

**American National Standard
for Financial Services**

**ANS X9.100-160-1-2004
(formerly published as ANS X9.13)**

**Part 1: Placement and Location of Magnetic
Ink Printing (MICR)**

Accredited Standards Committee X9, Incorporated
Financial Industry Standards

Date Approved: 10/15/2004

American National Standards Institute

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Contents

Foreword	viii
Introduction	ix
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Symbols and abbreviated terms	5
5 Dimensions and positioning	6
5.1 Reference edges	6
5.1.1 Horizontal dimensions	6
5.1.2 Vertical dimensions	6
5.2 Document size limits	6
5.3 Clear band (MICR)	6
5.4 Clear band (optical)	6
5.4.1 Printed borders	6
5.5 MICR print band	7
5.5.1 Space limitations (six inch documents)	7
5.5.2 Space limitations (documents over six inches)	7
6 Character spacing	7
6.1 Character pitch	7
6.1.1 Tolerance accumulation	7
6.1.2 Exception to character spacing	7
6.2 Spacing	7
6.3 Tolerance between fields and within fields	8
6.3.1 Amount encoding	8
6.3.2 Consecutive numbering	8
6.3.3 Transaction codes	8
7 Description of fields and use of symbols	8
7.1 General	8
7.2 Amount field and amount symbol	8
7.2.1 Amount field boundaries	8
7.2.2 Amount field format	8
7.3 On-Us field and related symbols	9
7.3.1 On-Us field boundary	9
7.3.2 On-Us field format	9
7.3.3 On-Us symbol—usage	9
7.3.4 Dash symbol—usage	9
7.4 Routing field and transit symbol	10
7.4.1 Routing field location	10
7.4.2 Routing field format	10
7.4.3 Routing field structure - source publication	10
7.5 External Processing Code (EPC) field	10
7.5.1 EPC field location	10
7.5.2 EPC field format	10
7.5.3 Maximum distance to adjacent fields	11

7.5.4	EPC - Adjacent character tolerance.....	11
7.5.5	EPC - Distance to trailing edge	11
7.5.6	EPC - Imprint tolerance for six inch checks	11
7.6	Auxiliary On-Us field.....	11
7.6.1	Auxiliary On-Us field location.....	11
7.6.2	Auxiliary On-Us field - maximum distance to adjacent fields	11
7.6.3	Auxiliary On-Us field - adjacent character tolerances	11
7.6.4	Auxiliary On-Us field - distance to trailing edge.....	11
7.6.5	Auxiliary On-Us field - dash symbol use	12
7.6.6	Auxiliary On-Us field maximum characters	12
Annex A (normative) Compliance Testing		22
Annex B (informative) Dimensional Accuracy.....		23
Annex C (informative) Metric Conversion Table		24

Figures

FIGURE 1 – MICR IMPRINT AREA – MASTER LAYOUT	13
FIGURE 2 – EXAMPLE OF MICR ENCODING ON A SIX-INCH CHECK	14
FIGURE 3 – EXAMPLE OF MICR ENCODING ON A CHECK LONGER THAN SIX INCHES	14
FIGURE 4 – DISTANCE BETWEEN CHARACTERS	15
FIGURE 5 – DISTANCE BETWEEN CHARACTERS WITH ONE BLANK SPACE	15
FIGURE 6 – BANK PRINTING OF AMOUNT	15
FIGURE 7 – ACCOUNT NUMBER AND CONSECUTIVE NUMBER PRINTED BY DIFFERENT METHODS	15
FIGURE 8 – AMOUNT DATA AND TRANSACTION CODE PRINTED SIMULTANEOUSLY	16
FIGURE 9 – SPACING ALLOWANCE WHEN ADJACENT CHARACTERS ARE FROM DIFFERENT PRINT METHODS	16
FIGURE 10 – AMOUNT FIELD WITH AMOUNT DATA PRINTED	16
FIGURE 11 – ON-US FIELD WITH 20 CHARACTER SPACES	17
FIGURE 12 – EPC PRINTED AT MAXIMUM DISTANCE FROM ON-US AND ROUTING SYMBOLS	17
FIGURE 13 – EPC PRINTED ADJACENT TO ROUTING SYMBOL	17
FIGURE 14 – EPC PRINTED ADJACENT TO ON-US SYMBOL	18
FIGURE 15 – EPC ADJACENT TO BOTH ON-US AND ROUTING SYMBOLS	18
FIGURE 16 – SINGLE DIGIT EPC ON A SIX-INCH CHECK	18
FIGURE 17 – AUXILIARY ON-US FIELD	18
FIGURE 18 – AUXILIARY ON-US FIELD AT MAX. PERMISSIBLE DISTANCE FROM ROUTING SYMBOL	18
FIGURE 19 – AUXILIARY ON-US FIELD AT MAXIMUM PERMISSIBLE DISTANCE FROM EPC	19
FIGURE 20 – AUXILIARY ON-US FIELD PRINTED ADJACENT TO ROUTING SYMBOL	19
FIGURE 21 – DISTANCE FROM CHECK TRAILING EDGE TO AUXILIARY ON-US FIELD	19
FIGURE 22 – SERIAL NUMBERING FOLLOW ACCOUNT NUMBER	19
FIGURE 23 – SERIAL NUMBERING PRECEDES ACCOUNT NUMBER	20
FIGURE 24 – LIMITS FOR NON-MAGNETIC PRINTING WITHIN THE MICR CLEAR BAND	20

Foreword

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Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

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Introduction

This publication is a revision of American National Standard Specifications for Placement and Location of MICR Printing, X9.13 - 1999. The material presented in this standard is a result of the combined efforts of financial institutions, check printers, business forms manufacturers, software suppliers and manufacturers of processing and test equipment for the financial services industry. This standard specifies the check sizes and the printing format for the various fields contained on the check. The continued successful use of this standard in the United States payments system justifies the reissuing of this standard with revisions that bring it up to date.

