ELFRING FONTS INC.

This package contains ten MICR fonts (also known as E-13B) used to print the magnetic encoding lines on checks, and eight Secure FontsTM for use in printing check amounts and payee names. These fonts are designed for Windows 10 - 7, XP, Server 2019/2016/2012. MICR (*Magnetic Ink Character Recognition*) encoding is used by all banks in North America (and many other countries) to automate check processing. Federal banking laws (Check 21 Act) and the Canadian law (CPA 006) **require** that MICR lines be printed with magnetic ink. **Since no magnetic ink exists for inkjet printers**, you must use a laser printer with a magnetic toner cartridge to print checks.

These fonts are designed to ANSI standard X9.100-160-1-2009, X9.27-1995, and the Canadian CPA 006 standards. Note that while OpenType fonts are scalable, these MICR fonts will only be recognized by banks when printed at exactly **10 points**. You **must** calibrate your entire printing system before you can submit checks to your bank. We supply a calibration utility to aid you in this process. You can also purchase our optional MICR Gauge to verify all aspects of your check printing.

MICR encoding is used by all North American banks, and in many other countries, to automate check processing. MICR characters must have very precise shapes, positioning, and spacing. It is not possible to build a single MICR font that will work with all printers and operating systems. This package contains a number of MICR fonts and a calibration utility that will help you select the correct MICR font for your particular printer and operating system. Elfring Fonts Inc has been producing MICR font sets for 32 years, since 1989.

The MICR typeface only contains 14 characters. They include the numbers 0 - 9, and four special characters not found on your keyboard. These special characters are placed in specific keyboard positions. Each special character is available in two separate places, the XeroxTM standard position (<, :, ;, =) and the People SoftTM position (*A*-*D*).

MICR Character	MICR Symbol	Xerox Position	PeopleSoft Position				
Zero	0	0	0				
One	1	1	1				
Two	2	2	2				
Three	3	3	3				
Four	L	4	4				
Five	5	5	5				
Six	6	6	6				
Seven	7	7	7				
Eight	8	8	8				
Nine	9	9	9				
On-Us Symbol	۱۱ ۳	<	С				
Transit Symbol	1	:	А				
Amount Symbol	al ^a	;	В				
Dash Symbol		=	D				

Chart 1

On-Us Symbol ॥■

The On-Us symbol tells the check reader that the next series of numbers identifies an account number, as well as other bank determined items. The issuing bank specifies the content of the On-Us area, so the branch bank information may also be indicated. (*Use the C or < to generate this character.*)

Transit Symbol

Each MICR line always includes two Transit Symbols. These symbols open and close the transit field. Numbers between these symbols tell the check reader the institution/bank on which the check is drawn. (Use the A or : to generate this character.)

Amount Symbol "

Two amount symbols tell the check reader that the numbers between them represent the amount of the check. This field is usually blank and added later by the bank or under other special circumstances. (Use the B or ; to generate this character.)

Dash Symbol

The Dash Symbol is used to separate items in the On-Us field. Some check readers may have problems detecting it. (Use the D or = to generate this character.)

MICR FONT CALIBRATION

The MICR encoding on a check must be printed at *exactly* 10 points and 8 characters to the inch. Differences in paper, operating systems, laser printing engines, toner cartridges, and settings can alter the spacing of your MICR characters. Alter spacing will cause your checks to be rejected. To solve this problem, this package includes five variations of the MICR font, each with special calibration characters, and a calibration program. The calibration program will tell you which MICR font is the correct font for your computer system and printer. This calibration utility prints a sample page using all five MICR fonts on your laser printer. You should use your magnetic toner cartridge and blank check paper. This test print will determine which MICR font should be used on your system.



To run our MICR calibration program, click on Start, Programs, MICR Font Set, and MICR Calibration. Select the type of font you want to use, either Standard or Bold. We recommend you use the standard fonts unless you have a signal strength problem with your toner cartridge. Click the *Next* button when you are ready to print a sample page. The utility will print a page showing you five different length MICR lines.



