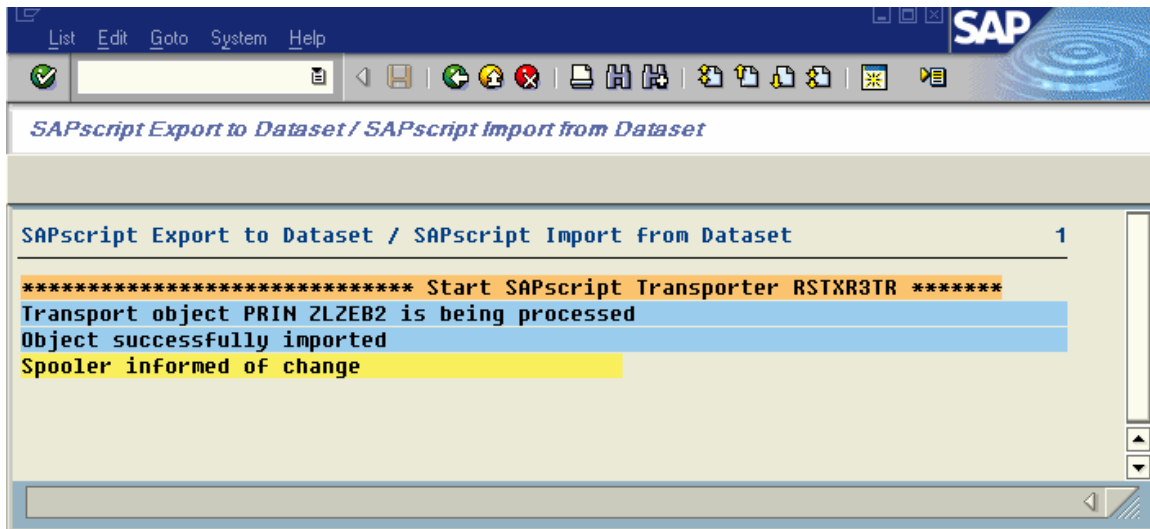
The above drivers are only for use with Smart Forms. The above drivers do not support SAPscript or SAPscript generated and uploaded by Zebra's BAR-ONE® *for mySAP™ Business Suite*.

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Using the Smart Forms Zebra Device Types with Output devices / Print Queues

Before we can use a printer (device type) in SAP mySAP Business Suite we must create and configure a print queue (output device).

Initiate the Spool Administration program, SPAD, by entering */nSPAD in* the transaction command line. Press the *<Ente*r*>* key or click on the check box adjacent to the command line text box entry.

At the " *Spool Administration Initial Screen* "windows, press / select the ***Output Device*** option.
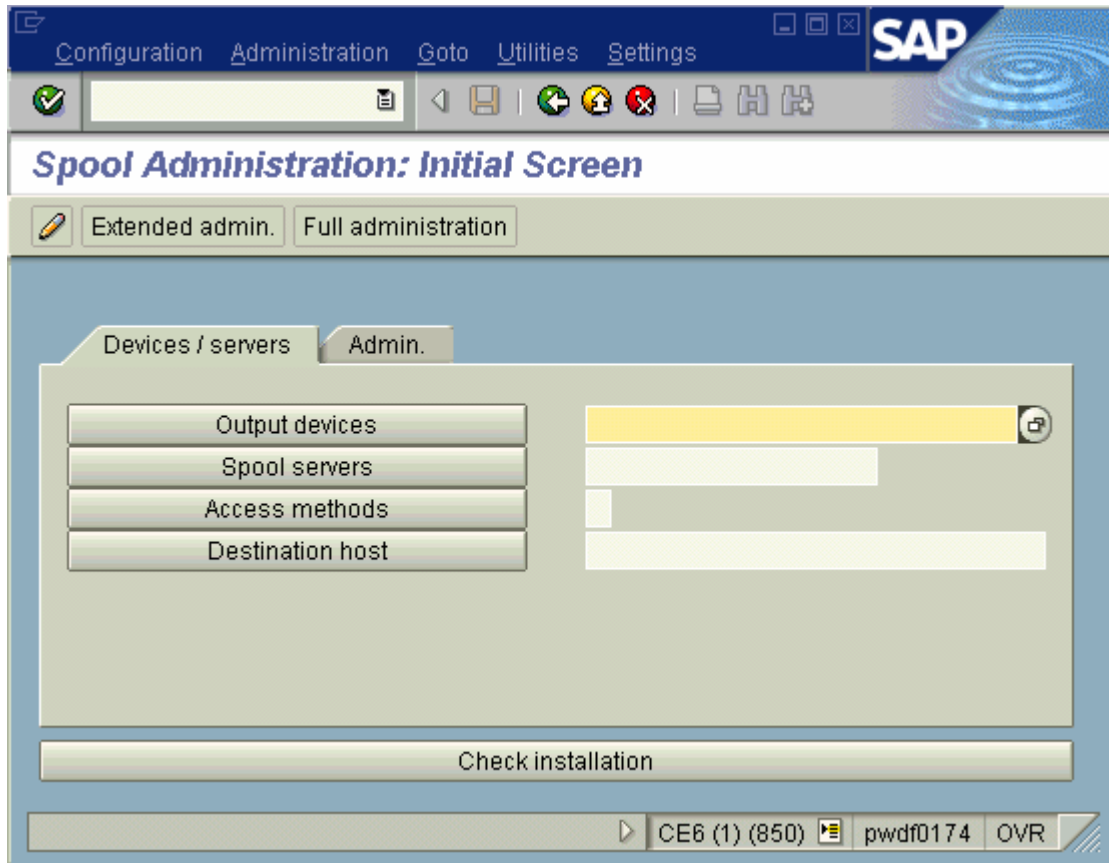
At the " *Spool Administration: List of Output Devices* "screen, shown below, press the Change   icon.
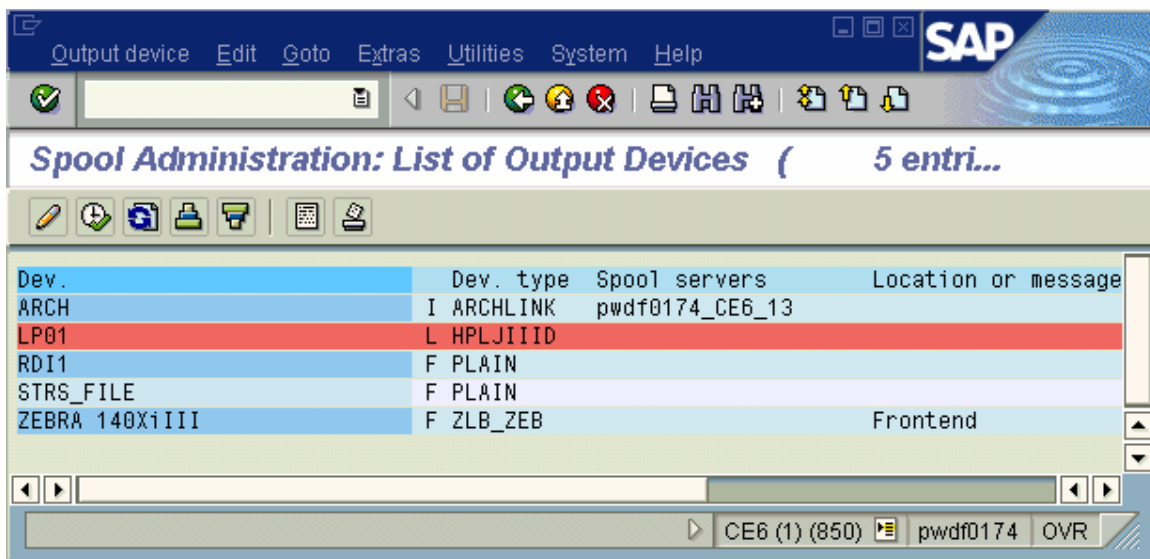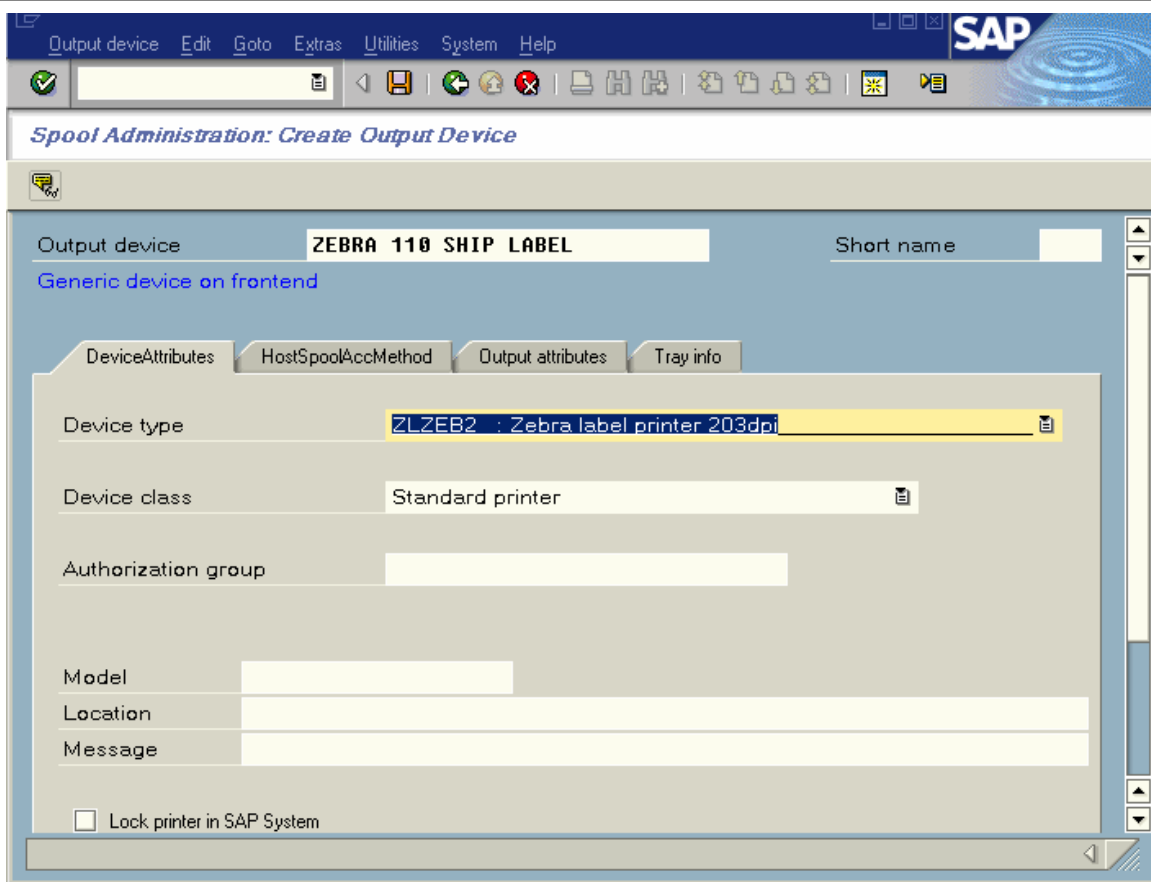
You should now see the screen below, exactly the same as the previous screen but with a new line of icons. Press the Create ☐ icon.
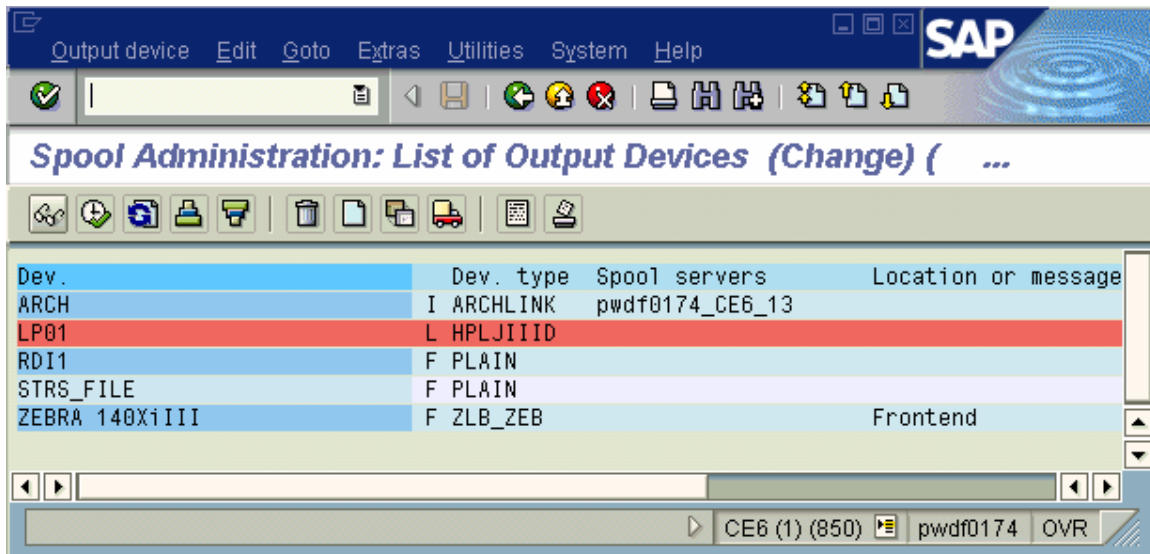
At the "*Spool Administration: Create Output Device",* similar to the screen below, do the following:

1) Allocate the **Output Device** name. You may also allocate a shortname
2) Select the **Device Type**, i.e. Zlzeb3
3) Enter Location and Message if required

Press the [HostSpoolAccMethod] TAB.

For testing and demonstration purposes only, we recommend that you use "Front End Printing." We do not recommend this access method for volume or mission-critical industrial printing. This means that you should complete the configuration of the output device by doing the following:

1) Ensure Host spool access method is set as option **F**
2) Type in __**DEFAULT** for Host printer
3) Press the save [icon] icon

Below is a detailed explanation of mySAP Business Suite printing terminology:

Output Device
This is the name of the print queue. You must also type in a short name; this is four characters.

Device Type
This is the name of the printer (device type) and could be **ZLZEB2**. This selection will be based on printer resolution and Codepage/language.

Spool Server
This is the name of the server that will do the spooling. Use the browse button to pick a server that has a spool process associated with it (if it doesn't have a spool server associated with it then it will be highlighted in red).

Access Method
This field must be filled before host printer, although it is listed after it! This is the most important, and complicated, field for setup of print queues (output devices). Summaries of the options are below:

F   **PC Front End Printing** (requires SAPlpd running)
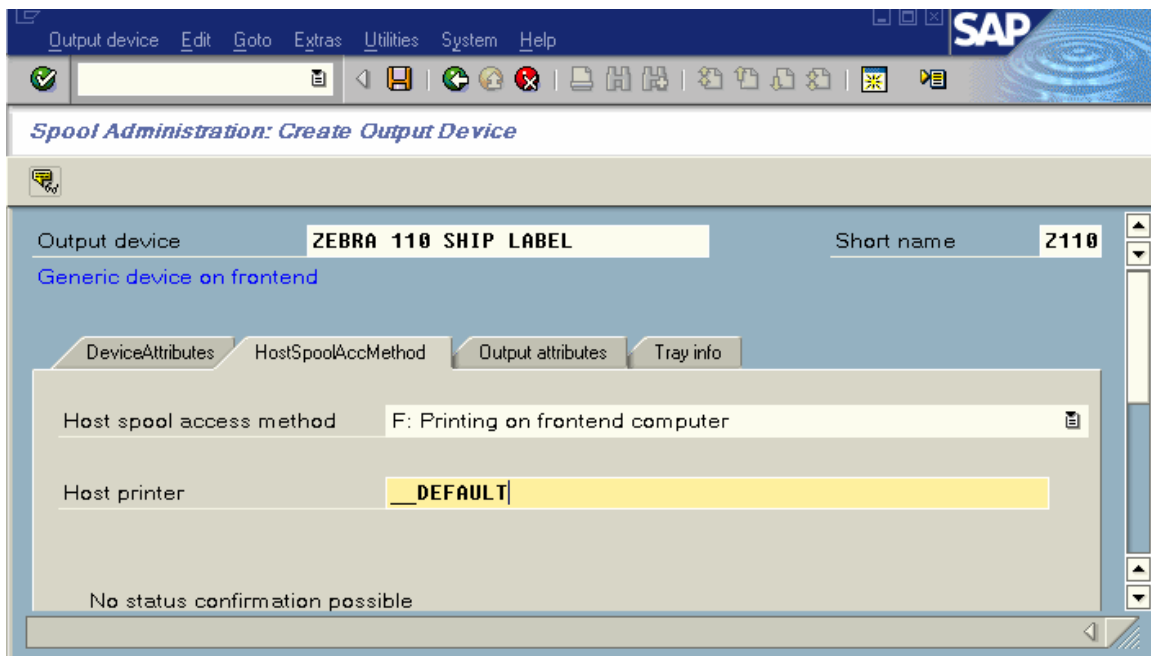   Required if no HOSTNAME available, such as remote WAN printing to a standalone PC. We recommend that this only be used for testing purposes.