The revisions issued in 1983 and 1990 changed the original by providing for a new field, the External Processing Code (EPC), with additional tolerance for proper printing, added rules governing the distance between the routing and auxiliary On-Ups fields on checks, established a rule requiring an On-Ups symbol to start and stop a serial number in the auxiliary On-Ups field.

Building on the 1990 document, a 1999 revision incorporated an expanded definitions section and provided for an optical clear band along the aligning edge of the document in addition to the already familiar MICR clear band. In addition, rules governing the spacing tolerances between printed characters both within fields and between fields, and from document edges and printed characters have been clarified. Finally, a normative annex addressing approved EPC applications was added along with an informative annex to enable metric conversion of the dimensions referenced in this standard. In this revision, the normative annex has been removed and replaced by a new standard part 2 (ANS X9-100-160-2) covering the same material.

This revision further adds a new limit of 17 MICR characters in the auxiliary On-Ups field. Previously, the number of characters in this field was constrained by the length of the check (up to 21 characters could be printed). The new limit is necessary to insure interoperability between this and other X9 standards that support electronic interchange and the creation of IRDs (substitute checks).

While this revision does not attempt to alter allowable characters contained within the On-Ups or auxiliary On-Ups fields, the use of dashes in either field, or of embedded or trailing On-Ups symbols within the On-Ups field, is considered non-traditional and should be examined for alternatives. There is a strong desire to eliminate these usages from this standard as changing check capture platforms to reproduce these formats is seen as major obstacle to full adoption of Check 21. Users of this standard are strongly cautioned that future changes should be expected.

It is important to note that ASC X9 is responsible for the assignment of EPC digits (see X9.100-160-2) for specific future applications as well as the monitoring of their use within the check processing community. It is expected that printers of checks will continue to exercise careful concern for all of the considerations specified in this standard in order to ensure maximum performance and continued success.

Suggestions for the improvement or revision of this Standard are welcome. They should be sent to the X9 Committee Secretariat, Accredited Standards Committee X9, Inc., Financial Industry Standards, P.O. Box 4035, Annapolis, MD 21403 USA.

This Standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Financial Services, X9. Committee approval of the Standard does not necessarily imply that all the committee members voted for its approval.

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ANS X9.100-160-1-2004

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Part 1: Placement and Location of Magnetic Ink Printing (MICR)

1 Scope

Part 1 of this standard covers only design considerations that apply to placement and location of magnetic ink printing on checks, drafts, and other documents intended for automated processing among depository institutions. Other types of documents such as internal control forms are not covered. A complete understanding of MICR printing requires reference to other standards and technical guidelines listed in Clause 2.

2 Normative references

The following publications contain provisions, which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated are valid. All standards are subject to revision. Accredited Standards Committee X9 (ASC X9) maintains a register of currently valid financial industry standards. Please see www.x9.org for additional information.

ANS X9.7-1999¹, *Bank Check Background and Convenience Amount Field Specification*

ANS X9.18-1998, *Paper Specifications for Checks*

ANS X9.27-2000², *Print and Test Specifications for Magnetic Ink Printing (MICR)*

ANS DSTU X9.37-2003³, *Specification for Electronic Check Exchange*

ANS X9.40-1998⁴, *Check Correction Strip Specification*

ANS X9.100-140-2004, *Specifications for an Image Replacement Document*

¹ At the time of this publication, a work effort is being organized to update ANS X9.7. Once that revision is completed, the correct reference will be ANS X9.100-110.

² At the time of this publication, ANS X9.27 is under revision. Once that revision is completed, the correct reference will be ANS X9.100-20.

³ At the time of this publication, DSTU X9.37 is under revision. Once that revision is completed, the correct reference will be ANS X9.100-180.

⁴ At the time of this publication, ANS X9.40 is being reballoted. Once approved, the correct reference will be ANS X9.100-151.

ANS X9.100-160-1-2004

ASC X9/TG-100-2003, *Organization of Standards for Paper-based and Image-based Payments*

ASC X9/TG-2-1995, *Understanding and Designing Checks*

American Bankers Association *Key to Routing Numbers*. TFP, Skokie, IL

Federal Reserve Regulation CC

NOTE

Be aware that Standards and Technical Guidelines are regularly revised. In all cases the most recent revision date represents the correct version. Be especially careful if the revision date indicates that the referenced publication is more than five (5) years old. Also, all Standards and Technical guidelines are cross-referenced. In the event that the same information is referenced in two or more standards, the publication with the most recent revision date is the correct version.

3 Terms and definitions

NOTE

Each term is followed by a reference to the defining standard.

3.1

aligning edge (ANS X9-100-160-1/X9.13)

The bottom edge of a document when its face is viewed.

3.2

amount field (ANS X9-100-160-1/X9.13)

Positions 1-12 of the MICR line on a document, within which the dollar amount is encoded.

3.3

amount symbol (ANS X9-100-160-1/X9.13)

The symbol in the E-13B font which identifies the field that bears the dollar amount of a check or other MICR encoded transaction document.

3.4

auxiliary On-Us field (ANS X9-100-160-1/X9.13)

A variable format, optional field in the MICR line, located to the left of the routing field, used at the discretion of the issuing financial institution.

3.5

character (MICR) (ANS X9.27/X9.100-20)

Any of the ten numerals or four special symbols comprising the MICR type font known as E-13B.

3.6

character space (MICR) (ANS X9-100-160-1/X9.13)

A 0.125 inch space in the MICR print band within which one MICR character may appear.

3.7

clear band (MICR) (ANS X9.27/X9.100-20)

A horizontal band, 0.625 inch high, on the front and back of the document, measured from the aligning edge, that must be free of any magnetic ink other than that of the E-13B font.

3.8

clear band (optical) (ANS X9.27/X9.100-20)

A 0.300 inch high band that has included within it the MICR print band. This band is located 0.150 inch above the aligning edge and extends the length of the document.

3.9

consecutive number (ANS X9-100-160-1/X9.13)

The document's serial number, printed in MICR characters. On checks of sufficient length it generally appears in the auxiliary On-Us field. On shorter, personal-sized checks, it generally appears to the left or to the right of the account number in the On-Us field.

