TROY

MICR Basics Handbook

NOTE: For best results, view this document using Adobe Acrobat 5.0 or higher.
Click on the highlighted text in the table of contents to link directly to that section.

Table of Contents

Table of Contents

Conventions

This guide uses these conventions:

Bold indicates emphasis or a minor heading.

Italic refers to a document title or is used for emphasis.

COURIER type indicates text visible on a computer screen or keys on your computer keyboard.

DISPLAY FONT indicates text visible on the printer control panels display.

The letter ℓ is used in examples to distinguish the small letter l from the numeral 1 (one).

The character Ø is used in examples to distinguish the numeral 0 from the letter O.

<Esc>, <CR>, <LF>, <FF>, etc. are control characters. Use a text editor to enter the equivalent of the character. For example, to get <Esc>, hold down Ctrl; press P and Esc. Some text editors may vary.

NOTE:　　　　**Notes contain important information set off from the text.**

CAUTION:　　**Caution messages appear before procedures which, if not observed, could result in loss of data or in damage to equipment.**

WARNING:　　*Warning messages alert you to a specific procedure or practice which, if not followed correctly, could cause serious personal injury.*

Introduction

Welcome to the world of MICR (Magnetic Ink Character Recognition) printing! Your TROY MICR Printer is the best choice for MICR printing because, while others manufacture MICR printers as a sideline, TROY specializes in the design and manufacturing of high-quality MICR products. In this, ending its fourth decade manufacturing MICR products, TROY continues to be the premier choice for MICR encoding and financial document printing. This handbook provides information for using MICR to print checks and other financial documents.

Reference Documents

For additional details on MICR specifications and guidelines, refer to these publications:

- (United States): "Understanding and Designing Checks – ANSI X9/TG-2" document published by X9-Secretariat, American Bankers Association. This publication has additional check standards with detailed ordering information.

- (International): ISO-1004 standards document

Year 2000 Compliance

All TROY products (including software and firmware options) are designed to operate without date data processing and will operate reliably without interruption into the 21st Century. If you have additional questions regarding TROY products or the Year-2000 Compliance, please contact a TROY representative at (800) 332-MICR (6427).

What is MICR Printing?

MICR is an acronym for Magnetic Ink Character Recognition. MICR technology uses magnetically chargeable ink or toner to print the numbers and special characters on the bottom of checks or other financial transaction documents. The numbers usually include the account number from which the money will be drawn, the identification number, and routing and transit of the check for the bank where the account resides. MICR technology is used in the banking industry in many countries because it allows very fast and reliable document processing.

MICR History

In the 1950s, the demand for data processing created a need for a mechanized method of check processing. United States banks, bankers, machine manufacturers, and check processors formed several committees to suggest solutions. The ultimate result of these committees was adoption of the E-13B Magnetic Ink Character Recognition in 1958 by the American Bankers Association (ABA).

This E-13B system uses specially shaped characters, which are printed on the bottom of bank documents. Soon after, almost all checks produced in the United States and many other nations, were magnetically encoded with E-13B characters.

Much of the E-13B information was then accepted by the American National Standards Institute (ANSI) and incorporated into several specifications for MICR printing. Today these specifications are made available by ANSI, which defines, in detail, the formation of the E-13B characters, MICR line placement, the components of the MICR line, and other components of a bank check. Some of this information is also provided in this handbook. For more information, please refer to the ANSI document titled, "*Understanding and Designing Checks* – ANSI X9/TG-2".

Specially designed E-13B or CMC-7 fonts are used for magnetically reading financial documents. The following table lists the countries currently using E-13B *or* CMC-7:

E-13B	CMC-7
United States of America	France
Canada	Spain
Australia	Israel
United Kingdom	Other Mediterranean Countries
Japan	South America (except Colombia)
India	
Mexico	
Colombia	
Turkey	

Within the next few years, most of the economically developed/developing countries will have installed or will be installing MICR processing systems. As for MICR printing, no other financial processing system of the electronic age is so widely recognized for its reliability, durability, and economic feasibility. No other payment transfer system is so broadly accepted by the business community and general public.

International MICR Standards

This TROY MICR Basics Handbook provides details for MICR specifications and guidelines that apply to the United States. For information on International MICR specifications and guidelines, refer to the ISO-1004 standards document.

How MICR Works

The E-13B information needed by clearing houses and banks is printed in magnetic ink near the bottom of the document. After printing, the documents are then processed mechanically and electronically through a reader-sorter machine. This machine magnetically reads pertinent information about the check, including the amount of the check, account number, institution upon which the check was drawn and other miscellaneous transaction codes.

During the clearing process, the E-13B characters are read several times, at extremely high speeds (less than 1/1000th-of-a-second per character). Therefore, for MICR to work successfully, the MICR characters must be accurately printed on a document according to precise specifications.

The MICR Check

This section provides information about the design and printing of MICR checks. A typical business check is shown below in Figure 1-1.