L   **Local Unix lpd spooler** (Print Queue)

C   **Local NT or AS/400 print manager**

U   **Print Server** (dedicated server such as UNIX or even a Zebra ZebraNet® 10/100)

              You can print direct to a print server such as a ZebraNet 10/100 but we do not advise this if you will be printing from multiple clients simultaneously. When printing from multiple clients simultaneously you must have a print queue setup. See the example below:

```
              Access method           U
              Host Printer            PORTLF1
              Destination Host        Your Printers IP Address
```

We have also seen graphics printing incorrectly when printing direct to the print server. This seems to be down to flow control. Please use a print queue.

U or **S**   **PC** with Windows® 95/98/NT4/2000 (requires SAPlpd running)

Destination Host (Like the name of the target PC / print server)
This is not required for **F**-Front End Printing as the destination host is the client PC that the print request was made from (requires SAPlpd running).

For **U** or **S**, This must be the Host Name of the PC that will have SAPlpd running on it or the Host Name of a dedicated Print Server with print queues setup. The easiest way to determine the host name of a PC is to run SAPlpd and you will find it near the top of the start up window. SAPlpd can be started by selecting Start-> Programs-> SAP Frontend-> SAPlpd.

This parameter is not required for **L** or **C** as the local server is the destination host.

Host Printer (Like the name of the target print queue on a PC or print server)
When using **F**, **U** or **S** with SAPlpd, this could be "__DEFAULT" (underscore underscore DEFAULT) for the Default Windows printer or it could be the exact name of the printer (not the share name), i.e., "Generic / Text Only". This is the name listed in Windows->Start->Settings->Printers.

When using **L** or **C** this is the "long name" of the printer. This is not the share name.

LPQ Format
This can be ignored.

Location
This is just an optional simple description/comment of where the printer is located.

Message
This is just an optional simple comment/message that you may wish to associate with the specific print queue.

SAP LPD
If you have chosen to use access methods F then you will have to run SAPlpd on the local PC.

SAPlpd is a proprietary print server that runs on a PC taking input from the mySAP Business Suite server and sending it to printers on the local PC. The printers on the local PC MUST use a generic text driver.

SAPlpd can be started by selecting Start-> Programs-> SAP Frontend-> SAPlpd. You should see a screen similar to the following:

```
┌─────────────────────────────────────────────────────────────┐
│ ▐LPD▌ Saplpd.log - SAPLPD                          _ □ ✕     │
├─────────────────────────────────────────────────────────────┤
│ File  Protocol  Options  Debug  Language  Help              │
├─────────────────────────────────────────────────────────────┤
│ [14:20:56] Network Communication via SAP-NiLib          ▲   │
│ [14:20:56] Hostname: kens-home                          ▒   │
│ [14:20:56] IP Address: 195.112.185.240                  ▒   │
│ [14:20:56] TRACE:  SncInit(): Reading configuration from 'SAPLPD.INI'. ▒ │
│ [14:20:56] TRACE:  SncInit(): Reading configuration from 'WIN.INI'.    ▒ │
│ [14:20:56]                                               ▒   │
│ [14:20:56] SAPLPD Version 4.26 for Windows 98 (OPT) is listening ▒ │
│ [14:20:56] OS-Info: version = 4.10, build = 40A/1998, text = ▒ │
│ [14:20:56] Copyright © 1992-1999 SAP AG               ▼   │
│ ◄                                                   ► ⁄⁄  │
└─────────────────────────────────────────────────────────────┘
```

SAPlpd needs to be run on any PC that requires a Windows printer driver to be used with mySAP Business Suite. This is the case if you are using Generic Text drivers or full-blown Windows drivers.

Note: We do not recommend using SAPlpd for volume or mission-critical industrial printing.

Test Printing from Smart Forms to an Output Device / Print Queue

Please ensure that the form you test print with has been designed for your device. Do not try and print a form that has been designed with "HELVE" on an ANDALE Unicode Device type (zlzebuX).

Please follow the following procedure to do a test print directly from Smart Forms:

Open the form you wish to print (/nSmart Forms), Type in the Form Name and press "Change." You will now see a screen similar to that below:
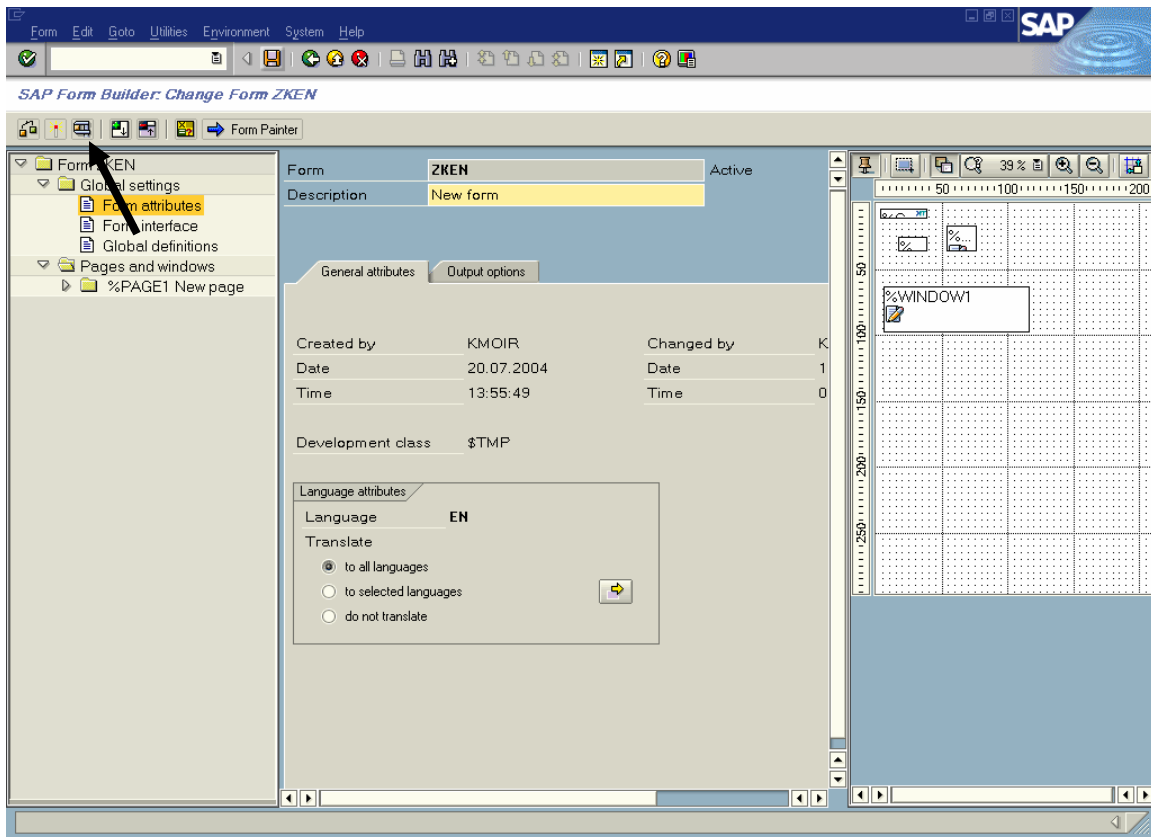
Press the Test Icon (or press F8). You will now see a screen similar to that below:
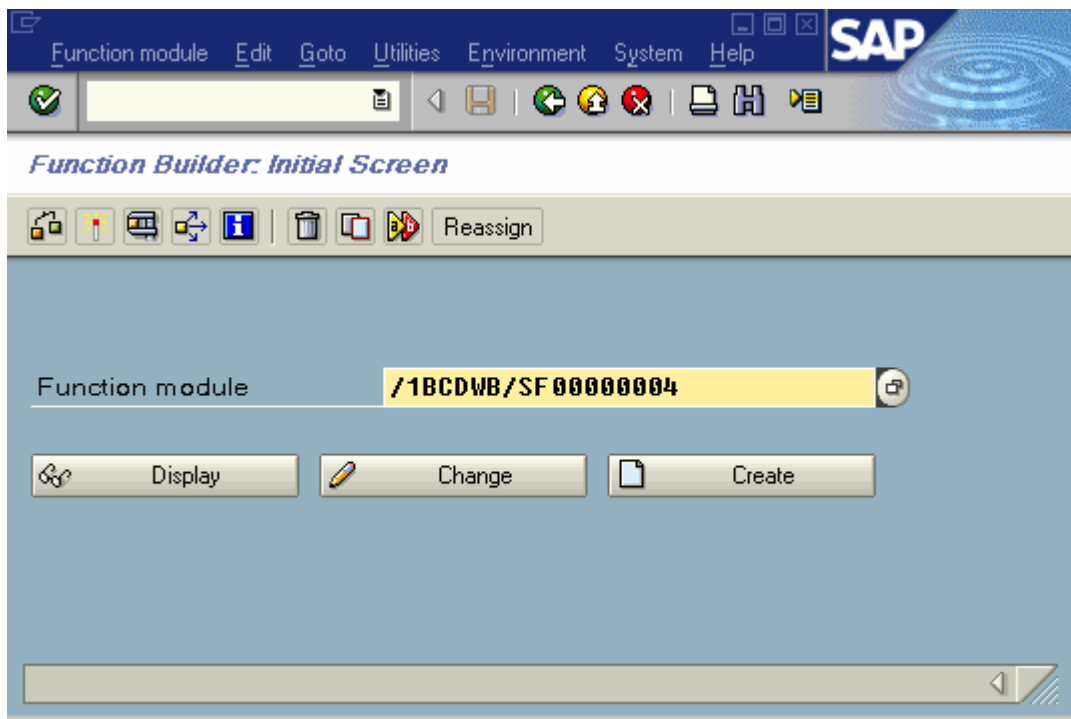
Press the Test Icon again (or press F8). You will now see a screen similar to that below:

Press the execute Icon (or press F8). You will now see a screen similar to that below:

You must enter/edit the following fields:

Output device   Enter the name of the print queue.
Print immediately Ensure this is checked/ticked.
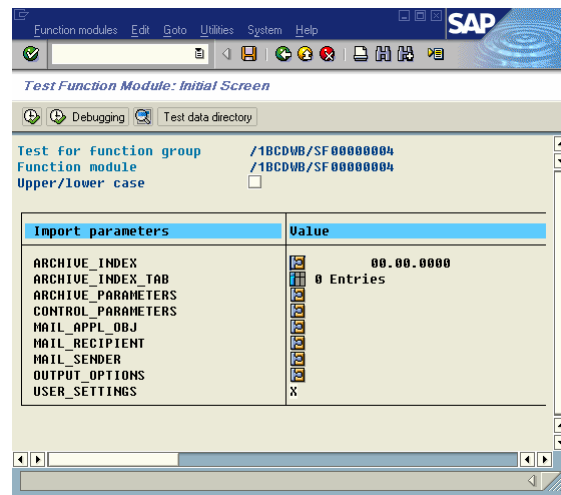**Delete after print** Ensure this is checked/ticked.
New Spool request Ensure this is checked/ticked.

Press the Print button. If the print was successful then the Zebra printer should print out your form.

The easiest means of debugging what is being sent to the printer is as follows:

1) Plug in a laser printer to the port that the Zebra should be attached to.
2) If using a Windows driver on the local PC then change the port to File (create a file on Disk).
3) Use SAP debugging tools (the instructions below depend on the version of mySAP Business Suite you are using).
   a) Edit Output device definition temporarily to include log information (use next screen).
   b) Use the spooler (/nSP01). Select output device and press enter to view spooled jobs.
   c) Select job and select Go To->Output Requests from the main menu.
   d) Select Edit->Display log from the main menu.
   e) Hit the *More Info* button 3 times (You can also use Hex dump and list to screen or printer)

Designing a Simple Smart Form

Disable PC Editor

Before starting to design your form, we advise that you use the old editor for full screen editor operations within Smart Forms. This can be achieved as follows:

Start the "Standard Text: Request" transaction by entering */nSO10 in* the command line text box located just below the menu bar of the current active window of mySAP Business Suite system. Press the *<Enter>* key or click on the check box adjacent to the command line text box entry.

You then select *Setting | PC Editor* from the main menu.
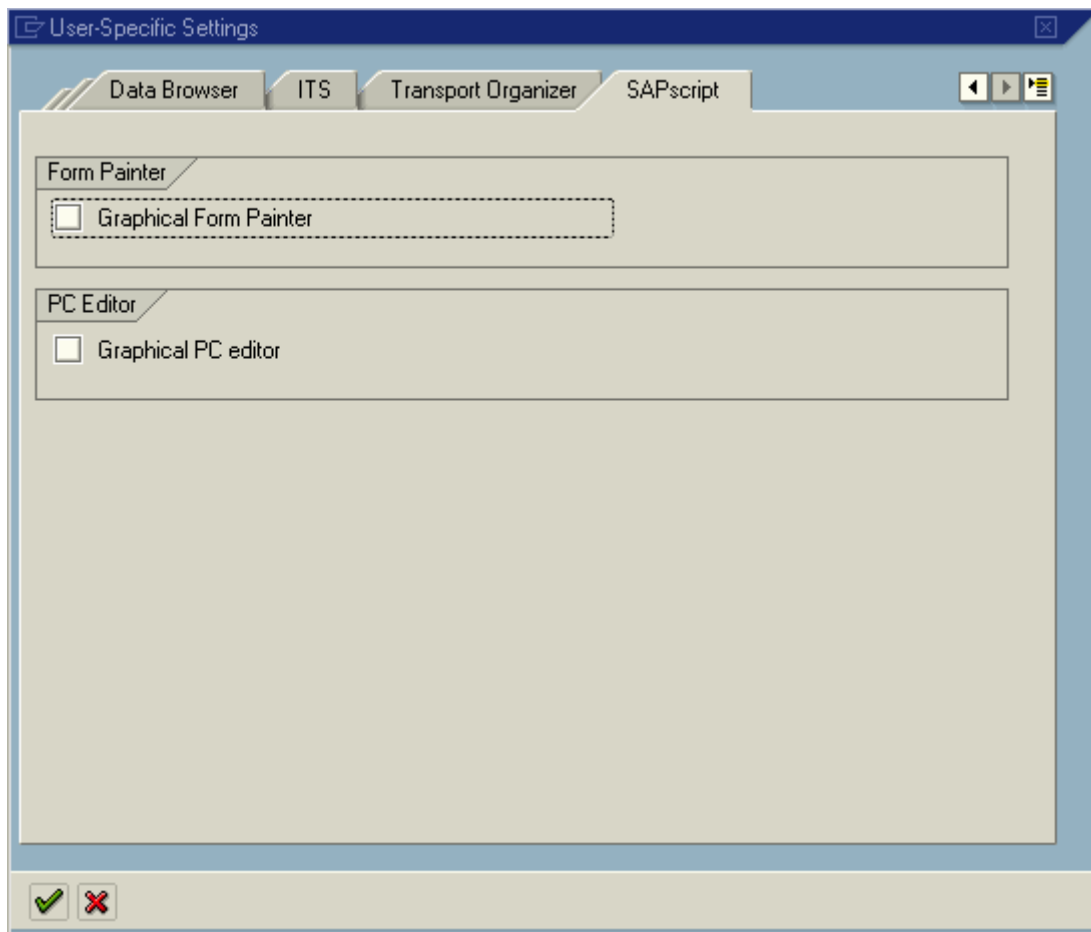
Ensure that both of the above checkboxes are unchecked.