Wait until the paper is cool before measuring the MICR line lengths. Use a finely calibrated ruler and measure the distance between the vertical bars over the entire length of the line. The correct MICR font for your system should measure as close as possible to 7 inches long. This will usually, but not always, be the standard MICR font. Identify the line that is closest to 7 inches in length and then click on the matching line selection in the window below. Once you have selected a line, click *Next*.



The MICRcal program will now tell you the name of the font to use with your check writing software. Make sure the print test is done on your check paper. If you want to print this sample yourself, you can cut-and-paste the sample text below or enter it yourself. Make sure you select a size of 10 points for the MICR font. The special spacing vertical line is produced using the "l" key.

MICR-N
0 1 234 56 70 1 234 56 70 1 234 56 70 1 234 56 70 1 234 56 70 1 234 56 7
MICR-N2
012345670123456701234567012345670123456701234567
MICR
012345670123456701234567012345670123456701234567
MICR-W2
012345670123456701234567012345670123456701234567
MICR-W
012345670123456701234567012345670123456701234567

The ten MICR fonts in this set are defined as follows:

onart 2									
	Narrow Fonts	Reduced Width	Standard Width	Expanded Width	Wide Fonts				
Standard Fonts	MICR-N	MICR-N2	MICR	MICR-W2	MICR-W				
Dark Fonts	MICRdark-N	MICRdark-N2	MICRdark	MICRdark-W2	MICRdark-W				

Chart 2

In general, you want to select one of the standard fonts, and usually either the standard (MICR), reduced (MICR-N2), or expanded width (MICR-W2) versions. If your bank indicates your magnetic signal strength is consistently low, you can use the dark alternative fonts. These dark fonts will increase signal strength by about 10%.

```
MICRdark-N
0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7
MICRdark-N2
0123456701234567012345670123456701234567012345670123456
MICRdark
012345670123456701234567012345670123456701234567
MICRdark-W2
0123456701234567012345670123456701234567
MICRdark-W
01234567012345670123456701234567012345670123456
```

Some MICR printing problems are related to the paper you print on. Paper absorbs moisture from the air and expands. When heated by your laser printer, the moisture evaporates and the paper shrinks. This changes the length of the MICR encoding line on the page! It is very important to store your check printing paper in a dry environment.



MICR Mounted Check Position Gauge Instructions

A MICR gauge verifies that **all** the data printed on your check is accurate and in the proper positions. A MICR gauge is a clear plastic template with a cardboard backer that you position over your check. It will indicate whether or not your MICR encoding line follows the correct spacing, is not skewed, and has the right number of characters. The MICR gauge also shows you the magnetic clear zone, maximum and minimum check widths and heights, offers a decimal inch ruler, plus much more

All U.S. specifications are measured in inches. All Canadian specifications are measured in centimeters (cm).



First: Slide your check between the transparent printed plastic gauge piece and the cardboard backing. You are now ready to position your check exactly inside the gauge.
Next: Move your check down until the exact bottom of your check aligns with the top of the black area at the bottom of the gauge. Finally, move your check from right to left until the right side of your check aligns exactly with the right side of the gauge .

1. CHECK ALIGNMENT ALWAYS STARTS AT THE BOTTOM RIGHT CORNER.

All MICR measurements are made from the bottom **right** corner of your check. **Always base measurements with the gauge from the** *right* **side of your check!** Measurements for items 2 - 7 are made by positioning the check under the clear gauge so that the check's bottom and right edge align with the black bottom area and right edge of the MICR gauge.