Figure 1-1: Typical MICR Check

Check Size

ANSI specifies that check width must be at least 6.00" and not more than 8.75". Check height must be at least 2.75" and not more than 3.66" (see Figure 1-2 below).
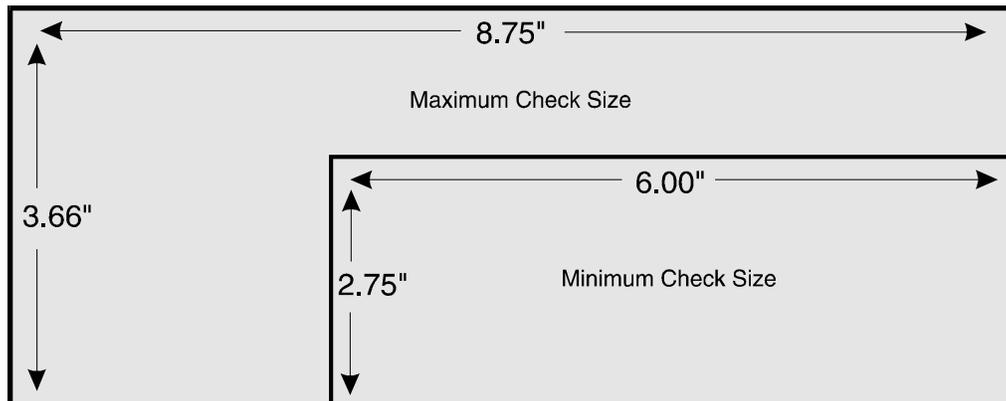
Figure 1-2: Minimum and Maximum Check Size

The MICR Line

The E-13B MICR characters (Figure 1-3) consist of ten specially designed numbers (0 through 9) and four special symbols (Transit, Amount, On-Us, and Dash). These characters and their relationship in the MICR line are described in detail in the following text and shown in Figure 1-4. For more details, refer to the TROY MICR Printer User's Guide, Section 6 – "Using TROY MICR Fonts" and the document titled, "Understanding and Designing Checks – ANSI X9/TG-2".

Transit   Amount   On-Us   Dash
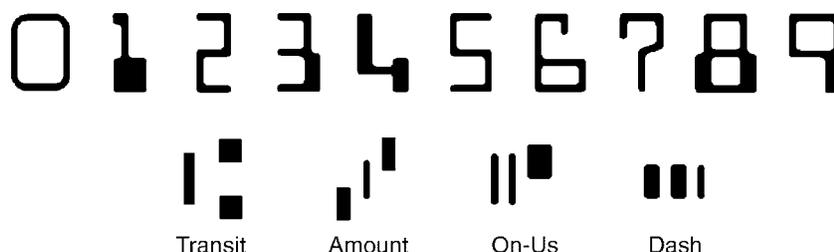
Figure 1-3: MICR Characters
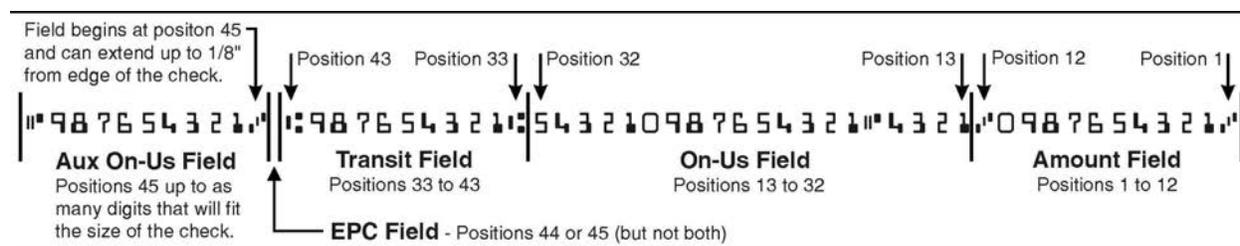
Figure 1-4: The MICR Line

Amount Field

The amount field occupies positions 1-12 on the MICR line. The amount field is not normally printed by the check supplier. This field is used for processing the check and is coded after the check is drawn in the post-encoding process at the bank of first deposit. From right to left, position 1 is the Amount symbol, positions 2 and 3 are cents, positions 4-11 are dollars (leading zeros filled from the left) and position 12 is the amount symbol. The amount field is designated as a fixed field that cannot be changed by the bank.

On-Us Field

The on-us field occupies positions 13-32 on the MICR line. Occupying nineteen spaces, each 1/8" (0.125") wide and to the right of the transit field. This is not a fixed field and is normally used by the bank for account number information, bank identification, check numbering or other special codes. An on-us symbol must appear to the right of the last account number digit. The four characters to the right of the on-us character (positions 13-16) are for special bank use.

Transit Field

The transit field is sometimes referred to as the routing field and occupies positions 33-43 on the MICR line. The routing field is reserved for the combined transit and routing codes used to direct the check as it passes through the system. This code is also referred to as the bank code. Because the numbers in this field are specially assigned, the transit field is designated as a fixed field that cannot be changed by the bank.

Referring back to Figure 1-4 on the previous page, position 33 is the transit symbol, position 34 is the check digit, position 35-38 is the bank number, position 39-42 is the routing number, and position 43 is the transit symbol.

EPC (External Processing Field)

The field immediately to the right of the auxiliary on-us field is a one-digit field called the EPC (External Processing Code) field. The field is either, *but not both*, positions 44 *or* 45 of the MICR line. This field is strictly controlled by the ASC (Accredited Standards Committee) X9B. It is used for specific purposes. The EPC field cannot be used without written authorization from the ASC X9B.