3.10

document (MICR) (ANS X9-100-160-1/X9.13)

Any printed item, including but not limited to checks, which conforms to all applicable MICR standards.

3.11

E-13B (ANS X9.27/X9.100-20)

A special type font consisting of ten numerals and four special symbols, developed for magnetic ink character recognition.

3.12

extension strip (ANS X9.40/X9.100-151)

A paper strip affixed to the bottom of a check to permit correct encoding of a MICR line. It is typically utilized for repairing rejected checks.

3.13

external processing code (EPC)(ANS X9-100-160-1/X9.13)

A MICR digit that conveys special information regarding the correct handling or routing of a check or check data by financial institutions and other processors.

3.14

external processing code field (EPC field) (ANS X9-100-160-1/X9.13)

An optional, single digit field located to the left of the routing field on a check. The EPC field is used for special purposes as authorized by ASC X9.

3.15

fixed format (ANS X9-100-160-1/X9.13)

A term applied to the required and optional fields for which the location, digit sequence and structure are completely specified.

3.16

leading edge (ANS X9-100-160-1/X9.13)

The right edge of a document when its face is viewed.

ANS X9.100-160-1-2004

3.17

magnetic ink (ANS X9.27/X9.100-20)

The ink used to print the E-13B code line for all MICR documents. It is formulated by introducing iron oxide particles to the ink materials, allowing the characters printed to be read by magnetic readers designed for this purpose.

3.18

magnetic ink character recognition (MICR) (ANS X9.27/X9.100-20)

The common machine language specification for the paper-based payment transfer system. It consists of magnetic ink printed characters of a special design, called the E-13B font, that can be recognized by magnetic readers.

3.19

MICR (ANS X9.27/X9.100-20)

See magnetic ink character recognition (MICR).

3.20

MICR print band (ANS X9.27/X9-100-120)

See print band (MICR). 3.21

On-Us field (ANS X9-100-160-1/X9.13)

The MICR print band area between the closing amount symbol and the opening transit symbol. Arrangement of the On-Us field is variable, specified by the financial institution on which the check is written. It may include such information as the user's account number, a consecutive number, and a transaction or processing code.

3.22

On-Us symbol (ANS X9-100-160-1/X9.13)

The symbol in the E13B font that identifies the field(s) containing information unique to the issuing financial institution.

3.23

optical clear band (ANS X9.27/X9.100-20)

See clear band (optical).

3.24

post-printed MICR data (ANS X9-100-160-1/X9.13)

Information encoded on a check after presentment for processing through the payment system, normally consisting of the amount field.

3.25

pre-printed MICR data (ANS X9-100-160-1/X9.13)

Information encoded on a check before delivery to the purchaser, normally consisting of the routing and On-Us Fields.

3.26

print band (MICR) (ANS X9-100-160-1/X9.13)

A 0.250 inch (6.350 mm) high band on the front of the document, subdivided into a series of character spaces, within which the E-13B characters are located.

3.27

process control code (ANS X9-100-160-1/X9.13)

See transaction code.

3.28**reader/sorter (ANS X9.18/X9.100-10)**

An automated MICR document processing machine that reads E-13B printed characters magnetically in order to sort the documents.

3.29**routing field (ANS X9-100-160-1/X9.13)**

Positions 33 through 43 of the MICR line that contain the routing number.

3.30**routing number (ANS X9-100-160-1/X9.13)**

The numeric identifier of a financial institution as assigned by the American Bankers Association or its agent. Routing numbers are used for routing purposes on checks, and virtually all other MICR documents, such as deposit tickets and batch tickets. A specific numeric series is reserved for internal bank usage.

3.31**symbol (ANS X9.13/X91.00-160-1)**

Any of the four special characters in the E-13B font used to identify fields of information, or to create a separation between groups of digits.

3.32**trailing edge (ANS X9-100-160-1/X9.13)**

The left edge of the document when its face is viewed.

3.33**transaction code (ANS X9-100-160-1/X9.13)**

An optional code usually located in the On-Us field that can identify document type or handling. Usage is specified by the financial institution on which the check is written.

3.34**transit symbol (ANS X9.27/X9.100-20)**

The symbol in the E-13B font that identifies the routing number field.

3.35**variable format field (ANS X9-100-160-1/X9.13)**

A term applied to the On-Us and auxiliary On-Us fields in which the data content and structure will vary.

4 Symbols and abbreviated terms

MICR – Magnetic Ink Character Recognition

EPC – External Processing Code

␣ transit symbol ␣ amount symbol

␣ On-Us symbol ␣ dash symbol

5 Dimensions and positioning

5.1 Reference edges

5.1.1 Horizontal dimensions

All horizontal format dimensions are measured from the leading edge of the document.

5.1.2 Vertical dimensions

All vertical dimensions are measured from the aligning edge of the document.

5.2 Document size limits

The maximum length and height of a check shall be 8.750 x 3.667 inches; the minimum length and height shall be 6.000 x 2.750 inches. Document dimensions are subject to a final printing and cutting tolerance of ± 0.0625 inch. For documents with attached correction strips see ANS X9.40.

5.3 Clear band (MICR)

A horizontal band, 0.625 inch high minimum, on the front and back of the document, measured from the aligning edge, which shall be free of any magnetic ink other than that of the E-13B font.

5.4 Clear band (optical)

The optical clear band is a 0.300-inch high band that has included within it the MICR print band. This band shall be located 0.150 inch above the aligning edge and extends the length of the document. As a general rule, all non-magnetic printing with a print contrast signal (PCS) greater than 0.30 shall be positioned outside the optical clear band. For a complete discussion of PCS, see ANS X9.7 and Figure 24 of this document.

5.4.1 Printed borders

Special provisions are made for non-magnetic printed borders. Non-magnetic printed borders, having a PCS greater than 0.30, may pass (vertically) through the optical clear band subject to the following limitations:

The maximum infringement from the leading edge shall be limited to 0.200 inch.

The maximum infringement on the trailing edge shall be limited to:

Personal size (6.00 inch) checks - 0.159 inch maximum.