2. MICR CLEAR BAND:

This area extends the full length of the check and 0.625 inches or 1.59 cm up from the bottom edge of the check. It must be **free of** *all* **magnetic ink** other than that used for the MICR / E13-B encoding information

3. MICR ENCODING BAND:

All MICR characters must be printed inside the encoding band located within the clear band. There are 62 character positions broken up into 4 fields: Aux ON-US / Serial Number, Transit, ON-US, and Amount. The **Amount Field** occupies positions 12 - 1, and the **Transit Field** must occupy positions #43 and stop at position #33 unless a floating field is required, ±0.0625 inches (0.16cm). Both the **ON-US Field** and **Auxiliary ON-US Field** are floating fields and may begin and end anywhere within their respective boundaries. The **External Processing Code Field** (EPC), is located between the transit field and the auxiliary on us field. The field location and content are supplied by your financial institution must be followed exactly.

Canada Only: CPA 006 update June 30, 2006: The maximum number of characters in the serial number field is twelve (12) digits and two (2) On-Us symbols. This field must end at position 58. Positions 63, 64, & 65 must not be occupied. These positions are only used in the United States.



You need 3/16" (.47625 cm) clear space both above & below the MICR line

4. OPTICAL CLEAR BAND:

This area surrounds the MICR encoding band and extends the entire length of the check. It must be free of all background printing exceeding the optical specification of 0.30 Print Contrast Signal (PCS). Refer to the ANSI MICR specifications for related border information.

5. CONVENIENCE AMOUNT SCAN AREA (CASA):

This rectangle includes the convenience amount clear area (CACA) and the convenience amount rectangle (CAR). Refer to the ANSI specifications for acceptable position and size variations. It is located in the upper right hand side of the MICR gauge.

6. HORIZONTAL CHARACTER TO CHARACTER SPACING:

Each MICR character must have its **right edge touching the right edge** of the rectangular box it is located in. Each box is exactly 0.125 inches $(0.317 \text{ cm}) \pm 0.010^{\circ}$ (0.025 cm), wide. The check may be shifted horizontally to positions 14 and 15 where possible spacing errors can be checked.

7. CHARACTER SKEW:

Position the check horizontally under the gauge so that the character in question is in position 54 or 55. If the character is tilted so that it falls outside of either slanted lines, the vertical character skew specification of 1.5 degrees has been exceeded.

8. LINE SKEW:

Position the check so that the top edges of the MICR characters, excluding the Dash and On-Us symbols, touch the solid horizontal line that marks the top of the clear band. The bottom edge of the check will then bisect the vertical scales, marked in 1/2 degree increments, viewed in positions 6 and 46. The difference between readings of the two scales is the degree of line skew. **Note the maximum line skew is 1.5 degrees.**

9. MICR FONT SIZE:

Position an outline character over a matching MICR symbol. The MICR character should fit inside the dashed.

10. VERTICAL CHARACTER TO CHARACTER ALIGNMENT:

Position the check under the gauge so that the field to be measured is located over the correct country area (U.S. or Canada). The bottom edges of the characters must be within the dashed boundary lines above and below the solid base line.

MICR FIELD DETAILS

Chart 3							
Field	Position	Description					
Amount	1	Amount Symbol					
	2 through 3	Cents					
	4 through 11	Dollars (zero fill to left)					
	12	Amount Symbol					
Blank	13						
On-Us	14 through 31	Determined by bank, generally contains the account					
		number, serial number, or transaction					
		Code					
	32	May optionally expand to position 32					
Transit	33	Transit Symbol					
	34	Check digit					
	35 through 38	Institutional identifier					
	39 through 42	Check routing symbol					
	43	Transit Symbol					
External	44 or 45	Optional External Processing Code					
Processing							
Auxiliary	45/46 through 65	Determined by bank, generally contains numbering,					
On-Us		transaction codes, and internal controls. Checks with this					
		field must be longer than 6 inches.					

SECURE FONTS™





This package includes eight different fonts for printing check amounts and payee names. These Secure Fonts are designed to be difficult to alter or forge. You can choose between fonts with or without printed text below the individual character. (*Fonts with printed text below each character should be printed on a 600 dpi or higher printer.*) Each font offers a number of different ways to vary the overall Secure Font line. Our examples below show some of the ways to do this. Note that these fonts support checks in dollars, cents, pounds sterling, yen, or the euro.