Smart Styles—Planning for Smart Forms

Before starting to lay out your form, you must determine what text and bar code objects you will require. You actually need to build a collection of all of the derivatives of text and bar codes you will use within the Smart Form. All of these objects need to be created and collected within a Smart Style.

Bar codes are actually a little more complex as you need to create the specific bar code derivatives that you will need; this is done with transaction /nSE73. See the section "Tips and Tricks for Smart Forms and Zebra Printers—Bar Codes"(page 51) for a detailed explanation.

Text is relatively simple and does not normally require any additional management other than within Smart Styles.

Before proceeding, we strongly recommend that you read the section "Tips and Tricks for Smart Forms and Zebra Printers" starting on page 41.

The following procedure is going to create a Smart Style that uses the Font "HELVE" 12 point and 24 point. We will also use a Code 39 bar code with a height of 20 mm and a narrow bar width 0.25 mm (2 dots on a 203-dpi/8-dpm printer).
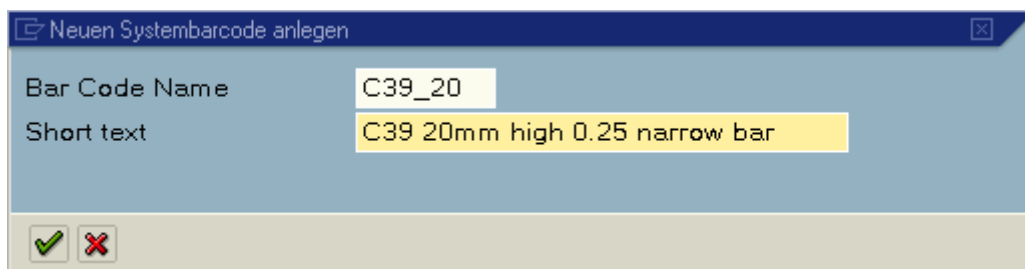
Create the Bar Codes You Need

Please follow the following procedure:
- Execute Transaction /nSE73
- Check / Select "System bar codes" and press "Change"
- Press the "New" Icon, you will now see:
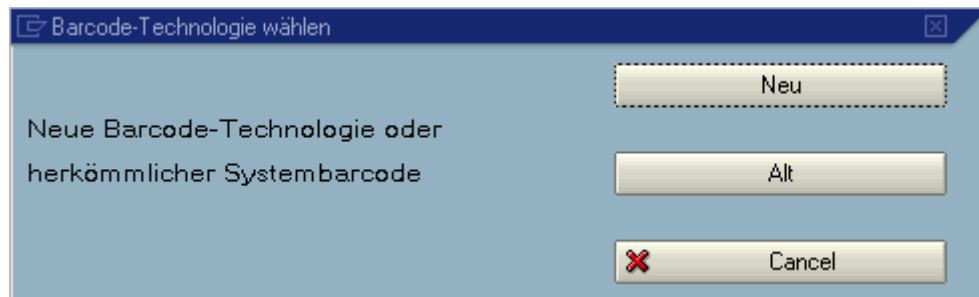
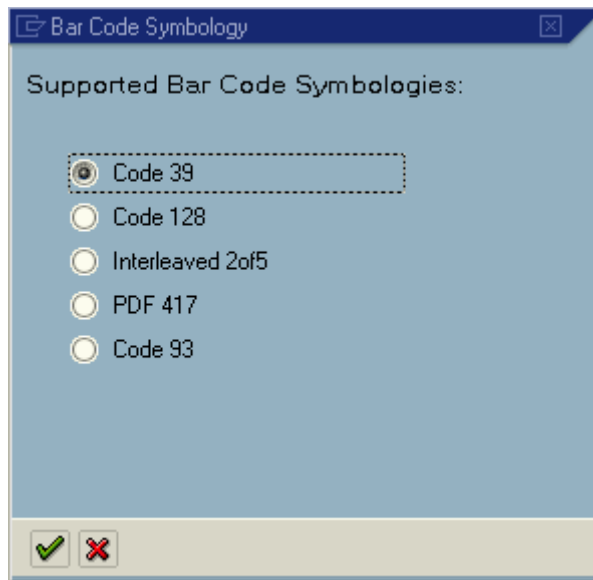- Press the "New" button (may be "Neu"). This is "New Technology".

- Enter in the bar code name "C39_20" and the Short text of "C39 20mm high 0.25 narrow bar" and press OK

- Select C39 as the Symbology and press OK
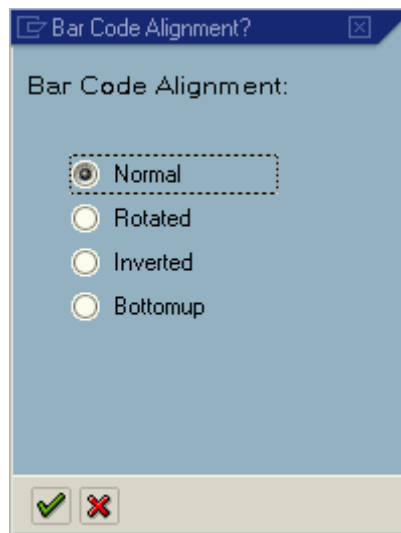
- Select Normal as the Rotation and press OK
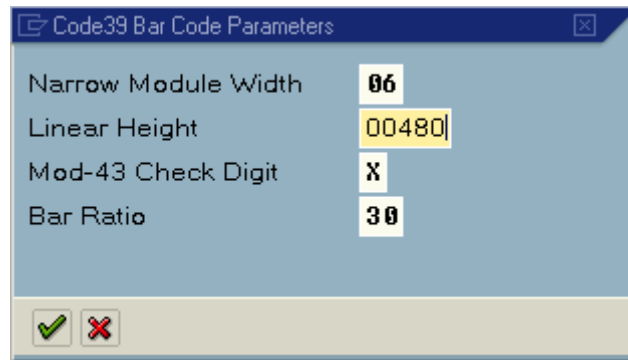
- Enter 6 (entered at 600 dpi/24 dpm but we will print at 200 dpi(¼ of 24=6))
- Enter 480 (entered at 600 dpi/24 dpm but we will print at 200 - 24*20=480)
- Leave the check digit enabled
- Leave the ration at 3:1
- Press OK
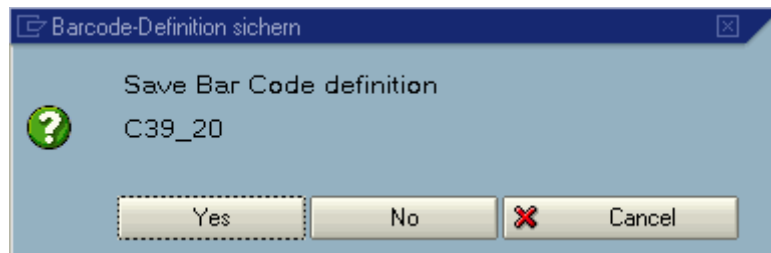
- Press "Yes" to Save
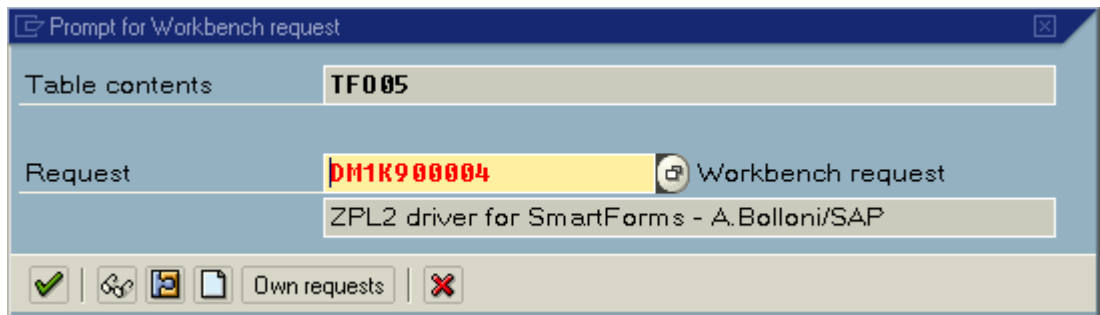
- If requested for a "Workbench request" then Press OK

Information ⊠

ⓘ   Table entry was included in task DM1K900006

✓ ⓦ
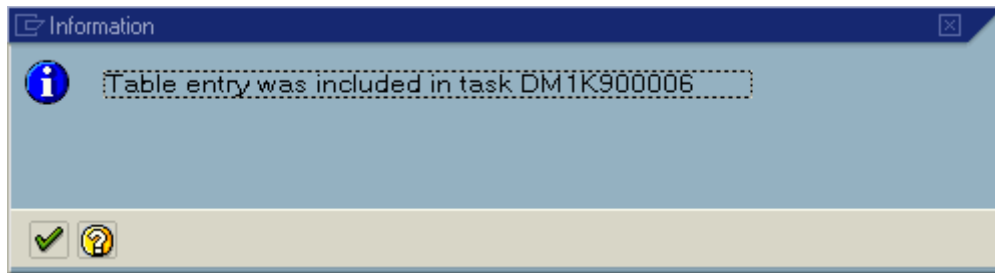
- Press OK

You have now successfully created the "New Technology" based bar code.
Repeat this for all bar codes that you will need. (No need to do any more for this
exercise.)

Creating Smart Styles to Select Text and Barcodes

Please follow the following procedure:

- Execute Transaction /nSmartStyles
- Enter a the Style Name "ZZEBRA_SHIPPING" and press the "Create" button

We are now going to add a bar code to our Smart Style:

- Select "Character Formats" from the tree, and press the right mouse button and then select "Create Node"
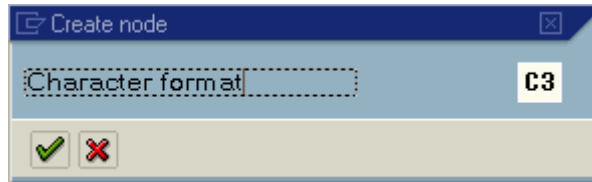
- Enter C3 as the Character Format and press OK
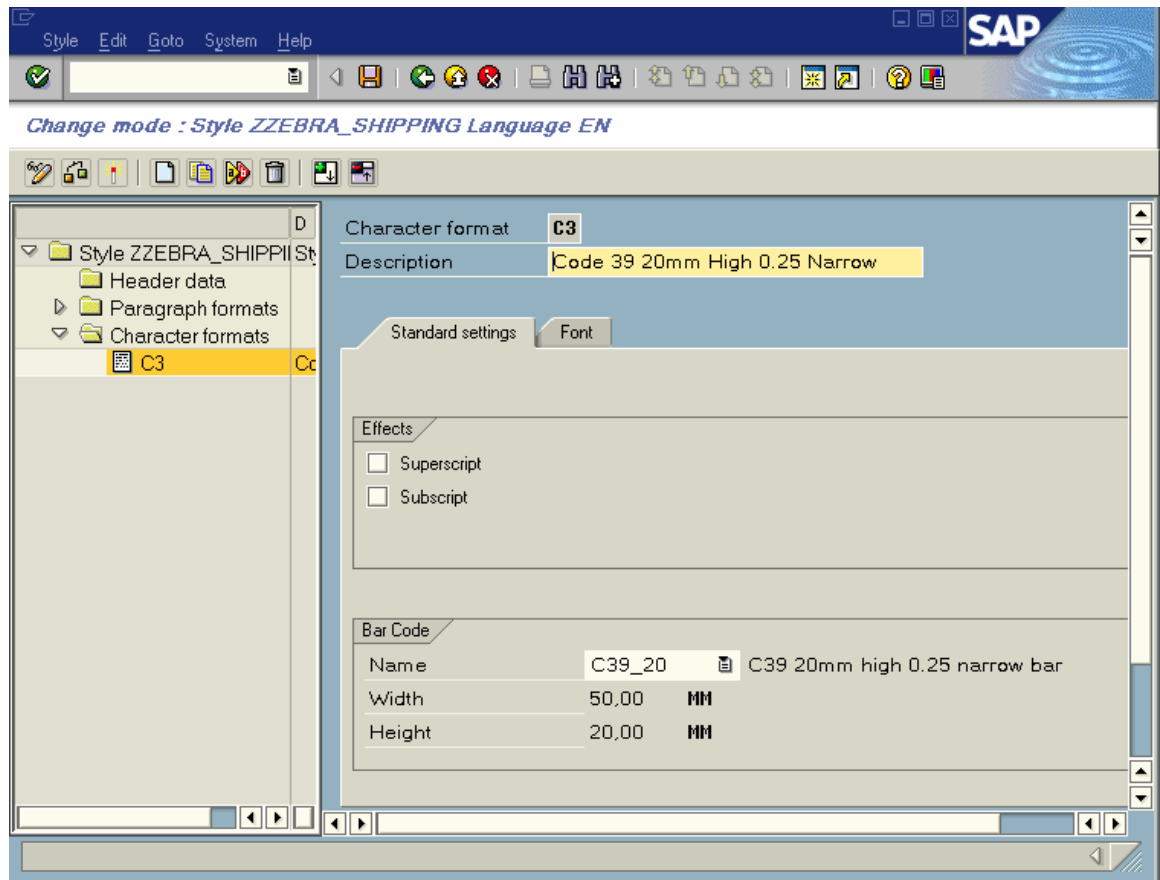
- Enter the Description "Code 39 20mm High 0.25 Narrow"
- Select "C39_20" as the "Bar Code", this is what we created in /nSE73

Repeat the above process for all bar codes that you wish to add to the Smart Style. (No need to do any more for this exercise.)