Business Size Checks - no closer than 0.0625 inch from leftmost MICR character.

Borders having a PCS greater than 0.30, that run parallel to the optical clear band, shall be positioned no higher than 0.150 inch from the aligning edge. See Figure 24.

5.5 MICR print band

The MICR print band is a 0.250-inch high band that shall begin at 0.1875 inch from the aligning edge and shall end at 0.4375 inch from the aligning edge. This is a reference measurement, not subject to the ± 0.0625 inch cutting tolerance. Measured horizontally, the MICR print band shall begin at 0.3125 inch from the leading edge and shall extend to 8.4375 inch maximum from the leading edge. This horizontal dimension is subject to the ± 0.0625 inch cutting tolerance. The MICR code line shall be printed in the MICR print band within the MICR clear band. Character spaces within the MICR print band are numbered from right to left as shown in Figure 1.

5.5.1 Space limitations (six inch documents)

The MICR print band on checks of six-inch length shall be limited to forty-four (44) character spaces. See Figure 1.

5.5.2 Space limitations (documents over six inches)

On checks longer than six inches, the number of character spaces increases as a function of the length of the check. Additional character spaces provide the opportunity to include an auxiliary On-Us field for serial numbers or other purposes. See Clause 7.6.6 for limitations on the auxiliary On-Us field.

6 Character spacing

6.1 Character pitch

Character pitch is expressed as the distance between the right edges of adjacent characters. This distance shall be 0.125 inch ± 0.010 inch. See Figure 3.

6.1.1 Tolerance accumulation

The accumulation of spacing tolerances in any common field shall be limited to the extent that the accumulation does not infringe upon the boundaries defining the field.

6.1.2 Exception to character spacing

There are instances when the encoding of MICR characters necessitates an enlargement of spacing tolerances. A portion of the MICR code line may be pre-printed, and additional characters post-encoded alongside, but without a blank space between the two elements. In this case, the usual tolerance of 0.125 inch ± 0.010 inch is expanded to 0.125 inch $+0.035$ inch -0.010 inch for the adjacent characters of the pre-printed and post encoded elements. See Figure 9.

6.2 Spacing

A spacing of 0.250 inch ± 0.020 inch is accumulated when two characters within a field or between fields are separated by one space. See Figure 5.

6.3 Tolerance between fields and within fields

Character spacing expressed in 6.1 and 6.2 are preferred in all cases. However, a spacing tolerance of ± 0.0625 inch is permitted from field to field, or within a field when a blank space is placed between two characters to accommodate the problems inherent in positioning preprinted and post printed elements. See figure 6. When a blank space cannot be provided, adjacent character spacing shall never be less than 0.115 inch or more than 0.160 inch.

6.3.1 Amount encoding

The routing field and On-Us field data are normally preprinted, while the amount field is normally encoded by the first financial institution in which the item is deposited (post printed). See Figure 6.

6.3.2 Consecutive numbering

A check printer may use one printing technique such as lithography to print the routing field data and account number, and a different technique such as a numbering machine to print the consecutive number in the MICR line. See Figure 7.

6.3.3 Transaction codes

Data in the On-Us and auxiliary On-Us fields, used by the payor bank for process control or item identification, may be either preprinted or post-printed at the discretion of the payor bank. See Figure 8.

7 Description of fields and use of symbols

7.1 General

In MICR printing applications, four symbols are used: the amount symbol, On-Us symbol, transit symbol, and dash symbol. See Clause 4.

7.2 Amount field and amount symbol

7.2.1 Amount field boundaries

The amount field boundaries shall be located 0.250 and 1.875 inches from the leading edge, character spaces 1 through 12. The right edge of the opening (rightmost) symbol shall be located 0.3125 inch ± 0.0625 inch from the leading edge of the document. See Figure 1.

7.2.2 Amount field format

The amount field shall always consist of ten digits bracketed by two amount symbols (⌞). See Figure 10. The amount symbol shall not be used in any other field.

7.3 On-Us field and related symbols

7.3.1 On-Us field boundary

The rightmost boundary of the On-Us field shall be located 1.875 inches from the leading edge. See Figure 1 and Figure 11.

7.3.2 On-Us field format

The On-Us field is located between the amount field and routing field in positions 13 through 32. It defines the boundaries within which On-Us data may appear (typically the account number, and optionally, a serial number and/or transaction code). Positions 13 through 32 included cover 20 character spaces. However, because of the printing tolerance requirements explained below, the maximum number of MICR characters allowed in this field is 19.

7.3.2.1 Tolerance space and impact of post encoding transaction code with amount

Typically, On-Us data is preprinted and the amount of the check is post encoded. To avoid a spacing problem between these two elements, a blank space is required. That blank space is usually Position 13. Note, however, that when a transaction code is post encoded simultaneously with the amount, the blank space shall be to the left of the leftmost digit of the transaction code. (See Figures 6 and 8.)

7.3.2.2 Printing entire MICR line at once

Another consideration arises when the entire MICR line, including the amount, is pre-printed at one time by a single print method. Here, it is theoretically possible to print 20 MICR characters in the On-Us field without creating a spacing problem. Nevertheless, to avoid potential conflicts with the capabilities of processing equipment, the limit of 19 characters shall be observed.

NOTE Although the format of the On-Us field varies, it commonly contains an account number and a check number positioned to the right of the first On-Us symbol (see Figure 22). Another common format for the On-Us field positions the check number to the left of the account number, often left of a second (optional) On-Us symbol (see Figure 23). The reader should consider that capture platforms of many institutions are not conditioned for interpretation or storage of MICR information positioned to the left of a second On-Us symbol. Conversely, in the absence of a symbol, many platforms will be unable to distinguish boundaries of sub-field structures and may also have sub-field character limitations that force truncation of high-order digits when storing field content. Therefore, any institution engaging in or planning for electronic exchange of checks should seriously consider the ramifications of structuring the On-Us field in nontraditional ways.