Auxiliary On-Us Field

The auxiliary on-us field occupies positions 45 and on up to any number of digits that fit the size of the check (digits may not extend further than 1/8" from the edge of the check) on the MICR line. The limits on the number of digits in this field are dictated by the length of the check and programming requirements of check-printing software packages.

The auxiliary on-us field is not present on small format checks (e.g., 6" personal style checks) as it would extend past the end of the check. On larger format business checks, this field is allowed to the left of the transit number field. The auxiliary on-us field usually contains the check serial number, and it may also contain accounting control information specific to that account.

The characters in this field are usually the MICR consecutive numbering of the checks. The characters here must always be immediately preceded by and followed by an on-us symbol.

MICR Line Placement - The Clear Band

MICR line placement is critical. The line must be printed in an area at the bottom of the document called the clear band (Figure 1-5).

The 1/4" MICR print area should be centered inside the 5/8" clear band area, leaving a 3/16" space above and below the MICR print area.

The Clear Band

1/4" MICR Print Area   5/8" Clear Band

MICR Print Area

3/16" space above and below the MICR print area

NOTE: If a check is printed at the bottom edge of the page, TROY recommends that the bottom of the MICR characters be at least 1/4" from the bottom of the check.

Figure 1-5: The Clear Band

ANSI specifications state that the clear band must be a minimum of 5/8" (0.625") high (measured from the bottom of the check). Within the clear band, the bottom of the MICR line should be 3/16" (0.187") up from the bottom of the check. If a check is printed at the bottom edge of the page, TROY recommends that the bottom of the MICR characters be at least 1/4" from the bottom of the check instead of the minimum ANSI specification of 3/16". TROY recommends this additional margin of safety to compensate for some papers that may have inherent curling.

The entire clear band MUST be free of any other printing, including digitized signatures or any artwork.

> **NOTE:** **It is very important that the MICR line be properly positioned within the clear band area. If not, the reader/sorter machines at your bank may not be able to read the information and the check could be returned as non-negotiable (rejected).**

Other Check Elements

Figure 1-6 below and the table on the next page displays and describes other check elements.

Figure 1-6: Other Check Elements

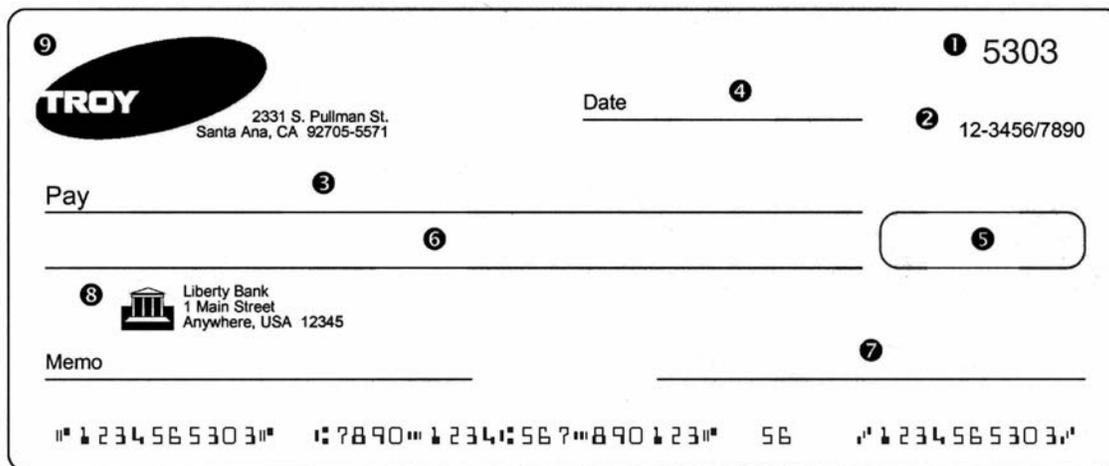| Item	Description
1 - Check Number	This is the customers sequential check number.
2 - Fractional Routing Area	The fractional routing numbers numerator is a bank identification code and its denominator is the Federal Reserve district transit symbol.
3 – Payee	The payee is the person or organization to whom the check is made payable.
4 – Date	The date is usually the date approved for payment.
5 - Convenience Amount Field	Provides an area to express the check value in numerals.
6 - Legal Amount Area	This is the negotiable amount of the check expressed in text.
7 – Signature	The signature can be hand-signed or digitized.
8 - Bank Name, Address, Logo	This is the name and address of the account's bank.
9 - Account Holders Name, Address, Telephone	Account holder's information.

Your Bank's Concerns

Producers of MICR-encoded documents must meet ANSI document preparation standards. Depending on where a check is deposited, it will probably be processed a number of times in multiple banks and Federal Reserve centers. It will be sorted and tabulated with thousands of other checks on reader/sorter equipment designed to read MICR characters at high speed. If it does not meet the requirements established for MICR printing, your check may be rejected by a reader/sorter, and the institution handling your check will have to process it manually. Manual processing costs the bank additional money and it has become common for the bank to charge the customer for rejected checks. If your checks are rejected, the bank may require you to correct the problem and you may be subject to a manual processing fee for each rejected check.

The Bank Specification Form

The primary guide to the proper contents of the MICR line is provided by the Bank Specification Form. A sample of a simplified typical specification form is shown in the document titled, "Understanding and Designing Checks – ANSI X9/TG-2".