We now need to add our Text Styles to the Smart Style:

- Select "Character Formats", from the tree, and press the right mouse button and then select "Create Node".
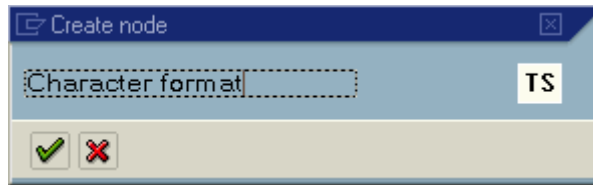
- Enter "TS" (Text Small) as the Character format and press OK
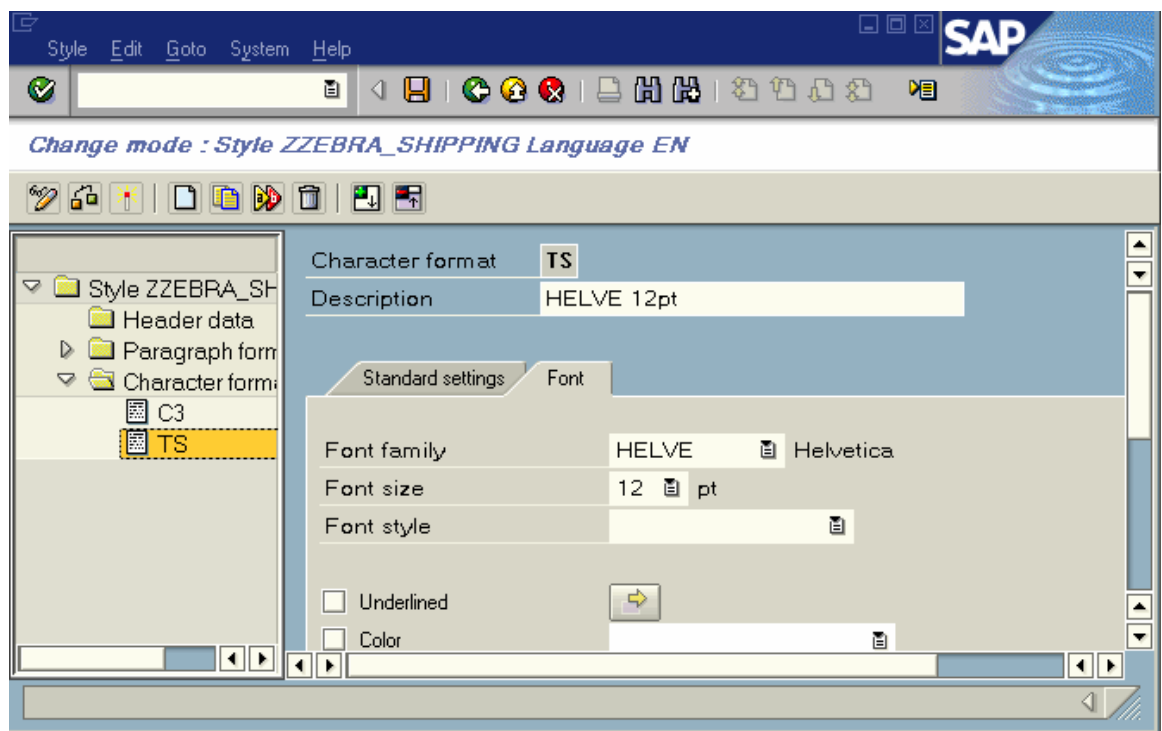
- Enter "HELVE 12 pt" as the Description
- Press the "Font" TAB
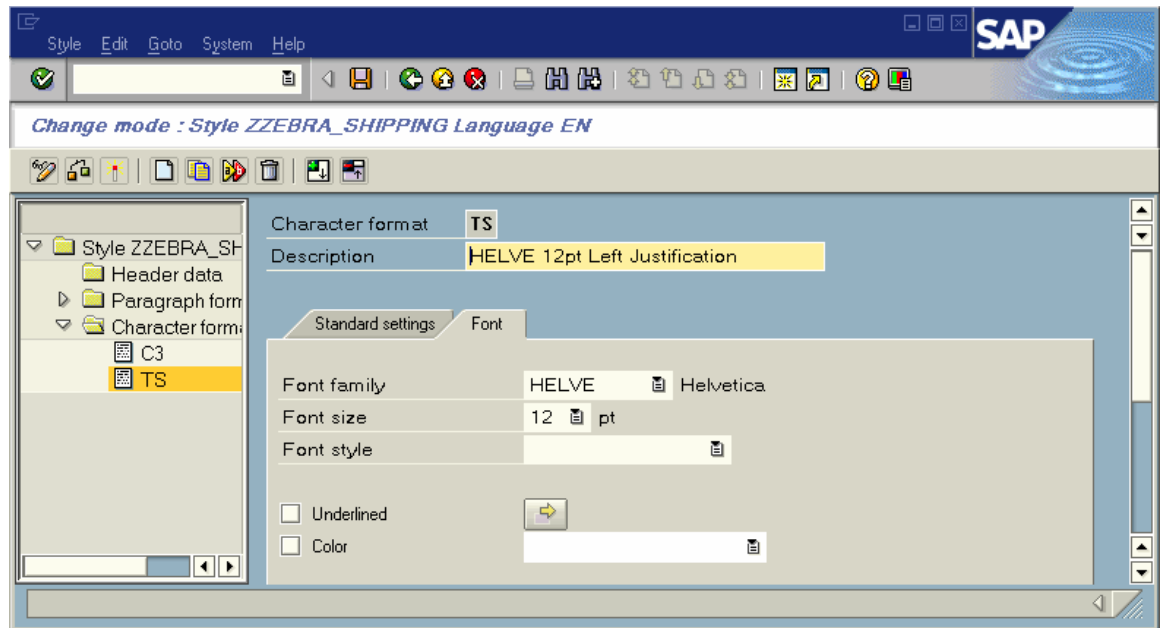
- Select "HELVE" as the Font family (CG triumvirate bold condensed for ZLZEBx)
- Select 12 point as the point size
- Repeat the above for 24 Point and call it "TB" (Text Big)

We now need to make a default Paragraph for our Header Data:
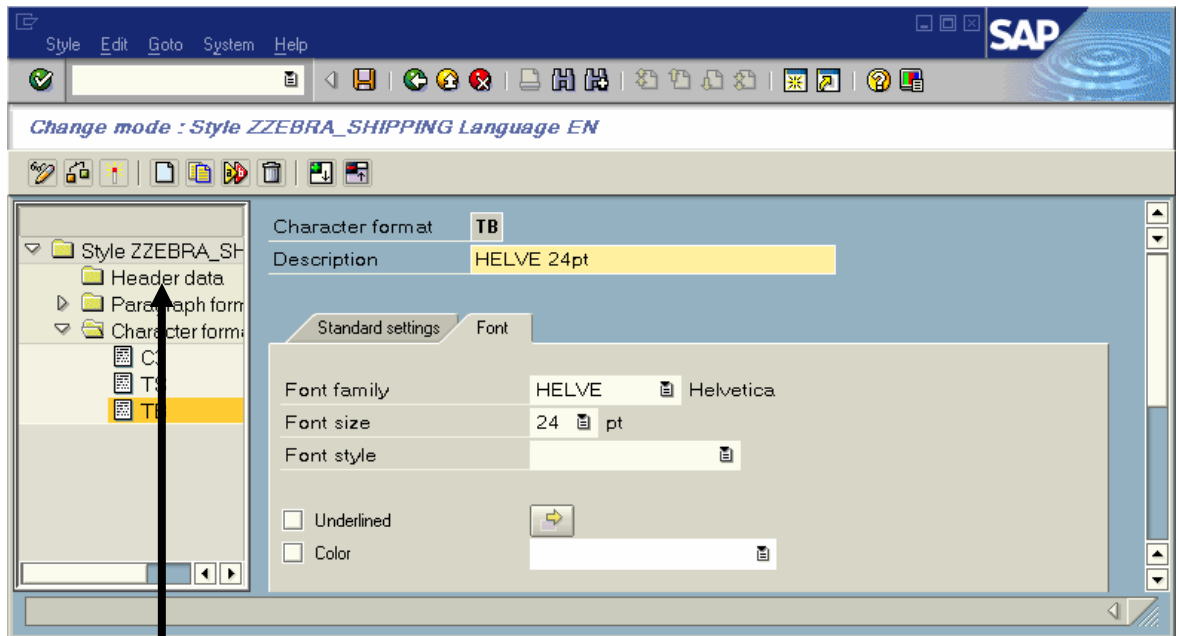
- Select "Paragraph Formats", from the tree, and press the right mouse button and then select "Create Node"
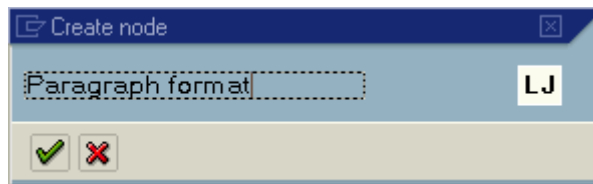
- Enter "LJ" (Left Justification) as the Paragraph format and press OK
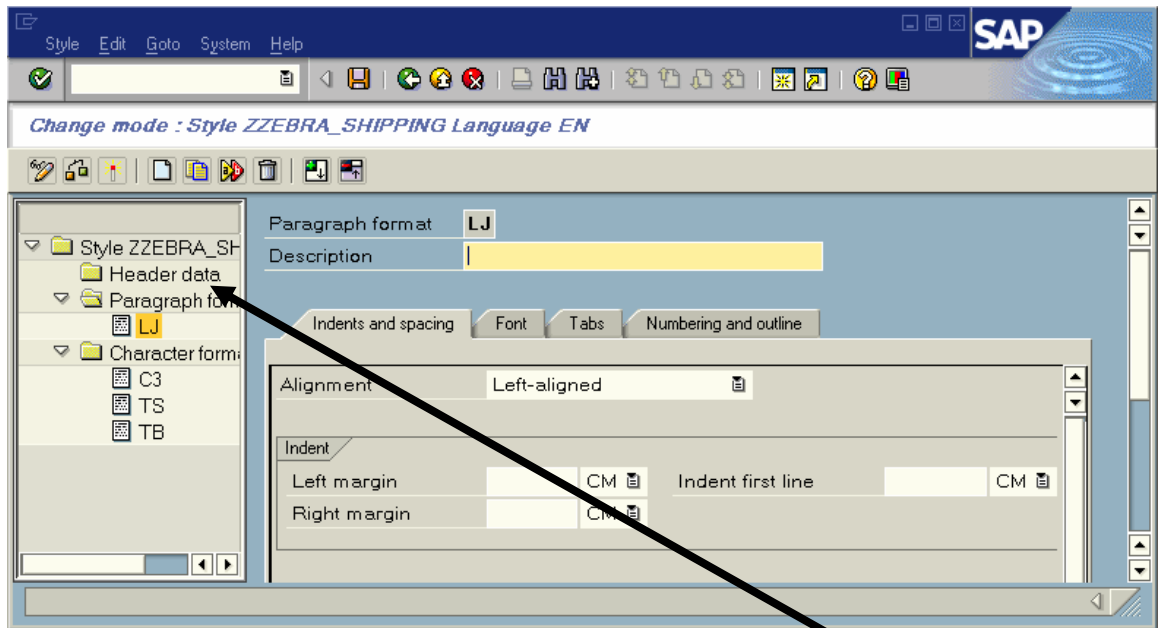
- We can use all of the defaults—no need to change any other settings for the Paragraph Format. You now need to double click on "Header data"
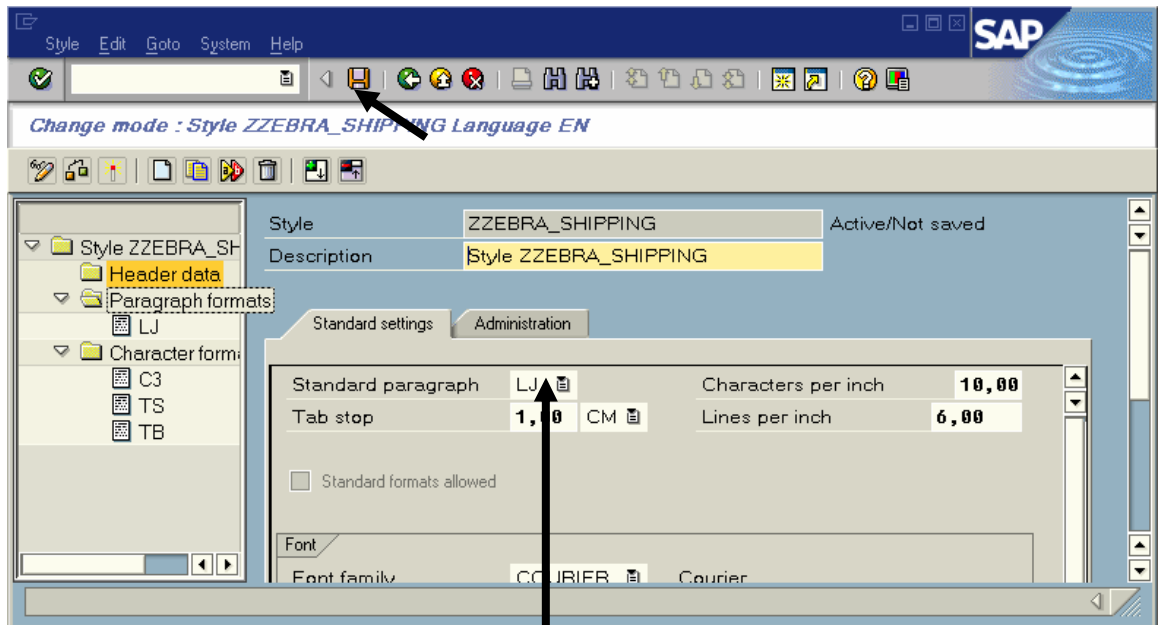
- Select "LJ" for the Standard Paragraph

We now need to save our Smart Style:

- Press the "Save" Icon

- Press "Local object"
- You now need to Select "Style | Activate" from the main menu.

You have now successfully created and activated your Smart Styles.

Laying out the Smart Form

Start the "Smart Forms" transaction by entering */n*SMART FORMS in the command line text box located just below the menu bar of the current active window of mySAP Business Suite system. Press the <*Ente*r> key or click on the check box adjacent to the command line text box entry.
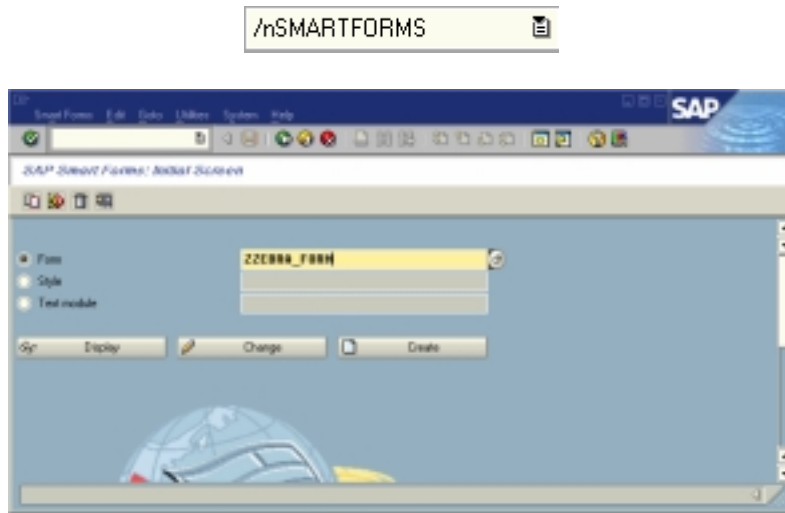
- Enter the name "ZZEBRA_FORM" as the Form and press Create button.