7.3.3 On-Us symbol—usage

An On-Us symbol shall always appear to the right of the account number. It is also permissible to use one additional On-Us symbol in the On-Us Field to bracket other MICR numerical data, but there shall never be more than two (2) On-Us Symbols present in the On-Us field. The On-Us symbol (⑈) shall be used in the On-Us and auxiliary On-Us fields only. Usage of the optional second On-Us symbol is discouraged, and it should not be used unless additional numeric data is present.

7.3.4 Dash symbol—usage

The dash symbol (⑆) may be used as a separator in the On-Us field. However, payor institutions should note that if a blank space will serve the same purpose, it is preferable to leave that position blank, thereby eliminating any possibility of a reader/sorter failure to recognize the dash symbol.

7.4 Routing field and transit symbol

7.4.1 Routing field location

The routing field shall be located between 4.3125 and 5.6875 inches from the leading edge, positions 33 through 43. Both of these horizontal dimensions are subject to the ± 0.0625 inch printing and cutting tolerance. See Figure 11. This field defines the boundaries within which the routing number of the payor bank shall appear.

7.4.2 Routing field format

The routing field shall contain the routing number. The routing number normally consists of two groups of four digits followed by a Mod 10 check digit character, except in the case when a check digit is not used. In that case, the two groups of four digits shall be separated by a dash symbol. The routing number shall be bracketed by two transit symbols (⌚), one on each side of the routing number. The transit symbol shall not be used in any field other than the routing field.

NOTE: Presence of the dash symbol (—) as a data set separator in the routing number on checks may indicate checks drawn on financial institutions in Canada or Mexico.

7.4.3 Routing field structure - source publication

For a complete description of the routing field structure, including an explanation of the formula for, and use of the Mod 10 check digit, see American Bankers Association *Key to Routing Numbers*.

7.5 External Processing Code (EPC) field

ANS X9.100-160-2 (Part 2: EPC Field Use) identifies and defines currently assigned EPC digits. Additional information regarding the management of EPC codes can be found there as well.

7.5.1 EPC field location

The external processing code (EPC) field is an optional fixed format field located to the left of the routing field, or between the routing field and the auxiliary On-Us field when auxiliary On-Us data is present. This field is created by inserting one MICR numerical character between the closing transit symbol and the opening On-Us symbol of the auxiliary On-Us field. The EPC digit may appear in either space 44 or space 45 for checks longer than 6.00 inches. Note that, due to document length considerations, only position 44 can be used in conjunction with 6.00-inch checks. (See Figures 1 and 2 detailing space limitations.) There are no special symbols associated with this field. Acceptable formats are detailed for personal (6.00 inch) checks in Figure 16 and for business size checks in Figures 12, 13, 14 and 15.

7.5.2 EPC field format

The EPC field format shall be limited to a single digit.

7.5.3 Maximum distance to adjacent fields

The EPC digit shall be no more than 0.250 inch to the left of the closing transit symbol, and shall be no more than 0.250 inch to the right of the opening On-Us symbol of the auxiliary On-Us field. See Figures 13 and 19.

7.5.4 EPC - Adjacent character tolerance

The EPC digit may be printed adjacent to the closing transit symbol, the opening On-Us symbol of the auxiliary On-Us field, or both if printing guarantees adjacent character tolerances. See Figures 13, 14, and 15.

7.5.5 EPC - Distance to trailing edge

There shall be at least 0.125-inch clear space (0.250 inch preferred from the left edge of the EPC digit to the trailing edge of the document if there is no auxiliary On-Us field data. For this reason, the EPC field on six-inch checks shall be limited to a single digit space (space 44) immediately to the left of and adjacent to the closing transit symbol. See Figures 1, 2 and 16.

7.5.6 EPC - Imprint tolerance for six inch checks

Because of the limited space and close printing tolerances on six-inch checks, the EPC digit shall be printed at the same time as the routing number.

7.6 Auxiliary On-Us field

7.6.1 Auxiliary On-Us field location

The auxiliary On-Us field is an optional variable format field positioned to the left of the routing field or the EPC when an external processing code is present. Data located in the auxiliary On-Us field shall be bracketed by On-Us symbols. See Figures 1 and 17.

7.6.2 Auxiliary On-Us field - maximum distance to adjacent fields

The opening On-Us symbol shall be located no farther than 0.250 inch from the closing transit symbol, or from an EPC digit if one is positioned between the closing transit and opening On-Us symbols. See Figures 18 and 19.

7.6.3 Auxiliary On-Us field - adjacent character tolerances

Whenever auxiliary On-Us data are printed with the routing number or EPC digit in a manner that guarantees tolerances for adjacent characters, the symbols may appear immediately adjacent to the EPC digit or the closing transit symbol. See Figures 14, 15 and 20.

7.6.4 Auxiliary On-Us field - distance to trailing edge

The number of character spaces available for use in the auxiliary On-Us field will depend upon the length of the document. A minimum space of 0.125 inch shall be maintained (0.250 inch preferred) between the closing On-Us symbol and the document trailing edge. See Figures 1 and 21.