Usually, the specification form is the vehicle for the financial institution to provide the definition of the proper contents of the MICR line to its customer. This form, or a related document, is to be used to convey any information regarding the approval requirements for check formats, and to specify any document testing procedures that may be required.

You can consult your bank and request a copy of their bank specification form (MICR printing specification). Most banks have these forms available for customers who wish to print their own checks or have custom checks printed. Additionally, most banks will be happy to look over your check layout and help you make any necessary corrections so that your financial transaction documents will flow smoothly through the clearing system.

Where to Get More Help with MICR

TROY strongly recommends that you acquire the ABA documents describing the proper design of checks and placement and use of the MICR line. A complete list of ANSI specification documents on MICR printing is contained in the document titled, "Understanding and Designing Checks – ANSI X9/TG-2".

MICR Formatting Standards

This section provides additional layout and guidelines to assist you in creating financial documents using TROY MICR Printing solutions. Use the information throughout this MICR User's Guide as a guideline for creating documents.

The proper format for a MICR-encoded document is determined from these sources:

- The ANSI X9B MICR standards in the US (or the appropriate standards of other countries where applicable).

- Specific requirements for overall check layout and certain optional fields in the MICR line specified by your bank.

- Your organizational requirements for check design and accompanying forms (such as check stubs or remittances).

Using commercially available MICR printing software will greatly simplify the task of formatting your MICR-encoded documents. With the proper MICR software, you may simply need to provide data such as the account number, bank name, and bank address. The software will automatically place this information into a check format. Follow the directions in the documentation provided with your MICR software. TROY recommends that you obtain a copy of your bank's specification sheet for the layout of checks to be drawn on that bank.

If you are designing your own MICR-encoded documents, refer to ANSI X9B standards as well as your bank's specification sheet for check layout. TROY recommends that you follow these specifications carefully to prevent reader/sorter machine rejects of checks.

You are responsible for ensuring that all MICR-encoded documents are formatted correctly and meet the guidelines established by the ANSI X9B standards committee in the USA, the banking industry, and the particular institutions with which you conduct business. TROY cannot be responsible for failure to meet these guidelines.

> **CAUTION:**   **It is strongly recommended that only TROY products (MICR paper, MICR toner and MICR system hardware) be used with your printer to prevent reader/sorter machine rejects of your checks which may result in higher processing costs for institutions that handle the documents you produce.**

Check Layout

Checks may be printed one check per page, or several checks per page. Figure 2-1 displays several multi-up layouts.

Four-Up
2 .75" x 8.5" w/ Stub

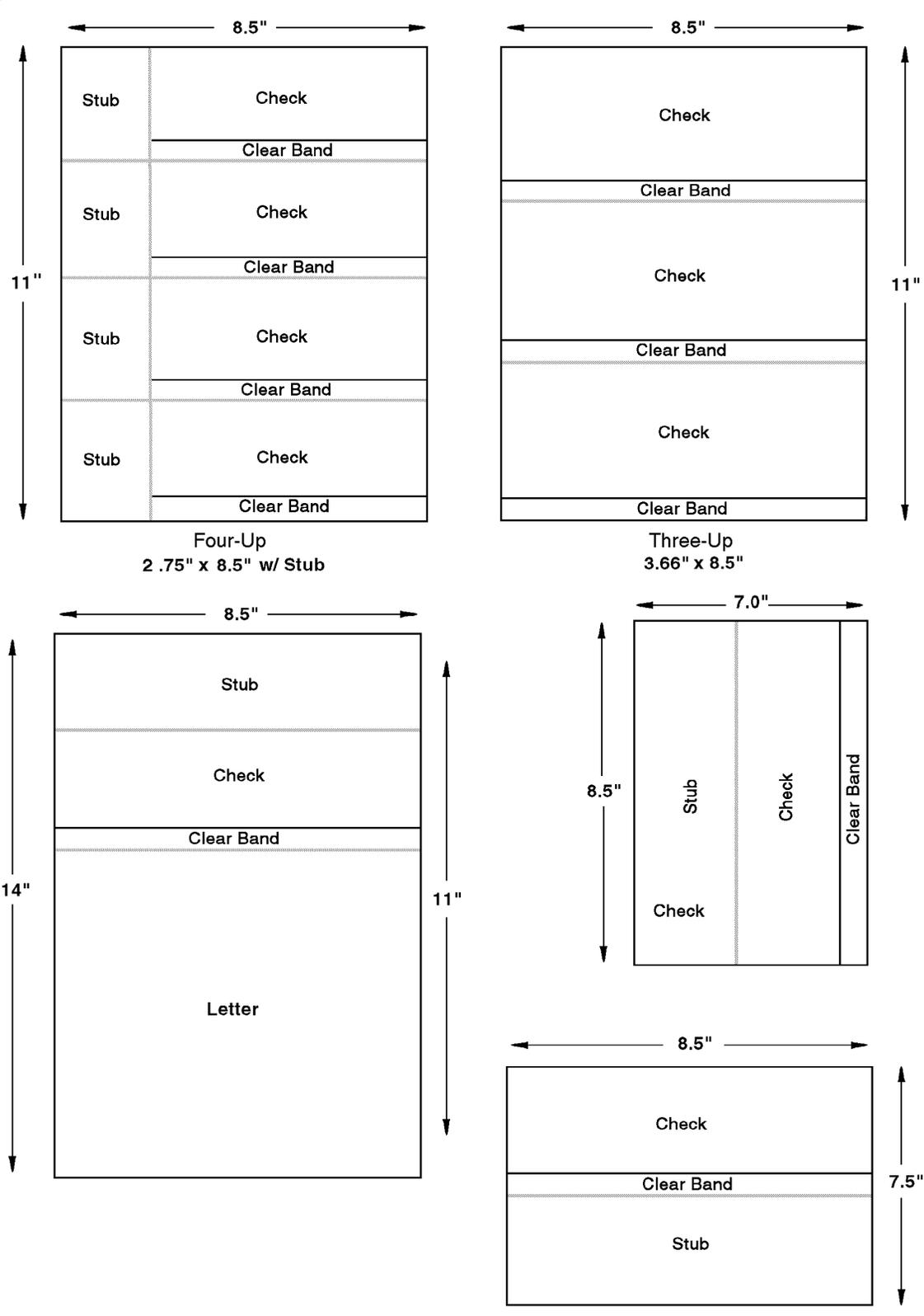**Three-Up**
3.66" x 8.5"