Map to Smart Style

You should now see a screen similar to that below:
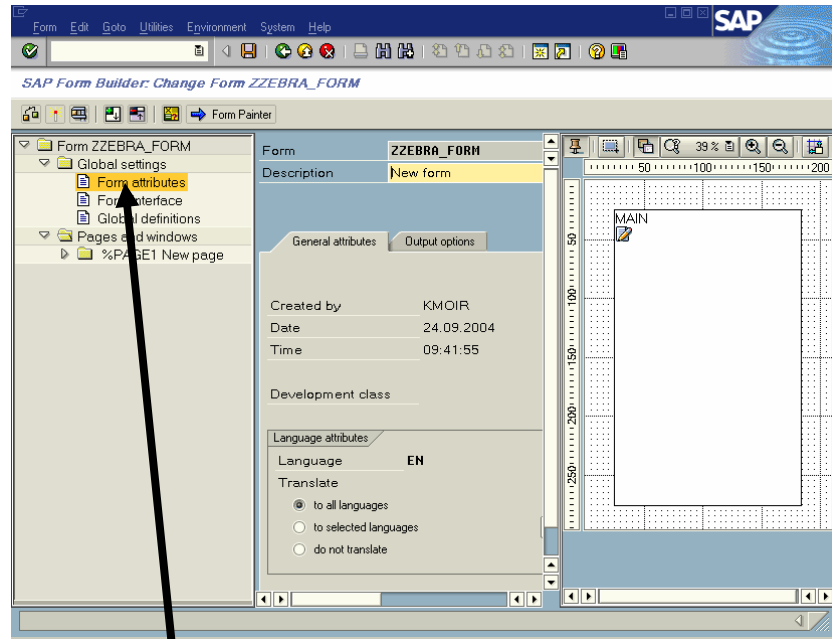
- We now need to map our Smart Style to this Form. Double click on Form attributes.
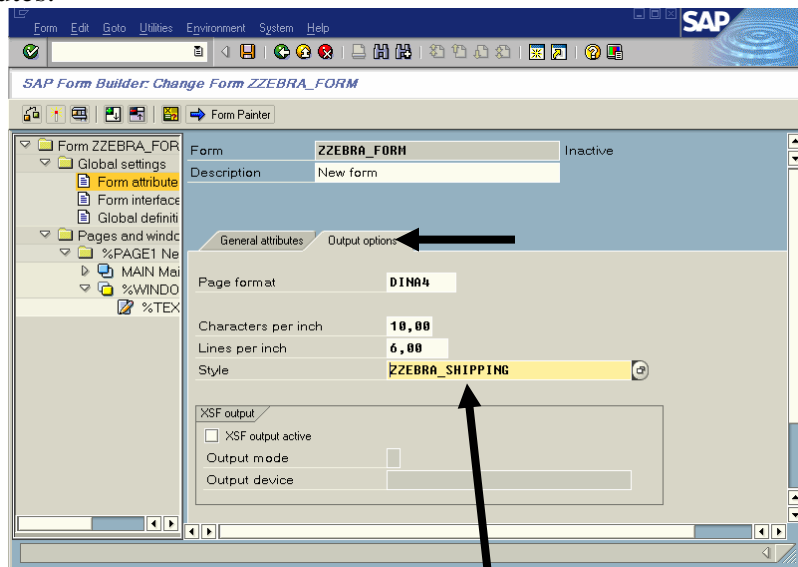
- Press the "Output Options" TAB
- Enter "ZZEBRA_SHIPPING" as the Style name
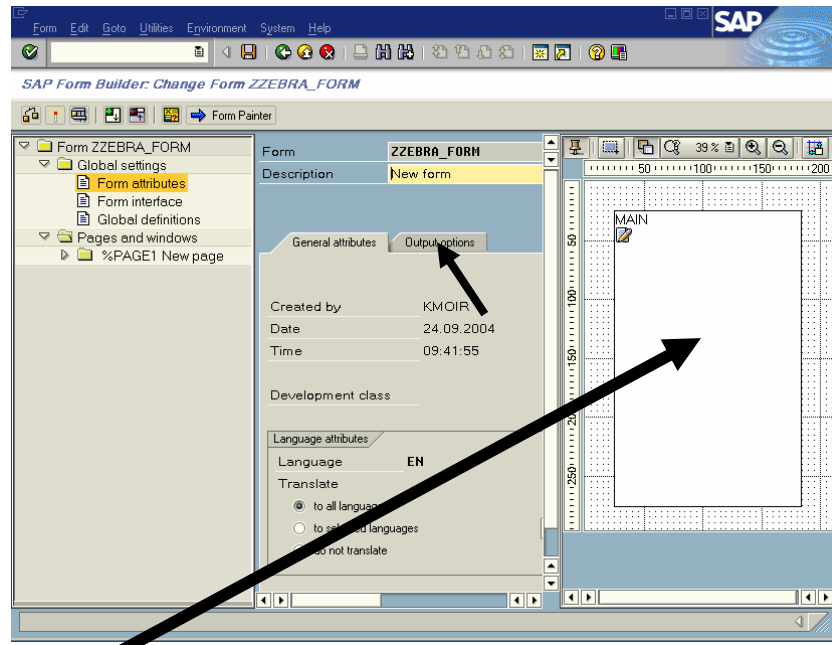
- Click on the Main Window
- Press the Output Options TAB (if not already active)
- Change the Left margin and Upper margin to 0 (Zero)
- Change the Width and Height to that of the Label Size (It is actually safer, to avoid SAP automatically moving fields, to ensure that this is bigger than the actual label)

Add Text and Bar Code Fields
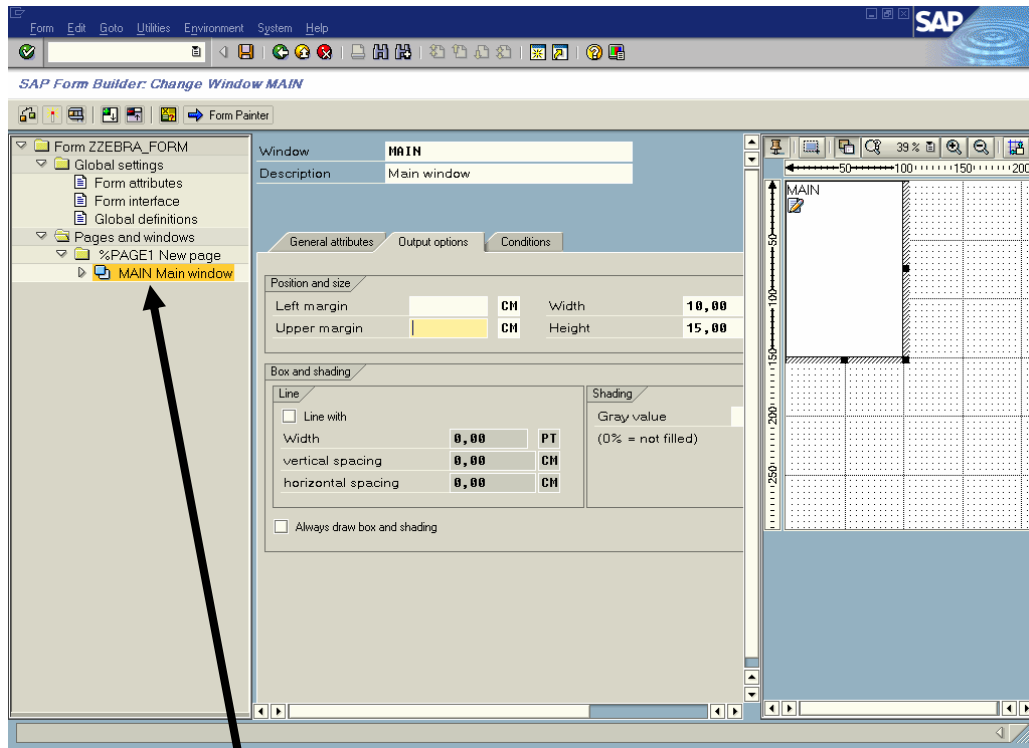
- Press the right mouse button on "MAIN Main Window" tree
- Select "Create | Window". We are basically going to create a separate Window for each field, in the Main Window (think of the Main Window as the Label)
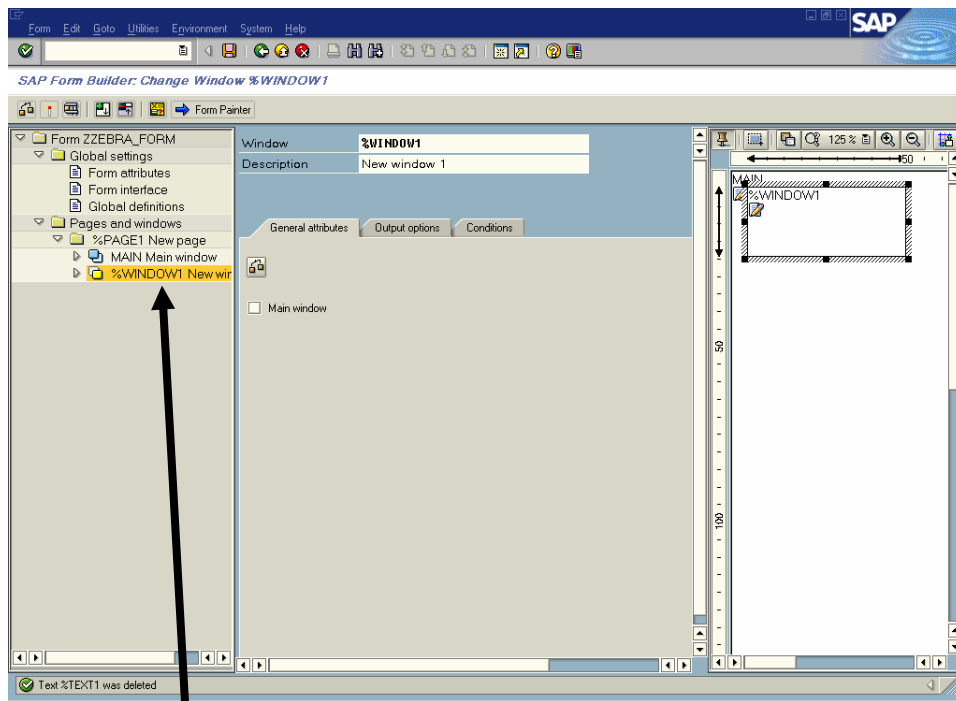
- Press the right mouse button on "%Windows1 New Window" tree
- Select "Create | Text".
- Press the "General Attributes" TAB (if needed)
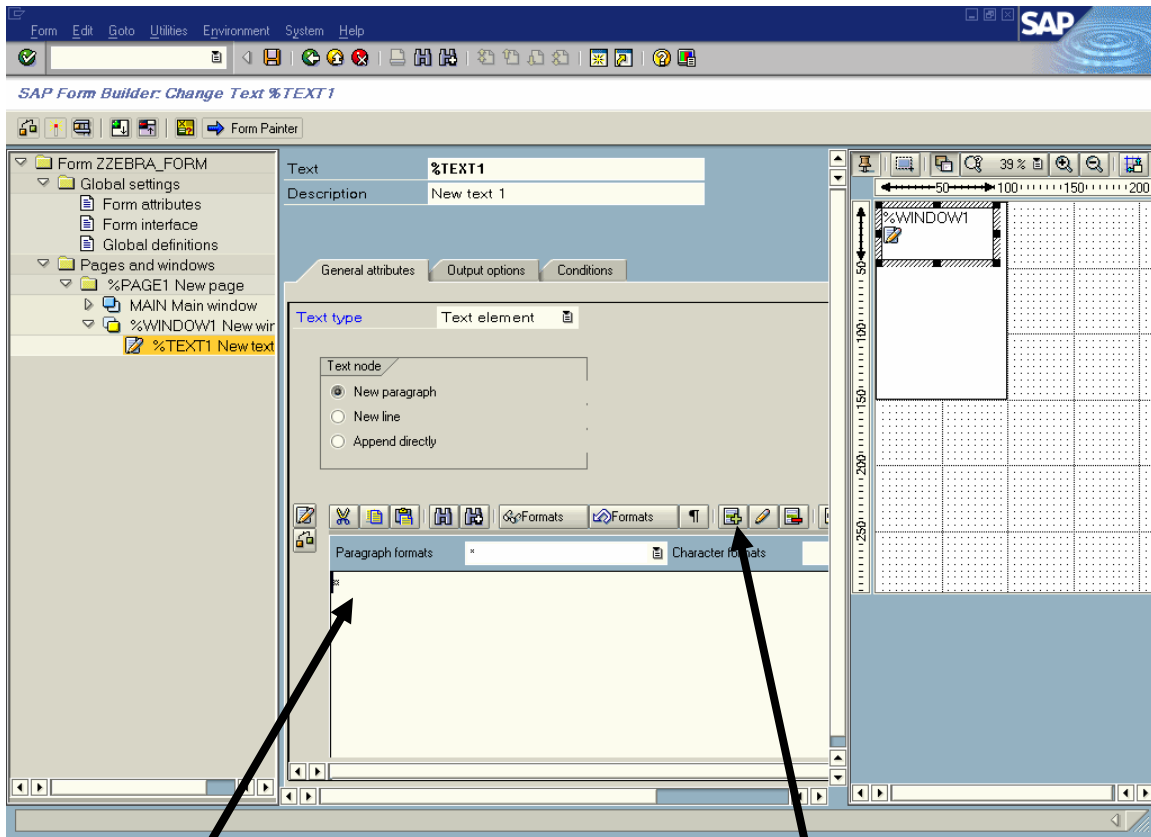
- Enter "Date: "
- Press the "insert field icon"
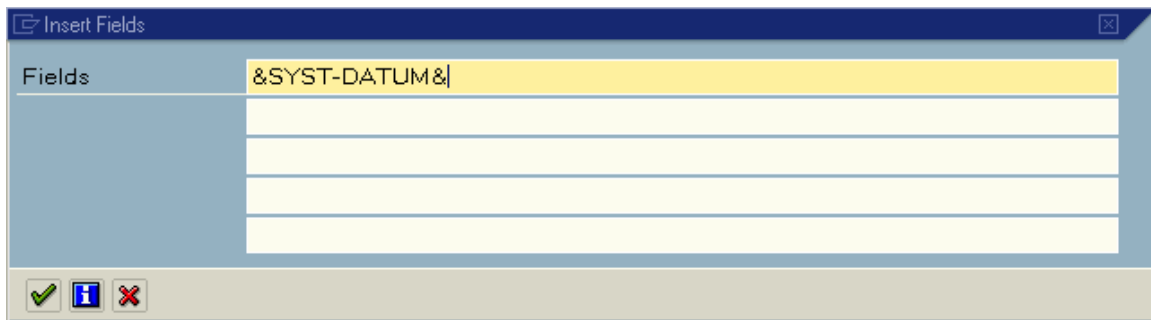
Enter "&SYST-DATUM&" in the Text Editor box above (System Date)
Press OK
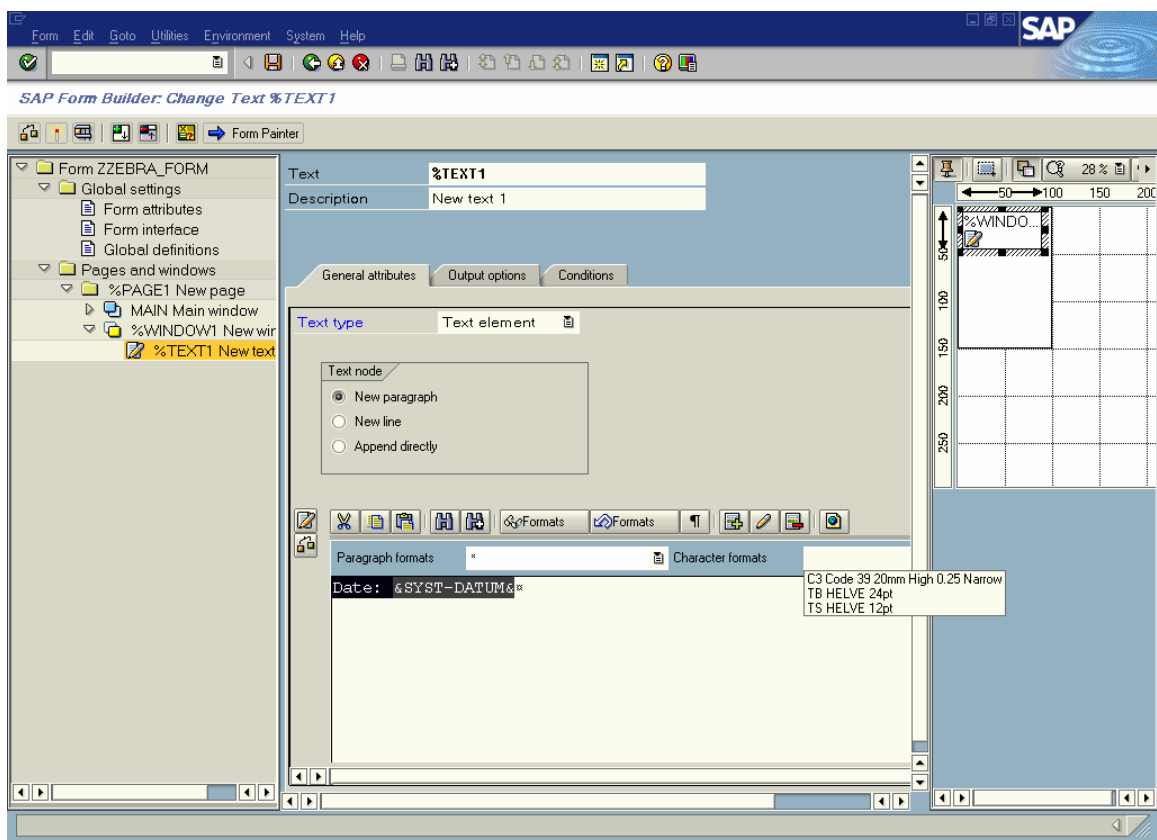
- Select highlight "Date: &SYST-DATUM& by dragging over it. You could make this a multi-line field (paragraph).
- Pick Character Format "TS HELVE 12 PT". You can pick any text or bar code style that you have created. Bar codes will just show as text on this screen.