CHARACTER SET

Each Secure FontTM contains several lead-in and lead-out characters, numbers, special symbols, and capital letters. Chart 4 shows the complete character set of each font.

A	SCII	Secure Fonts™		A	SCII	Secure Fonts™					
Char	Position	1-2	3-4	5-6	21-22	Char	Position	1-2	3-4	5-6	21-22
<u>!</u>	33	PAY TO The Ordea Of	PAY TO THE ORDER DF	THE CRIER OF	PAY TO The Orjer Of	6	54				
#	35		POUND	I I I I I I Peund	POLINE	7	55			SEVEN	
\$	36					8	56			с), 1)) 1,11 1,111 стан	
%	37				%	9	57	Ē		A LU A LU A LU A LU A LU A LU A LU A LU	on:
1	39				8	<	60				
(40					=	61				•
)	41	D	D			>	62				
*	42				*		91				
+	43	PUUS	PW 8	PLU8			93				
,	44	E OMMA	COMMA	COMMA	ig cours		95				
-	45				555 11975	{	123				
-	46	PERIOD	PERIOD	PIRIOD	E PE BIQD	}	125				
1	47	LASH	J Blash	STASH	51. LSH	¢	162				C
0	48		ZENG		0	£	163	POUND	POUNC	TOURN	
1	49		ONE	dNE	ONE	¤	164	EURO		EURO	EURC
2	50					¥	165	TT			
3	51				THREE	Α	65	蓋			A
4	52	FOUR	FOUR	FOUR	A.	В	66	Ē			B
5	53				S	С	67				Ç

Chart 4

A	SCII	Secure Fonts™			 A		Secure Fonts™				
Char	Position	1-2	3-4	5-6	21-22	Char	Position	1-2	3-4	5-6	21-22
D	68				D.	Ρ	80				P.
Ε	69					Q	81				Q
F	70					R	82		R		R
G	71				G	S	83	五章			S -
Η	72					Т	84				ESEME Second
	73					U	85				
J	74				,	V	86		V		V
Κ	75		X		K	W	87				Ŵ
L	76				L	X	88		X		X
Μ	77					Y	89				Y
N	78					Ζ	90		2		
0	79				O						

Chart 4 continued

VARIATIONS:





PRINTING CHECK AMOUNTS

First, decide whether to use a Secure FontTM with, or without, text printed below it. Odd numbered Secure Number fonts have no text below each character, while even numbered Secure FontsTM have text printed below each character:



To print check amounts with these special fonts, you add a special lead-in character (*except with Secure Fonts 21 & 22*) and end the string with a lead-out character. Each font offers four different lead-in and lead-out characters. For example, to print the amount "\$1.00" you could use:

(\$1.00) or <\$1.00> or [\$1.00] or $\{\$1.00\}$

When this text is placed in a Secure FontTM you get:



You may optionally follow the lead-in character with padding, to make the amount field a fixed length. The "_" character prints the selected background with no character, or you can use the " * " or the " = " for padding. For example:



Finally, you can select a typeface name to vary the appearance of the check amount:



PRINTING PAYEE NAMES

You can add a "Pay to the order of" message before a payee name by using the "!". For example:



To print payee names with these special fonts, you typically add a special lead-in character and end the string with a lead-out character. Note that while these fonts only support upper case letters, they automatically map lower case letter into upper case one. For example, to print "BOB" you could use:

!(BOB) or !<Bob> or ![BOB] or !{Bob}

When placed in a Secure FontTM, you get:



You can add a space between words by using the "_" for padding. For example:

![BOB_SMITH] gives →



Finally, selecting a different typeface name varies the appearance of the check amount:



EMBEDDING MICR FONTS IN PDF FILES

The fonts in this MICR set are **not** embeddable. When you embed a font in a PDF document **or print to a pdf file**, you are actually distributing a copy of that font with every single PDF file you generate. Your PDF generator glues a copy of the MICR font to the end of each PDF file it builds. This font is then installed on every computer that views the PDF document. Also note that when using PDF files it is easy to print a MICR line on a printer that has not been calibrated. This can lead to check rejection at your bank.