Figure 2-1: Additional Check Layouts

Digitized Image Placement

It is mandatory that no other printing besides the MICR line appear in the clear band area. It is important, when designing checks that digitized images do not intrude into the clear band area. This will cause the check to be rejected by the clearing houses and bank institutions (refer to Figure 2-2 below).

Correct Signature Placement

Jane Jones   12345
Joe Jones

Joe Jones

The Clear Band

Incorrect Signature Placement

Jane Jones   12345
Joe Jones

The digitized signature
must not intrude into
the clear band area.

Joe Jones
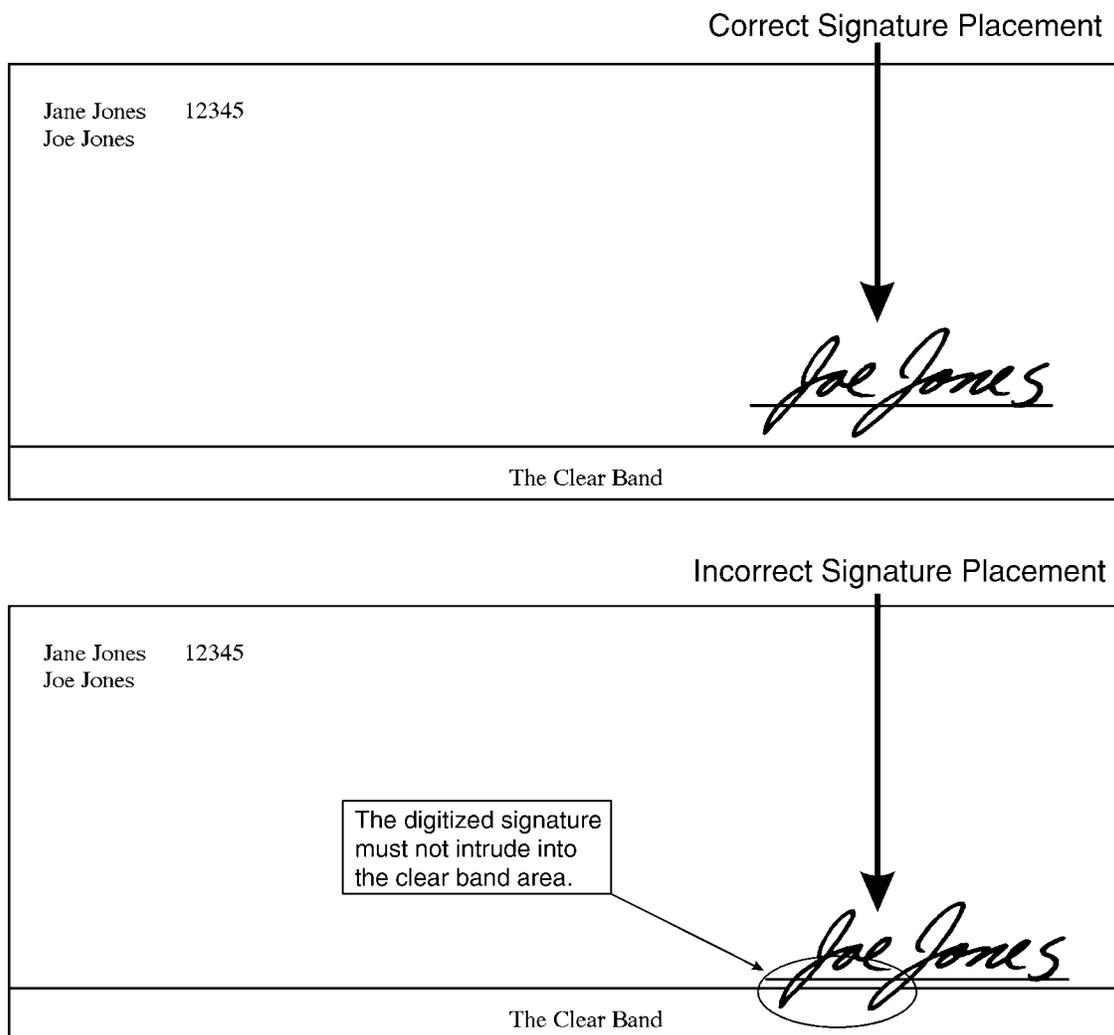
The Clear Band

Figure 2-2: Proper Signature Placement

It is important that logos, text or signatures printed with MICR toner in your TROY printer do not extend into the clear band.