You now can repeat the above process for each field you need to add. Remember to create a separate Window with a separate Node for Each Field (otherwise they will all align under each other)

Add Lines and Boxes

You should now see a screen similar to that below:
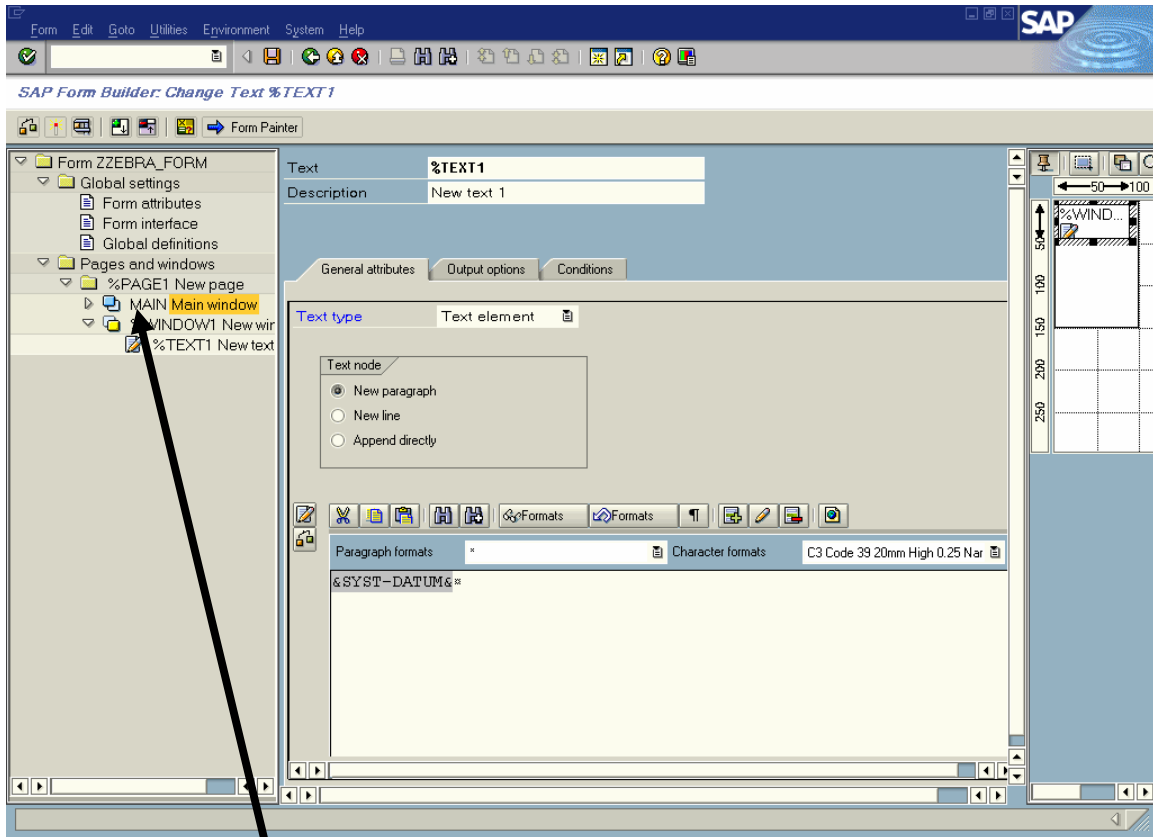
- Press the right mouse button on "MAIN Main Window" tree
- Select "Create | Window
- Press the "Output options" TAB
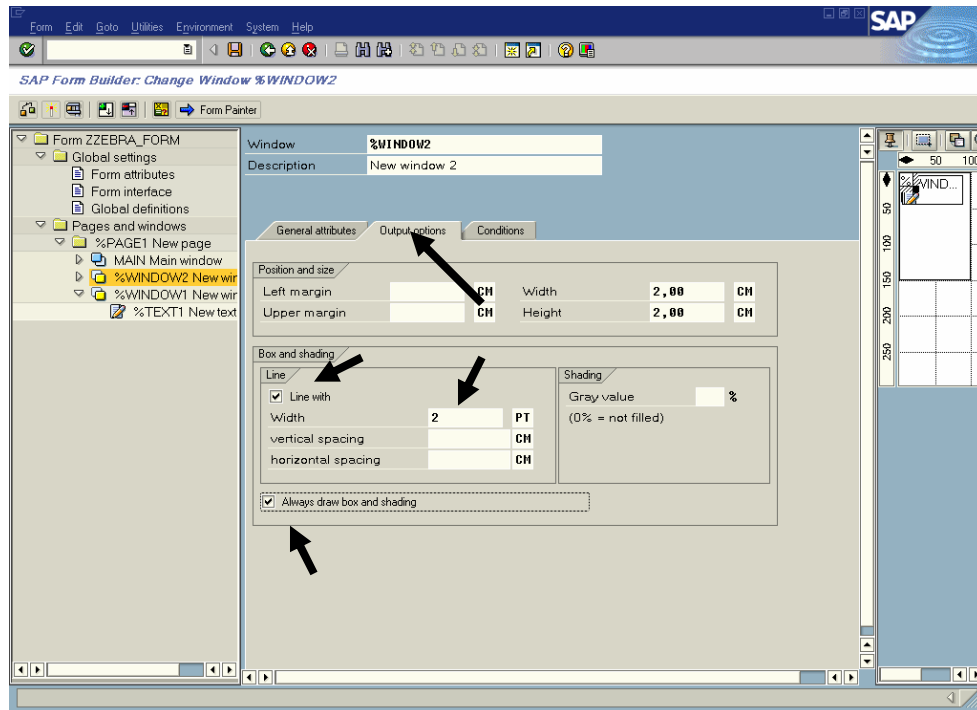
- Enable/check the "Line width" checkbox
- Enter Point size of line width (or change units of measurement)
- Enable "Always draw box and shading"
- Enter 100 for "Gray Value" if you want a solid box (leave as blank or 0 for lines or boxes)

You need to create a separate Window for each box you wish to draw. You can also draw boxes around any existing Window used for text, bar codes or graphics.

For Text Reversing we advise that you select the "Output options" TAB of the "Text Node", not the Window. You will also have to enable field reversing via "Tips and Tricks: Printer Setting" (page 48): **S_LZPL_SETUP** and enter **'^LRY'**

See "Tips and Tricks: Lines and Boxes" on page 43 for more information

Add Logos/Graphics

You should now see a screen similar to that below:
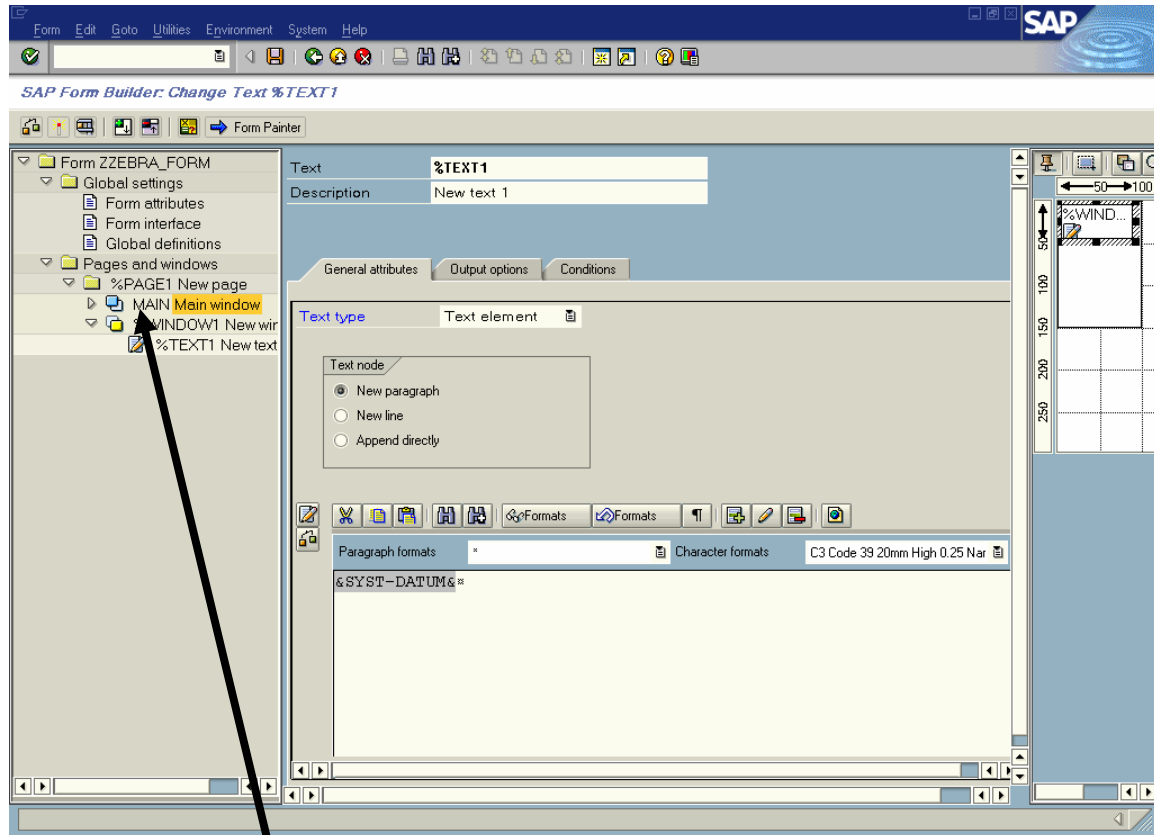
- Press the right mouse button on "MAIN Main Window" tree
- Select "Create | Window
- You may want to move / position the Window
- Press the right mouse button on the Window you just created
- Select "Create | Graphic
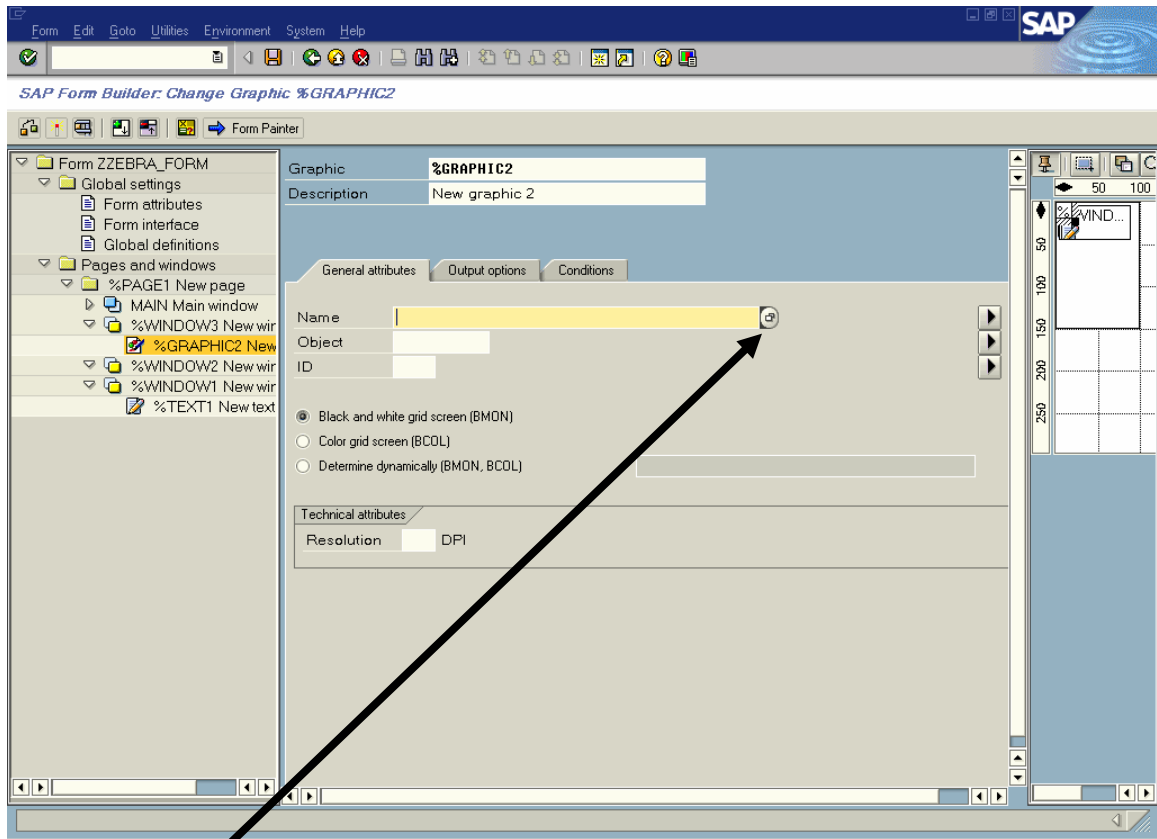
- Press the "browse graphic" icon
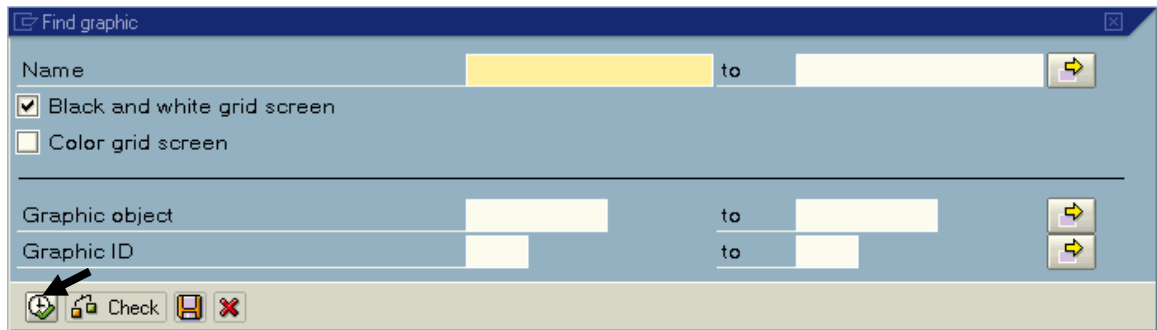
- Press the "execute" icon (or press F8)
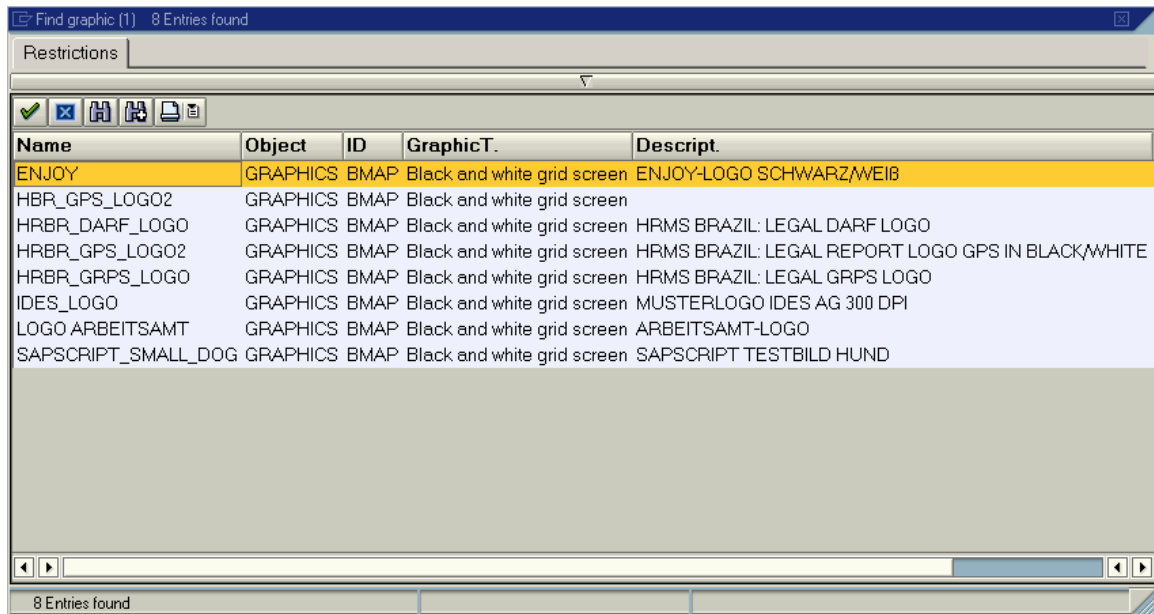
- Double click on the logo you require (we will use ENJOY)
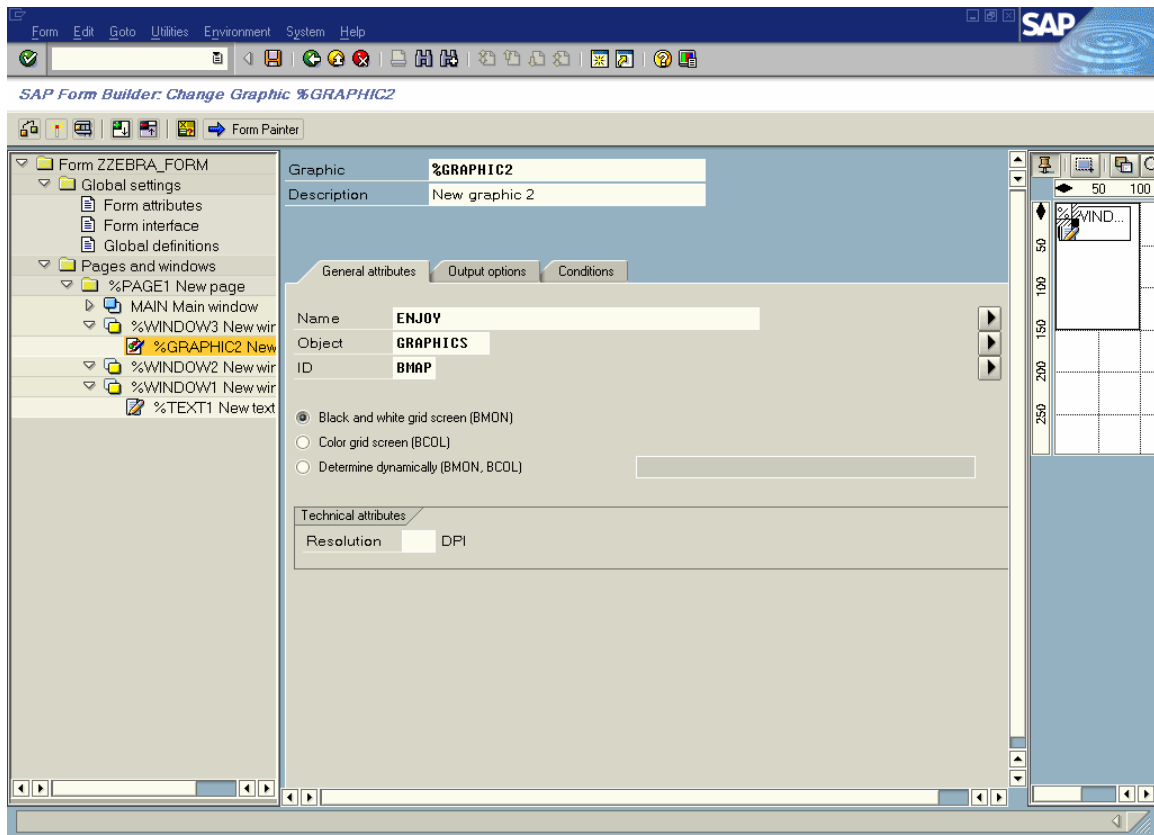
For detailed information on logos, refer to "Tips and Tricks: Logos / Graphics" on page 47.