7.6.5 Auxiliary On-Us field - dash symbol use

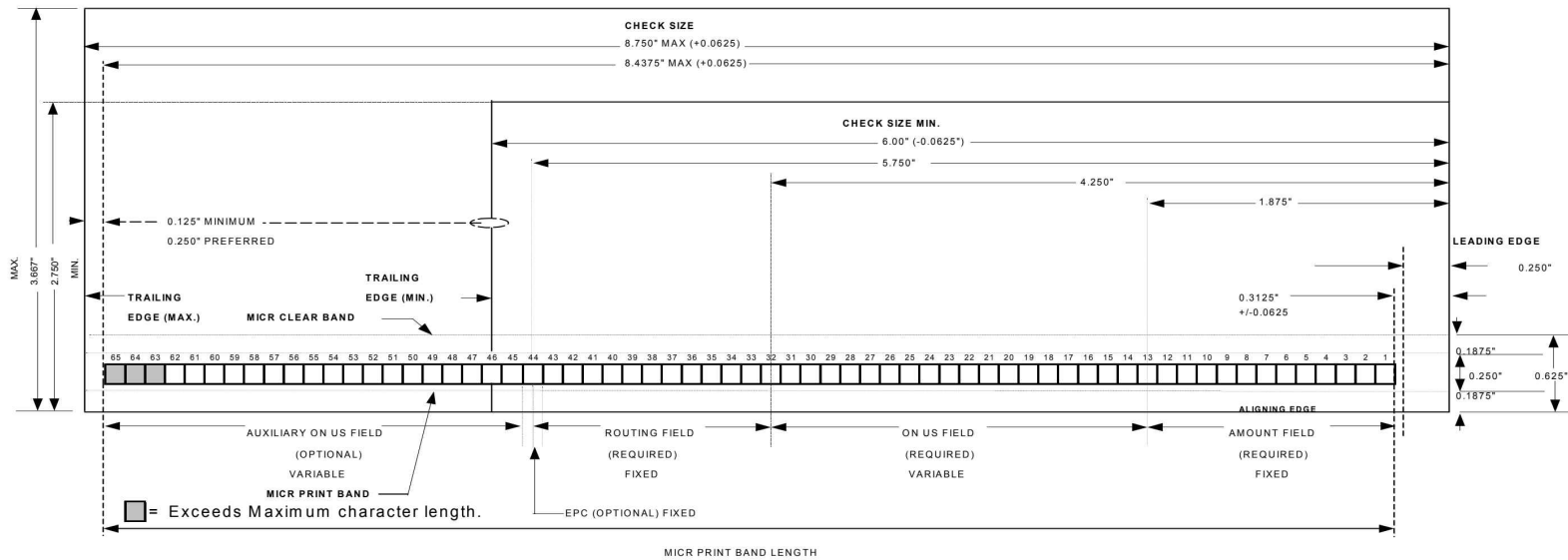
The dash symbol (▬) may be used as a separator in the auxiliary On-Us field. However, payor institutions should note that if a blank space will serve the same purpose, it is preferable to leave the position in question blank. This would eliminate reader/sorter failure to recognize the dash symbol.

7.6.6 Auxiliary On-Us field maximum characters

The auxiliary On-Us field on all checks shall not contain more than 17 characters, including the required two On-Us symbols and any other allowable characters. This maximum is necessary to support interoperability between electronic check standards that are limited to supporting 15 significant numerical digits or dashes and the physical size limitation of an IRD. For documents other than checks or IRDs, the maximum is at the discretion of the designer. See Clause 7.6.4.

FIGURE 1 – MICR IMPRINT AREA – MASTER LAYOUT

ILLUSTRATES THE PERMISSIBLE SIZE RANGE FOR CHECKS, LOCATES THE MICR CLEAR BANK AND PRINT BAND AND IDENTIFIED THE REFERENCE EDGES





NAME OF DEPOSITOR
STREET ADDRESS
CITY, STATE

00-6789/0000
12345678

101

DATE _____

PAY TO THE
ORDER OF _____ \$ _____

Dollars

Financial Institution Name
Street Address
City, State

Memo _____

MP

9 000006 7894 1 2345678 101 000001 2345

ROUTING FIELD ON-US FIELD AMOUNT FIELD

EPC FIELD

Figure 2 - EXAMPLE OF MICR ENCODING ON A SIX-INCH CHECK
SEE CLAUSES 5.5.2, 7.5.1 AND 7.5.5

NAME OF COMPANY
STREET ADDRESS
CITY, STATE

00-6789/0000

101

DATE _____

PAY TO THE
ORDER OF _____ \$ _____

Dollars

Financial Institution Name
Street Address
City, State

Memo _____

MP

000001 01 9 000006 7894 1 2345678 000001 2345

AUXILIARY ON-US FIELD ROUTING FIELD ON-US FIELD AMOUNT FIELD

EPC FIELD

Figure 3 - EXAMPLE OF MICR ENCODING ON A CHECK LONGER THAN SIX INCHES
ILLUSTRATES PRESENCE OF AUXILIARY ON-US FIELD
SEE CLAUSE 5.5.2

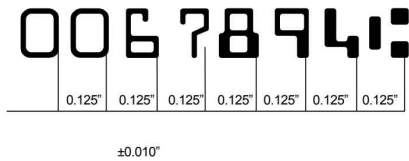


FIGURE 4 - Distance between characters

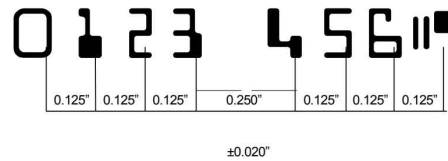


FIGURE 5 Distance between characters with one blank space

Note: Spacing shown in figures 4 AND 5 are preferred dimensions for all applications

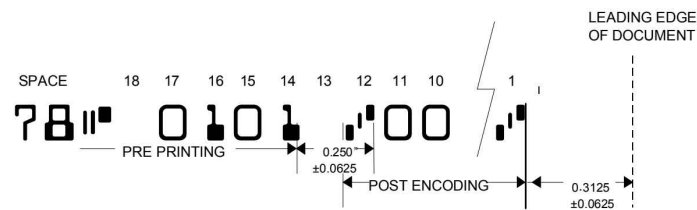


FIGURE 6 BANK PRINTING OF AMOUNT

SPACE 13 LEFT BLANK TO PROVIDE TOLERANCE SPACE BETWEEN PREPRINTED ON-US AND POST PRINTED AMOUNT. SEE CLAUSES 6.3, 6.3.1 AND 7.3.2