You can use the TROY Document Template to determine if any other printing is near the MICR Clear Band. See **Section 3 - MICR Quality Control** for more details.

Although such printing is acceptable, it is possible that a misalignment or mis-cutting of a document may cause the printing to move into the MICR Clear Band; this can cause misreading.

> **NOTE:**   **Preprinted check forms are usually printed in color and should always printed with non-magnetic inks. These inks are not detected by check-reading equipment and may appear in the clear band.**

Using the TROY MICR Document Template

This section explains how to check the print quality and positioning of your E-13B MICR printing, based on the ANSI X9/TG-2 document. For information on international MICR specifications and guidelines, refer to the ISO-1004 standards document.

The quality of the magnetic printing and the print position on checks is critical. Use the TROY MICR Document Template (Figure 2-1) to check the MICR positioning on your printed checks. Additional TROY MICR Document Templates can be ordered using the TROY part number 54-17373-001.

> **NOTE:**   **Be sure to print and inspect a sample of your MICR-encoded documents whenever you buy new MICR security paper stock, change MICR paper types, or replace the MICR toner cartridge.**

During development of your check-printing program, all output should be tested using the MICR document template. Each printed check should meet the tolerances and dimensions outlined in this section.
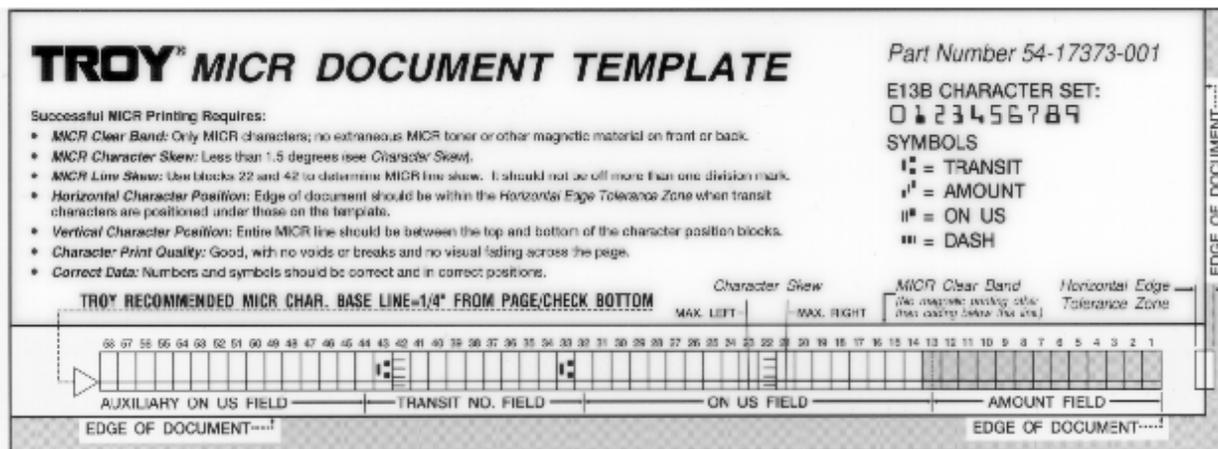

Figure 2-1: MICR Document Template (not to scale)

To use the TROY MICR Document Template:

- Place template on the check and align the right and lower edges (or perforations) of the check with the long dashed lines on the template marked edge of check.

- All MICR printing must fall within the 1/4" wide band - located in the middle of the 5/8" wide clear band at the bottom of the check.

- The left-hand transit symbol must be located in position 43 within the 1/4" band.

- Ensure that only E-13B MICR characters appear in the 5/8" clear band. Since all printing generated by the printer is magnetic it is extremely important that borders, signatures or any other characters do not intrude into the clear band.

> **NOTE:**   **If the template indicates problems, check obvious reasons, such as improper cutting of the paper or printer misfeeds.**

Check Quality Requirements

Refer to ANSI Specification X9.27 - *Print Specifications for Magnetic Ink Character Recognition* for more details on check quality requirements.

Dimension

The width of horizontal and vertical bars is to be 0.013" using average edges. The nominal edge dimension tolerance is +/-0.0015" using average edges. Minimum width of horizontal bars is to be 0.011" using average edges.

Irregular Edge

Edge irregularities may extend +/-0.0035 from the nominal edge dimension. No more than 25% of the edge may be present in the zone, which begins 0.0015" away from the nominal edge and extends out to 0.0035" away from the nominal edge. Edge irregularities that exceed 0.0035" zone are treated and measured as character edge irregularities. Edge irregularities that exceed the -0.0035" zone are treated and measured as voids. The portion of the edge void within the -0.0035" zone is included in the 0.0015" to 0.0035 irregular edge measurement.

Voids

Single voids are allowable if contained within an 0.008" square. Single voids in double-wide zones (except for edge voids) are allowable if contained within a 0.010" square. Edge voids are allowable if contained with an 0.008" square (using average edge of character). Voids 0.002" wide by any length are allowable. The combined void area of any row or column must not exceed 20% of the row or column.

Uniformity

Toner must be laid down uniformly inside the outline of each character.