Saving and Activating the Smart Form

- Press the Save Icon

- Press "local object" (if prompted)
- Select "Form |Activate" from the Main Menu

Tips and Tricks for Smart Forms and Zebra Printers

Smart Forms was originally developed for "Form" and "Report" design, not labels. Smart Forms can now be successfully used to design labels on high performance bar code label printers, but you need to be aware of the tips and tricks not documented within the original Smart Forms manuals. Please read the following:

Label Size / Page Size

In Smart Forms, a page format must be set for every form or label, for example, DINA4 or LETTER. For the Zebra printer driver it does not matter which format is set here, since it cannot affect the label size in the printer. It is therefore of no benefit to define separate new page formats/format types for labels for label printing with the above zebra device types (just use DINA4 or LETTER). However, in Smart Forms, when you define the window on the page, ensure that you only use the label area that is actually available.

Important Note: in Smart Forms, only use the PORTRAIT page orientation. It is not possible to rotate the orientation of the label by 90 degrees by selecting the LANDSCAPE page orientation. Technical background: In the ZPL II printer language, there is no command for rotating the output of the entire label by 90 degrees. The printer driver therefore cannot use orientation=LANDSCAPE to rotate the label by 90 degrees.

If you need to shift the entire label output slightly on the Zebra printer, you can use the form output shift in the SPAD transaction (when you define the output device), as described in note 39259. This shift is analyzed by the Zebra driver.

Smart Forms has no concept of Label Size. Please ensure that the Main Window is larger than the label.

Workaround for rotating the label output: There is a command in the ZPL-II printer control language that rotates each individual field by 90 degrees (clockwise). If you insert this command into the output data stream using the "command nodes" mechanism as described below under "Printer Settings", you will achieve the rotation of individual fields at printout. However, you must adjust the position of the fields (or windows) in the form to obtain a "landscape" printout, as Smart Forms and the printer driver are not aware of the rotation. Therefore, define the Smart Form with the "portrait" orientation. For the rotation, add a command node, for example in the MAIN window. In this command node, enter the following under "spool control", "free attributes":

> Attribute name: Attribute value:
> S_LZPL_SETUP   '^FWR'

The LZPL printer driver sends the ^FWR command to the printer at the beginning of the label and causes a rotation of the output fields.

Note: The command ^FWR in the command node has no effect on printing barcodes, as these have their own parameters for rotation. Define the barcodes needed for the landscape label in SE73 with the necessary rotation.

Field Positioning—X, Y Coordinates

Labels normally use a "field" concept whereas Smart Forms use a "Page Window" style of design. Label fields normally have a fixed "origin" whereas text in forms is much more dynamically positioned.

We recommend that you make a separate "Window" for each field on the label. Each Window should then have an associated Node (Text, Bar Code or Logo). Multi-line Text fields may all be tied to a single Window. The reason for this is the location of each Window specifies the fields (Nodes) X and Y co-ordinates.

All of these fields must be inside the Main Windows. Please ensure that your Main Window is large enough! We also believe that it's good practice not to associate any Nodes with the Main Window.

Lines and Boxes

Lines and boxes are drawn, as with any Smart Form, via drawing a new Window, selecting the "Output Options" Tab and then entering a point size for the "box and shading" options.

Reverse boxes, for text reversing, can be enabled by using the ^LRY command in the printer settings node **S_LZPL_SETUP.** See printer setting for more information.

Note: Ensure that you have "Always draw box and shading" checked in the "output Options of your Windows" Grey Value must be 0 (hollow) or 100 (sold).

Text Objects

Smart Forms supports Zebra preloaded printer-resident scaleable fonts. It also supports
TrueType font downloading and TrueType fonts stored in Zebra printer Flash memory.
We strongly recommend that you use printer-resident fonts for simplicity and maximum
printer throughput.

Western European—IBM CodePage 850

You will normally design your forms/labels for Zebra printers using the SAP "HELVE"
font. This font maps to Zebra's printer-resident "CG Triumvirate bold condensed" (IBM
Codepage 850) when using device type ZlbzebsX.pri *(X=2,3 or 6).*

International Printing (EMEA Only)—Unicode™

SAP "HELVE","HELVECYR" (Cyrillic) and "HELVE_I7" (Greek) can also be used for
international printing using Zebra's ZlbzebsX.pri (X=2,3 or 6) device type. This Unicode
UTF-8 device type maps to Zebra's printer-resident Swiss 721 font. This is preloaded on
all printers shipped in EMEA. This font is available for download FOC for other
countries if required. This will allow you to print local languages using Unicode (UTF-8)
even on non-Unicode SAP systems.

Global International Printing including APAC—Unicode

SAP end users wishing to print Asian characters on Zebra printers must use the SAP font
ANDALE_J, ANDALE_K, ANDALE_S or ANDALE_T with the Zebra Device Type
ZlbzebuX.pri (X=2,3 or 6) and the corresponding optional matching font card available
from Zebra. Refer to the section on device types at the beginning of this document for
more information. This will allow you to print local languages using Unicode (UTF-8)
even on non-Unicode SAP systems.

Text Reversing

Text reversing is supported via Solid Boxes. Refer to "Tips and Tricks: Lines and Boxes"
(page 43) and also "Tips and Tricks: Printer Settings" (page 48) for detailed information.

TrueType Fonts

Smart Forms allows users to upload TrueType fonts and then use these fonts for the
form/label design (See OSS Note 201307). TrueType fonts are uploaded using
transaction SE73; see below:
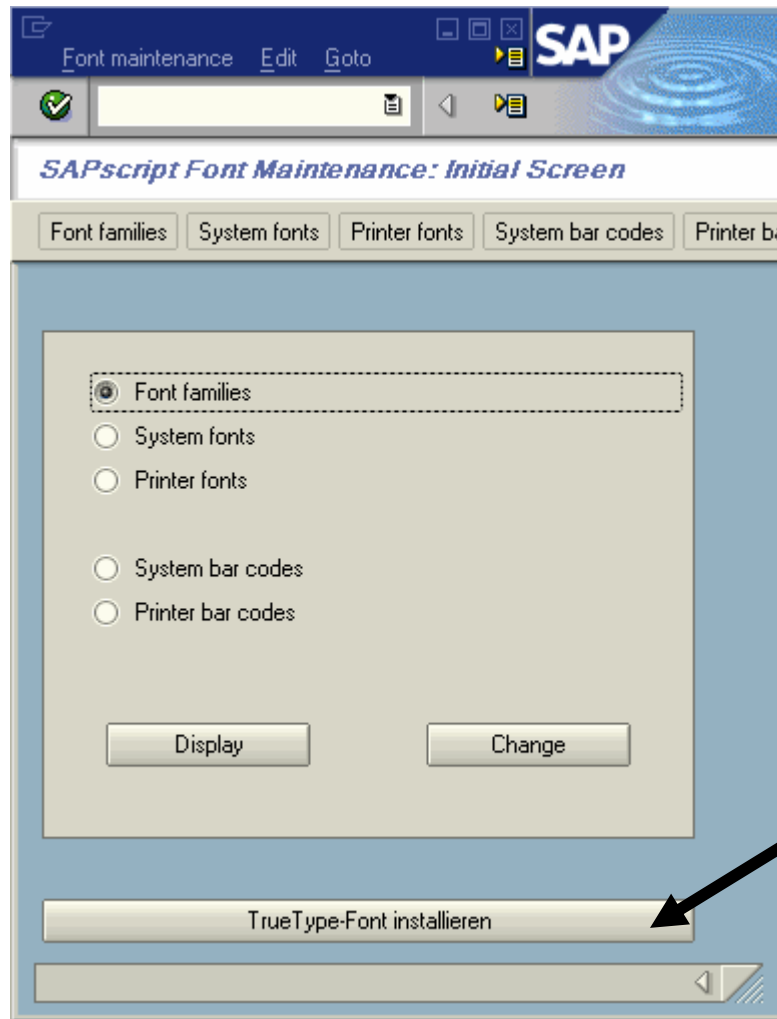
For detailed information on how to upload a TrueType font, refer to OSS Note 130658

In the case of ZPL II printers, this font is automatically downloaded to the printer at the beginning of the print run as an <u>IBM Codepage 850</u> scaleable font, and then deleted at the end of the print run. It is also possible to tell the printer device type that the TTF is permanently stored in printer Flash memory and therefore does not need downloading. If downloading performance or network traffic is an issue, <u>we strongly advise</u> that you use a printer-resident scaleable font or store the TTF on the printer's Flash memory.

Download a TTF Font to Zebra Flash Memory

- You should store the Font on **E**: or B: (Flash) not R: (RAM)
- Download Zebra ZTools™ utility from <u>http://www.zebra.com/SD/utilities.htm#ZTools</u>
- Install, Run and select "Convert | Unbound TT"
- Please ensure that the name uses no more that 5 characters (ZTools support 8 but SAP has a 5-character limitation)
- This will create a file with the extension of "ZSU". In the case of "Arial," this would be "Arial.ZSU". You then must download this to the printer.
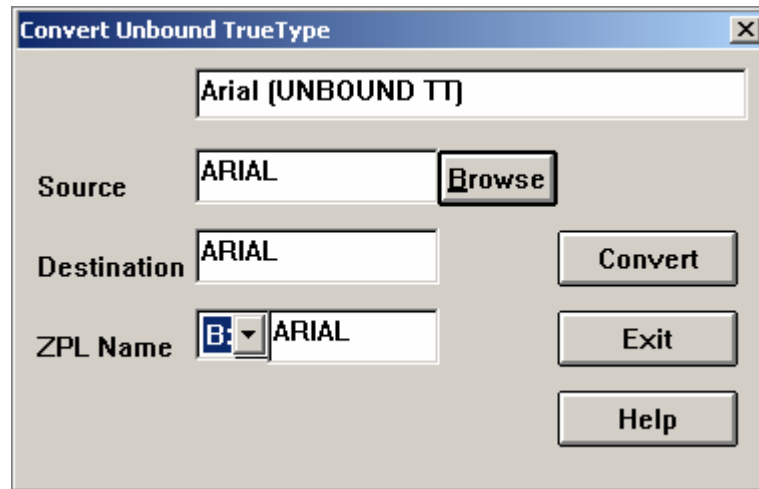
Modify the Zebra SAP Device Type
Select Transaction SE73 (Printer Fonts) and press "Change"
Scroll down and Double click on the target device type (This must be one of the
IBM Codepage 850 device types Zlzebx (x=2, 3 or 6)
Double click on the TrueType font (for example ZArial)
Enter the name of the font that you downloaded to the printer (for example
"ARIAL"—don't specify the memory location)

<div align="center">

<u>Font Licensing (TTF) / Disclaimer</u>

</div>

It is the responsibility of the end users to ensure that they comply with the font licensing
requirements provided by the owners of such fonts. Any fonts stored in the Flash memory
of Zebra printers may require licensing from the font vendor. This applies to fonts
converted using ZTools, fonts downloaded via ^DY or fonts copied directly onto
CompactFlash® memory cards.