Embeddable versions of these fonts are available, at additional cost. Pricing for this add-on font set is based on how many computers or users will use the embeddable fonts When you purchase an embeddable add-on font set you receive a new version of these fonts, and the new fonts will embed in PDF files. You must contact Elfring Fonts to order an embeddable font set, or order them with your original MICR purchase.

VISUAL BASIC FUNCTIONS FOR ACCESS, EXCEL, AND WORD

This package contains macros / functions that let you automatically build Secure FontTM strings in Excel, Access, and indirectly in Word. This set includes the following functions:

Function	Details
SecureSqr(Text)	Converts all text to upper case, turns spaces into underlines, and removes any illegal characters. Square lead-in and lead-out characters are added to the string. This result must be formatted with one of our Secure Fonts [™] .
SecureSqrPay(Text)	Converts all text to upper case, turns spaces into underlines, and removes any illegal characters. "Pay to the order of", plus square lead-in and lead-out characters are added to the string. This result must be formatted with one of our Secure Fonts™.
SecureRnd(Text)	Converts all text to upper case, turns spaces into underlines, and removes any illegal

Chart 5

	characters. Round lead-in and lead-out characters are added to the string. This result must be formatted with one of our Secure Fonts [™] .
SecureRndPay(Text)	Converts all text to upper case, turns spaces into underlines, and removes any illegal characters. "Pay to the order of", plus round lead-in and lead-out characters are added to the string. This result must be formatted with one of our Secure Fonts™.
SecureRnd(Text)	Converts all text to upper case, turns spaces into underlines, and removes any illegal characters. Triangular lead-in and lead-out characters are added to the string. This result must be formatted with one of our Secure Fonts [™] .
SecureRndPay(Text)	Converts all text to upper case, turns spaces into underlines, and removes any illegal characters. "Pay to the order of", plus triangular lead-in and lead-out characters are added to the string. This result must be formatted with one of our Secure Fonts [™] .

Warning!

These Visual Basic functions do **very** limited error checking. Any character that does not exist in the Secure FontsTM character set is simply deleted.

Using Visual Basic Functions in Excel

Open the spread sheet where you want to add Secure FontTM functions (*or create a new spread sheet*). Click on Tools, Macros, then Visual Basic Editor. In the Visual Basic Editor tool, click on File, Import File, and select the drive and folder where you installed our MICR Fonts package (*probably MICR*). The Visual Basic file, **VBsecure.bas**, should appear there. Select this file and open it. This will add a new function module, EFSECURE, to your spread sheet. This module is automatically saved along with your spread sheet and adds to it the six functions described in Chart 5.

These bar code functions can be used in any formula or cell to build working bar codes. For example, if cell H9 is defined as a text cell (*Format, Cell, Number, Text*) and cell I9 has the formula =SecureSqr(H9), then any text entered in cell H9 will be converted into a Secure FontsTM string in cell I9. Note that you also need to select the proper typeface for that data, using Format, Cell, Font. See Chart 4 for applicable font names.

Using Visual Basic Functions in Access

Open the database where you want to add Secure FontTM functions (*or create a new database*). Under your database Objects, click on Modules, then click on the New icon at the top of the box. This will bring up the Visual Basic Editor tool. Click on File, Import File, and select the drive and folder where you installed our MICR Fonts package (*probably MICR*). The Visual Basic file, **VBsecure.bas**, should appear there. Select this file and open it. This will add a new function module, EFSECURE, to your database. This module is automatically saved along with your database and adds to it the six functions described in Chart 5.

These bar code functions can be used in a report to build working bar codes. To use these functions, pass data to them from your table fields and return the result in a report. This is accomplished by entering a formula =SecureSqrPay ([table.field]) in the control source field of the report. **Note** that you need to select the proper typeface for that data. See Chart 4 for a complete listing of font names.

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