Extraneous Toner (front)

Magnetic toner spots within the clear band that are visible to the naked eye are acceptable if they can be contained within a 0.004" square and are no more than one per 1/8 of a character space or five per field. The portion of magnetic toner that is attached to a character and exceeds the +0.0035" irregular edge limit is considered to be extraneous toner and must conform to extraneous toner specifications.

Extraneous Toner (back)

Magnetic toner on the back of the document within the area of the clear band is allowable if contained within a 0.006" square.

Signal Level

The signal level may vary from 50 to 200% of the characters nominal signal level. The TROY minimum is 70%.

Alignment

The bottom edge of adjacent characters within each field must not vary vertically more than 0.015".

Spacing

The distance between the right average edge of adjacent characters in all fields is to be 0.125 +/- 0.010".

Skew

The maximum character skew allowed is +/- 1.5 degrees measured with respect to the bottom edge of the document.

Document Testing Services

The MICR Technology Center provides complete facilities for the testing of your MICR Documents:

      MICR Technology Center
      2331 South Pullman Street
      Santa Ana, CA., U.S.A. 92705

      TEL: (800) 332-6427
               (949) 250-3280

      FAX: (949) 250-8972

Technical Support

TROY Technical Support is available Monday through Friday, 6:00 AM to 5:00 PM, Pacific Standard time at the following numbers:

      TEL: (800) 332-6427
               (949) 250-3280

      FAX: (949) 261-4608
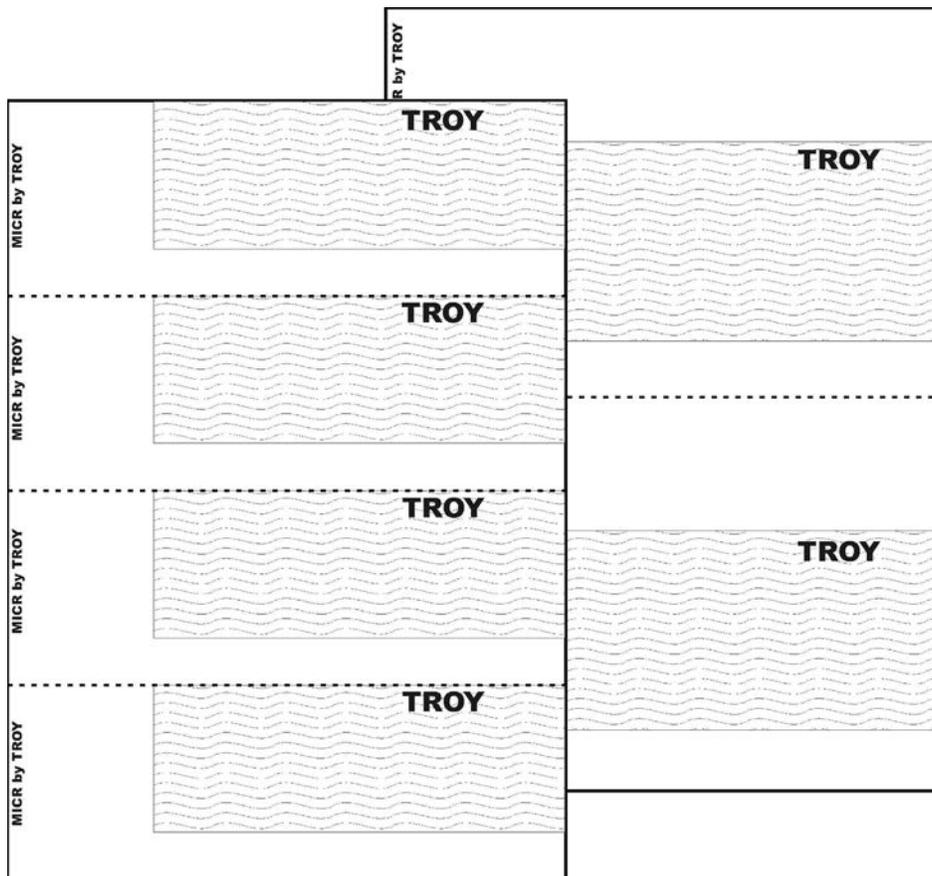
Selecting Check Paper

During a typical processing cycle, a check may pass through high-speed readers/sorters as many as 30 times. If the proper check paper is not used, the check could easily become damaged. If damage occurs at the beginning of the processing cycle, the check may not feed into subsequent machines. Damaged documents must be repaired before being re-entered into subsequent reader/sorter machines.

Inexpensive paper may save you money in the short term; however, the finished documents may not survive the processing cycle and may cause a marked increase in rejected documents at your banking operation centers and clearing houses. Most of these establishments keep accurate records on problem checks. Continued use of inferior check stock could ultimately result in fines from these clearing houses and/or outright rejection of all of your subsequent checks.

After learning about the paper requirements in the following sections, you will find that TROY's premium quality security check paper will give you the best results. TROY's premium quality security check paper is made specifically for printing checks. If you wish to order your paper stock from your own source, show the paper requirements outlined in this section to the sales representative.

If you are uncertain about the characteristics of your paper stock, TROY's state-of-the-art paper and print quality laboratory will test your paper forms and print quality for a nominal fee. For more information on this service or to obtain TROY premium quality check paper, call: (949) 250-3280.