Note: Windows Core Fonts require licensing from Agfa Monotype Corporation before
they can be stored in the Flash memory of any Zebra printer as a "permanent printer
resident font." Arial Unicode MS requires licensing from Microsoft Corporation before it
can be stored in the Flash memory of any Zebra printer as a "permanent printer resident
font."

Logos/Graphics

Colored bitmap graphics from Smart Forms are changed to black and white when you print from the Zebra printer driver. If the picture quality deteriorates following this conversion, you should convert the graphic to black and white using a graphics program (such as PaintShop Pro) and import it into Smart Forms as a black-and-white graphic. The driver does not convert monochrome graphics. However, all graphics may be justified to adjust the size of the graphic to the printer resolution (203, 300 or 600 dpi). During the import to Smart Forms, you have the option to flag a bitmap graphic as "resident." In this case, the printer driver saves the graphic when it first appears in the printer's RAM ("R:" device of the Zebra printer). At the end of the spool request, the driver deletes the graphic again from the printer's RAM, so that no more memory remains occupied. Resident graphics during label printing from Smart Forms are therefore only faster if more than one label is printed within a spool request, and the resident graphic repeats on every label.

Uploading Graphics into Smart Forms
Transaction SE78 can be used to upload logos. You can also run program RSTXLDMC from transaction /nSA38.

Permanently Printer Resident Bar Codes (Flash)
The only way to support graphics stored on printer Flash memory is to recall the object with a direct ZPL II command. This could be done very simply with the **S_LZPL_SETUP** command node (see printer settings) or alternatively by creating a custom "Printer Bar Code" or print control (see bar codes).

Printer Settings

Command Nodes allow you to set printer specific settings from within individual Smart Forms. Each Smart Form may have different settings associated with it. This means that you can have a Smart Form set the printer's darkness (burn temperature) and print speed (as well as many more settings).

Command Nodes are set by selecting a page Windows and pressing the Right Mouse Button over the tree structure and then select "Create | Command." See the diagram below:
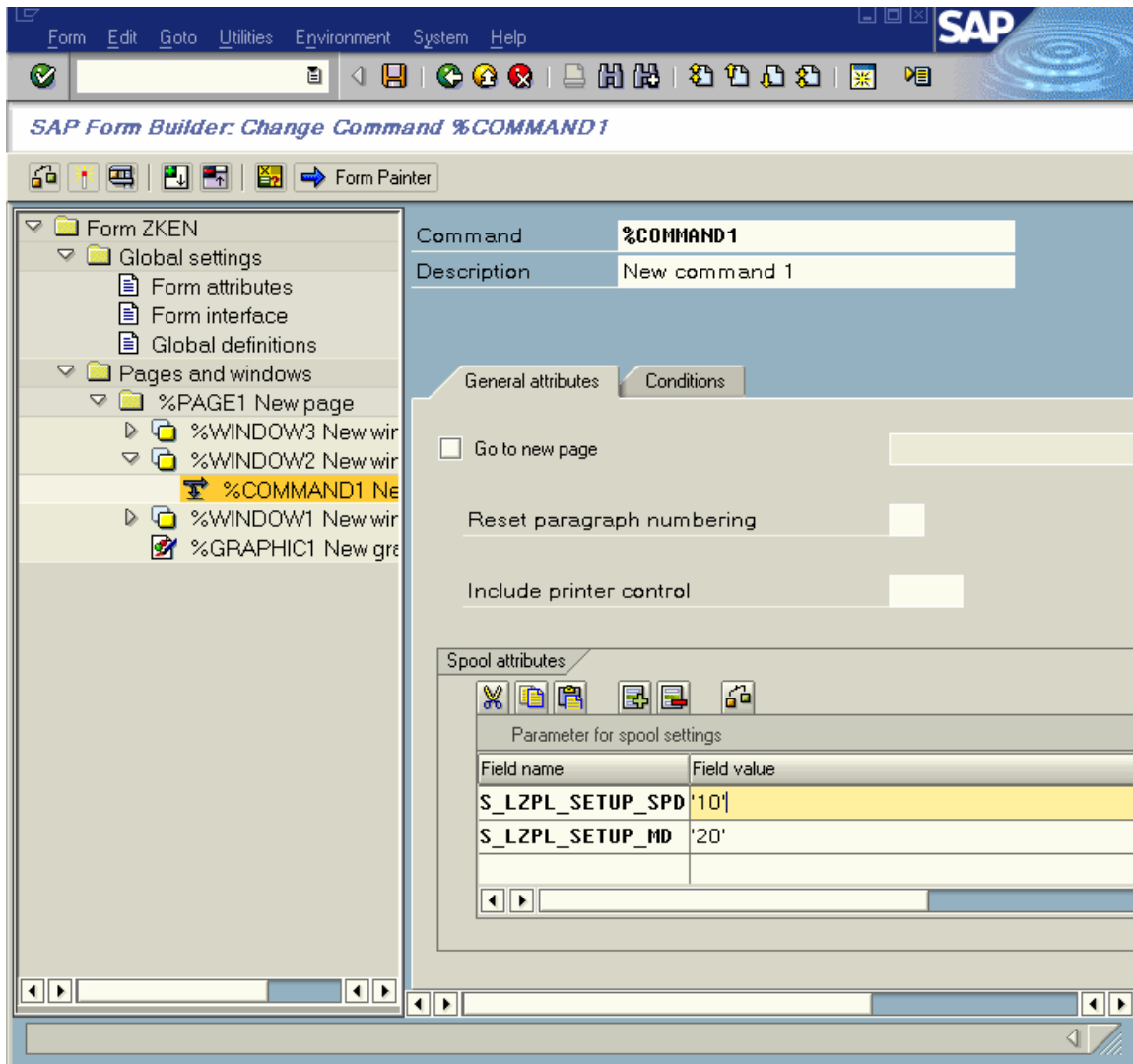
The ZPL II commands must be entered in the command node using quotation marks.

Below is a list of supported command Nodes:

| Description	Command Node	Supported Values
Human Readable	**S_LZPL_HR** **S_LZPL_HR1** **S_LZPL_HR2** **S_LZPL_HR2**	System Bar Code Style Name
Print Speed (^PR)	**S_LZPL_SETUP_SPD**	Supports 2,3,4,5,6,8,9,10,11,12
Media Tracking (^MN)	**S_LZPL_SETUP_MTR**	N Y W M (Continuous, Non-Continuous, Web Sensing, Black Mark Sensing)
Media Type (^MT)	**S_LZPL_SETUP_MT**	D T (Direct Thermal, Thermal Transfer)
Print Mode (^MM)	**S_LZPL_SETUP_PM**	T R P C (Tear off, Rewind, Peel Off, Cutter)
Top Position (^LT)	**S_LZPL_SETUP_TP**	Supports -120 to 120
Tear Off Position (~TA)	**S_LZPL_SETUP_TO**	Supports -120 to 120
Media Darkness (^MD)	**S_LZPL_SETUP_MD**	Range is -30 to 30
Generic commands	**S_LZPL_SETUP**	Any ZPL-II Command

Note: If the System Bar Code name used in the Smart Style is entered against "S_LZPL_HR**x**" (x=1 to 3) then the Human Readable will be enabled for that specific object (only human readable below the bar code is supported).

Other ZPL II commands can be added via "Printer Bar Code Objects", i.e., a circle, box with rounded corners, RF-ID field or a ZTools bar code! This is also useful for enabling "box reversing" to support "reverse text" via using the command ^LRY.

Bar Codes

Bar Codes are managed via transaction /nSE73. See the screen below:
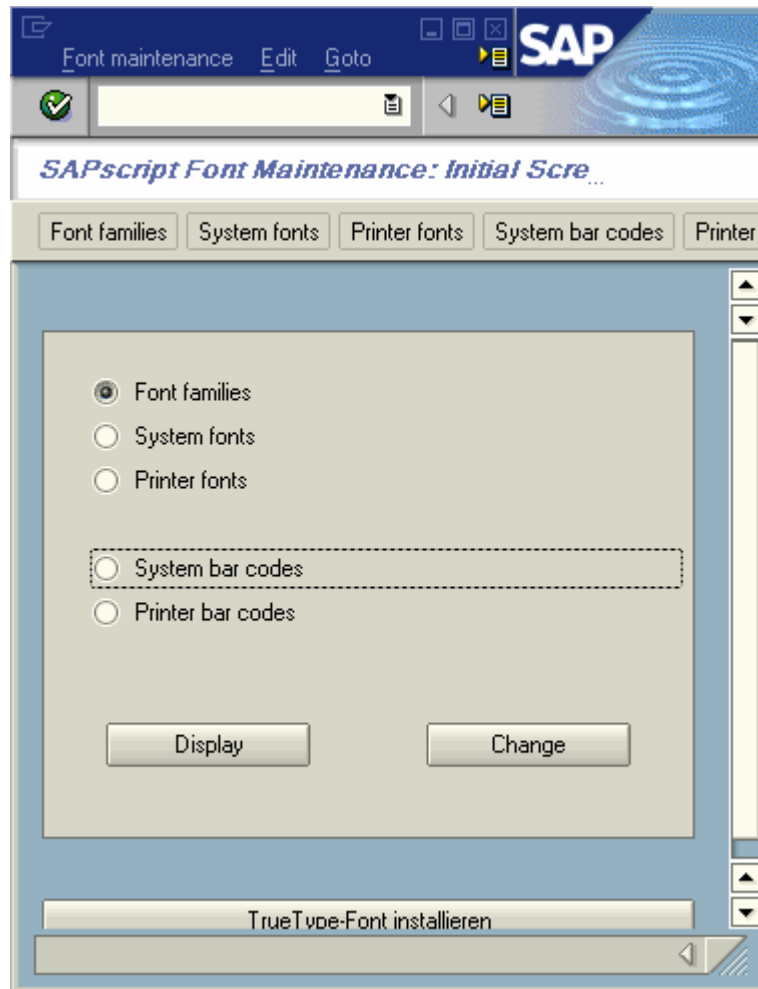
Individual bar code "types" need to be created for each flavor of bar code. A Smart Style then needs to be created to include bar code "types" for each Node. Firstly you need to create/configure "printer bar codes" or "system bar codes."

Printer Bar Codes

"Printer bar codes" are bar codes that are specific to a specific printer. These bar codes actually have the commands and parameters hard coded for each separate bar code symbology and derivative. This is known as SAP's "old bar code technology." You will also need to create new "printer bar codes" if you wish to change any parameters such as ratio, narrow bar width, or height. You should try and avoid this "old technology" if possible. See the screen below:
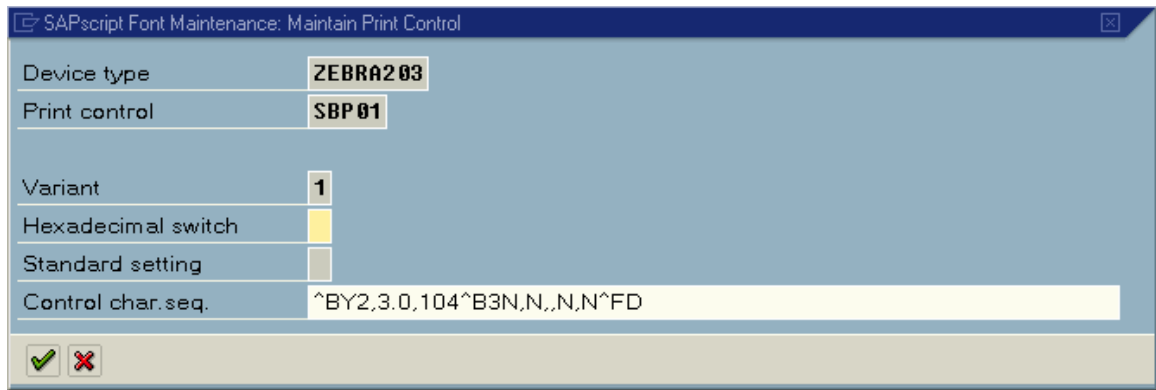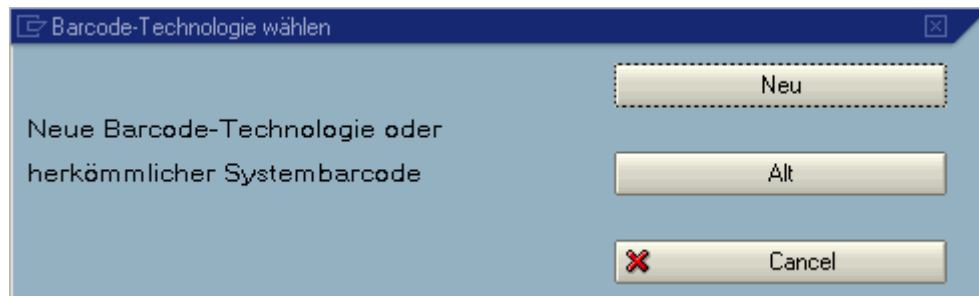
System Bar Codes

"System bar codes" can either use the "old barcode technology "and use a specific "printer bar code" based on the device type selected, or alternatively use the "new bar code technology." We recommend that you use "new technology" if possible as this has many advantages:

- Does not require the creation of "printer bar codes" for every single possible device type being used
- Does not require knowledge of the printer's command language.
- You can preview the bar code (SAP NetWeaver 04 onwards)
- This can also be rendered on non-Zebra printers (although as a graphic)

You will have to create a separate "system bar code" for separate styles. This means that a separate "system bar code," based on "new technology," would have to be created for all derivatives of rotation, height, narrow bar width, ratio and checkdigits, etc. You would then include all of the bar codes you need for your form within a Smart Style (/nSmartstyles).

New Technology—"System Bar Code"
This new rendering technology was actually developed by Zebra Technologies Corporation and licensed to SAP AG. These new bar codes are rendered as graphics using Zebra's Bar Code Rendering Library in the kernel of mySAP Business Suite. PCL, PostScript and Prescribe printers receive the graphic as a bitmap. Zebra printers receive the graphic as a ZPL II command, ensuring maximum performance and data validation.
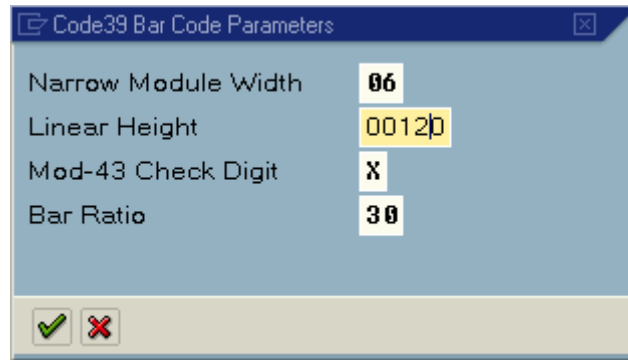
Note: Bar code parameters "Height" and "Module Width" are entered at a resolution of 600 dpi independent of the resolution of the target printer. This means that a bar code height of 120 would print 10 mm on a 203-, 300- or 600-dpi printer.

For more information on this "New Technology" see OSS Note 430887.

Unsupported Bar Codes / New Symbologies
You can create new or custom bar codes by creating a "Printer Bar Code" and create a "System Bar Code" using "Old Technology" that refers to the "Printer Bar Code." This mechanism lets you create an object that has ZPL II associated with it. You could use this feature for any object or ZP II command. Examples of this could be:

- Creating a MaxiCode bar code
- Drawing a circle or ellipse and having it come out as ZPL II (not a graphic)
- Boxes with rounded corners (via ZPL II)
- Reversed text (White on a black background)
- Recalling a graphic that is stored in Flash memory

Resources

Visit www.zebra.com/sap to keep up-to-date on bar code printing and RFID solutions for SAP End Users.

Additional Smart Forms information can be found by visiting the SAP Developer Network website at www.sdn.sap.com. Refer to SAPnet notes 750002 and 750772.