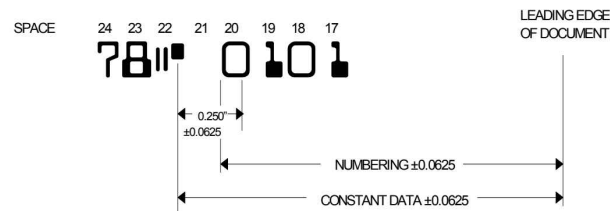


FIGURE 7 ACCOUNT NUMBER AND CONSECUTIVE NUMBER PRINTED BY DIFFERENT METHODS

BLANK SPACE (21) PROVIDES TOLERANCE FOR PRINTING ALIGNMENT. SEE CLAUSE 6.3.2

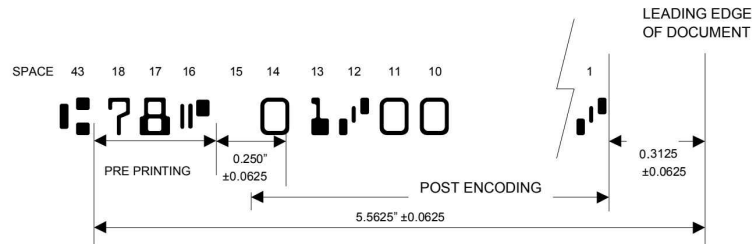


FIGURE 8 AMOUNT DATA AND TRANSACTION CODE PRINTED SIMULTANEOUSLY
 SPACE LEFT PURPOSELY BLANK DURING PREPRINTING TO PROVIDE TOLERANCE FOR POST PRINTED TRANSACTION CODE
 SEE CLAUSES 6.3.3 AND 7.3.2

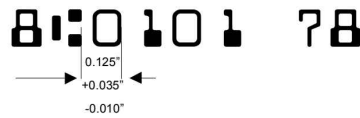


**FIGURE 9 – SPACING ALLOWANCE WHEN ADJACENT
 CHARACTERS ARE FROM DIFFERENT PRINT METHODS**
 SEE CLAUSE 6.1.2

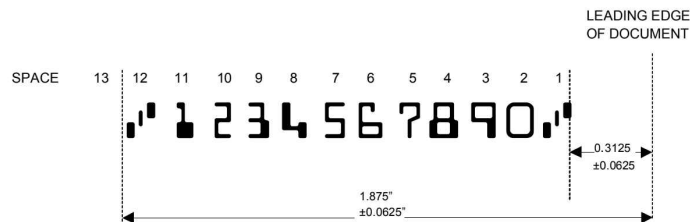


FIGURE 10 AMOUNT FIELD WITH AMOUNT DATA PRINTED
 MUST CONTAIN TEN NUMERIC CHARACTERS WITH AMOUNT SYMBOL AT BEGINNING AND END
 SEE CLAUSE 7.2.2

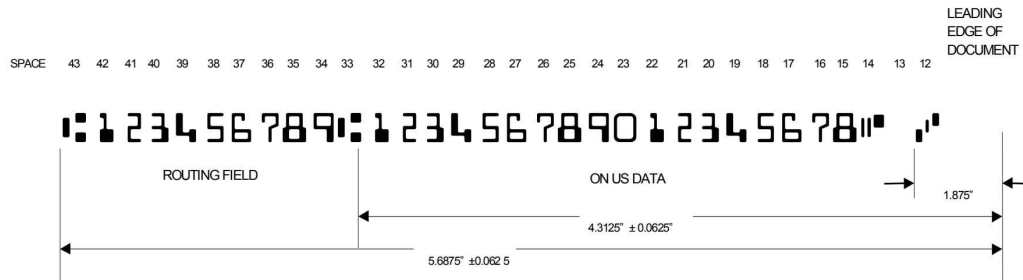


FIGURE 11 ON US FIELD WITH 20 CHARACTER SPACES
NOTE 19 CHARACTERS MAXIMUM. ONE ON-US SYMBOL REQUIRED
SEE CLAUSES 7.3.1 AND 7.4.1

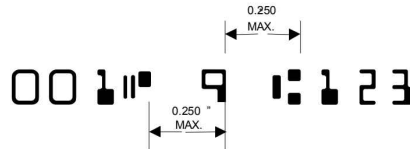


FIGURE 12 EPC PRINTED AT MAXIMUM DISTANCE FROM ON-US AND ROUTING SYMBOLS
SEE CLAUSE 7.5.1

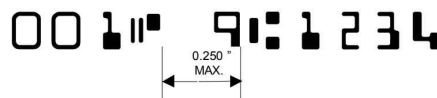


FIGURE 13 EPC PRINTED ADJACENT TO ROUTING SYMBOL
SEE CLAUSES 7.5.1, 7.5.3 AND 7.5.4

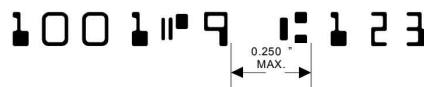


FIGURE 14 EPC PRINTED ADJACENT TO ON-US SYMBOL
SEE CLAUSES 7.5.1, 7.5.3, 7.5.4 AND 7.6.3



FIGURE 15 EPC ADJACENT TO BOTH ON-US AND ROUTING SYMBOLS
 PRINTED SIMULTANEOUSLY IN ONE CONTINUOUS LINE
 SEE CLAUSES 7.5.1, 7.5.4 AND 7.6.3

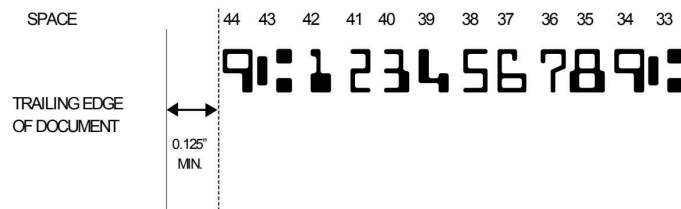


FIGURE 16 SINGLE DIGIT EPC ON A SIX INCH CHECK, ROUTING SYMBOL IN SPACE 43
 IN THIS SITUATION THE EPC SHALL ALWAYS BE PRINTED SIMULTANEOUSLY WITH THE ROUTING NUMBER
 SEE CLAUSES 7.5.1 AND 7.5.5



FIGURE 17 AUXILIARY ON-US FIELD
 SEE CLAUSE 7.6.1



FIGURE 18 - AUXILIARY ON-US FIELD AT MAXIMUM PERMISSIBLE DISTANCE FROM ROUTING SYMBOL
 SEE CLAUSE 7.6.2



FIGURE 19 AUXILIARY ON-US FIELD AT MAXIMUM PERMISSIBLE DISTANCE FROM EPC
SEE CLAUSE 7.6.2



FIGURE 20 AUXILIARY ON-US FIELD PRINTED ADJACENT TO ROUTING SYMBOL
PERMITTED ONLY WHEN THE AUXILIARY FIELD DATA AND ROUTING NUMBER ARE PRINTED SIMULTANEOUSLY
SEE CLAUSE 7.6.3

TRAILING EDGE
OF DOCUMENT



FIGURE 21 DISTANCE FROM CHECK TRAILING EDGE TO AUXILIARY ON-US FIELD
NOT SUBJECT TO CUTTING AND PRINTING TOLERANCE OF PLUS OR MINUS 0.0625 INCH
SEE CLAUSE 7.6.4



FIGURE 22 – SERIAL NUMBERING FOLLOWS ACCOUNT NUMBER
ON-US SYMBOL IS POSITIONED ON RIGHT SIDE OF ACCOUNT NUMBER
AND FALLS BETWEEN ACCOUNT NUMBER AND CHECK SERIAL NUMBER
SEE CLAUSE 7.3.2

0 1 0 1 1 2 3 4 5 6

FIGURE 23 – SERIAL NUMBERING PRECEDES ACCOUNT NUMBER
 ON-US SYMBOLS ARE POSITIONED ON BOTH LEFT AND RIGHT SIDES OF ACCOUNT NUMBER
 CHECK SERIAL NUMBER IS PRINTED ON LEFT SIDE
 SEE CLAUSE 7.3.2

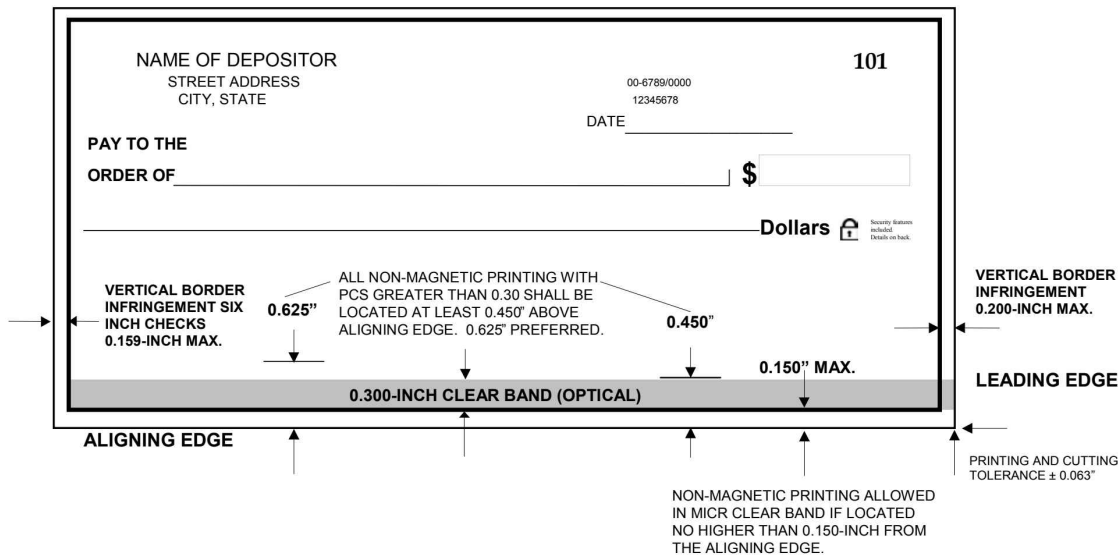


FIGURE 24 - LIMITS FOR NON-MAGNETIC PRINTING WITHIN THE MICR CLEAR BAND
 SEE CLAUSES 5.4 AND 5.4.1

Annex A (normative)

Compliance Testing

An accurate ruler divided into one sixty-fourth inch (0.015625) increments is sufficient to verify all dimensions when used under low power magnification. A more convenient method is the use of a specially designed Position and Dimension Gauge. Refer to ASC X9/TG-6 for availability. A complete discussion on compliance testing is outside the scope of this document. For a discussion on compliance testing, see ASC publication TG-6, and publication ANS X9.27.

**Annex B
(informative)**

Dimensional Accuracy

(This appendix is not a part of American National Standard Specifications for Specification for Placement and Location of Magnetic Ink Printing (MICR), X9.100-160-1-2004, but is included for information purposes only.)

Printers historically have made measurements using a fractional scale; therefore, tolerances typically have been expressed in fractions. Dimensions and tolerances in this standard, which are shown to 4 decimal places, are for the purpose of converting from prior fractional values and are not for the purpose of indicating the degree of dimensional accuracy expected. A number shown to 3 or 4 decimal places therefore implies a tolerance of ± 0.005 inch unless otherwise stated.

Annex C (informative)

Metric Conversion Table

All measurements in this standard are expressed in inches. The following factors will be helpful for converting measurements to metric equivalents.

1 inch = 2.54 cm or 25.4 mm

To convert from inches to millimeters, multiply inches by 25.4 and apply an appropriate rounding rule to three decimal places.

Example: 0.625 inch x 25.4 mm/inch equals 15.875 mm, and the result rounded to 15.88 mm.

Tolerances on metric dimensions should be considered to be +0.1 mm for all those cases where the implied English tolerance is +0.005 inch. A table for converting inches to millimeters is provided below:

Inches to Millimeters	
Inches	Millimeters
0.005	0.127
0.010	0.254
0.015625	0.397
0.020	0.508
0.035	0.889
0.0625	1.588
0.063	1.588
0.115	2.921
0.125	3.175
0.150	3.810
0.159	4.039
0.160	4.064
0.1875	4.763
0.200	5.080
0.250	6.350
0.300	7.620
0.3125	7.938
0.4375	11.113
0.450	11.430
0.625	15.875
1.875	47.625
2.750	69.850
3.3125	84.138
3.667	93.142
4.250	107.950
4.3125	109.538
5.5625	141.288
5.6875	144.463
5.750	146.050
6.000	152.400
8.4375	214.313
8.750	222.250