> **NOTE:** **This section provides details for MICR specifications and guidelines that apply to the United States. For information on International MICR specifications and guidelines, refer to the ISO-1004 standards document.**

Section 4   Selecting Check Paper and MICR Toner

Basis Weight
ANSI Standard X9.18 specifies that the minimum weight paper is to be 20-pound long grain. However, due to the rigors of the check clearing process, TROY strongly recommends 24-pound paper minimum.

Stiffness
Taber stiffness must be M.D. 2.5 and C.D. 1.1 minimum. Gurley stiffness must be M.D. 200.0 and 88.0.

Grain Direction
Figure 4-1 illustrates grain short or grain long as it applies to checks.
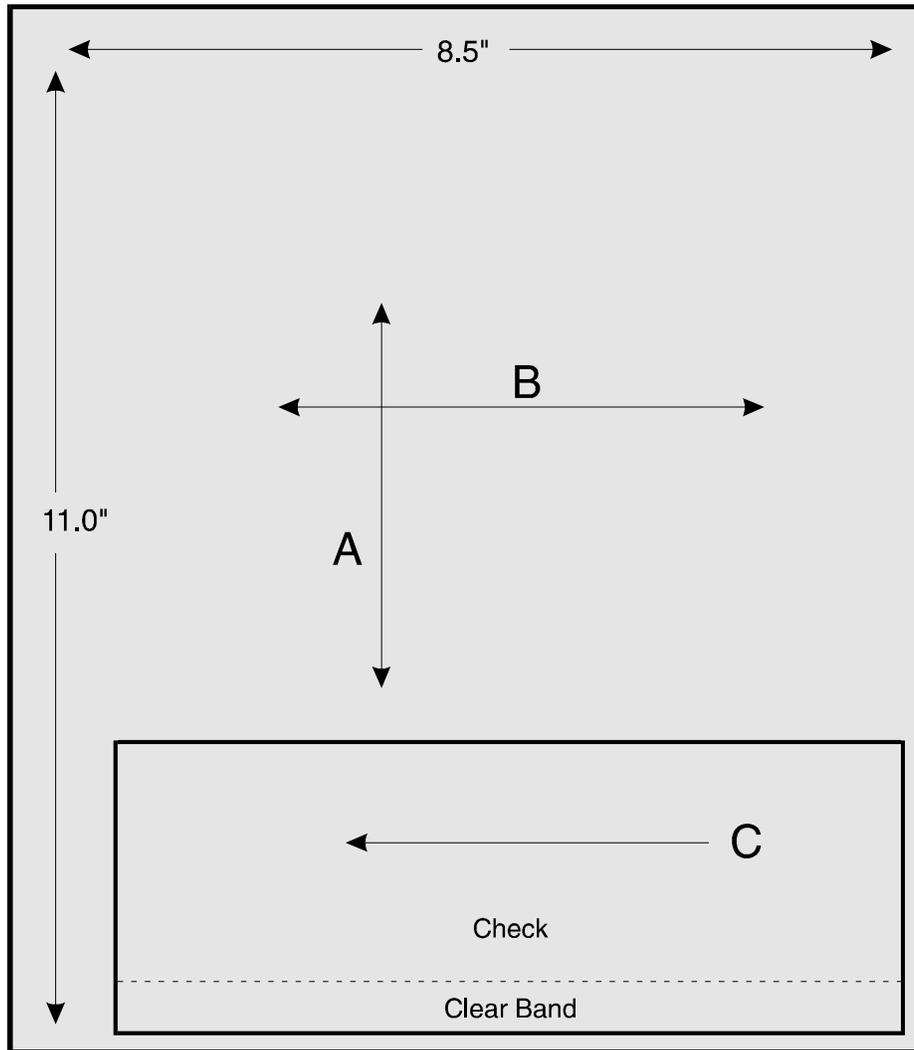

Figure 4-1: Grain Direction

If the grain is in the direction of (A), it would be grain long - as it relates to the 8.5" X 11.0" sheet of paper. But in relationship to the check, it is considered grain short. This would most likely result in mechanical failure of the check if it were subjected to more than eight to ten passes in direction (C) of a reader/sorter.

If the grain is in the direction of (B), it would be grain short as it relates to the 8.5" X 11.0" sheet of paper. But it would yield a grain long check, which would hold up far better than the other example (up to and exceeding 30 passes in direction (C) of a reader/sorter). Keep in mind, if you are printing in the landscape mode, that the grain long direction in relationship to the check should always be in the same direction that the check moves through the reader/sorter.

Moisture

This is the ratio of moisture to the dry mass of the paper. Paper moisture content should be between 4.7% and 5.5%.

Porosity

Paper Porosity is defined as the resistance of paper to the passage of air under a specified pressure through the paper. This is measured as the average time in seconds required to displace 100 ml of air through a one-square-inch area of paper under a pressure of 4.88" (12.4 cm) of water. Minimum porosity should be 12 secs. (Gurley).

Security Paper

To prevent counterfeiting, unauthorized reproduction and/or alterations to the check, use a security paper stock. Some newer security check papers use a background pattern, called a pantograph. Additionally, when some of these papers are photocopied, the word VOID becomes visible in the check area. There are many other security features that can be incorporated into checks, depending on the institution generating the checks.

Smoothness

Sheffield paper smoothness is the rate of flow of air under constant pressure between paper and a smooth steel plate against which the paper is held by two concentric annular lands. A paper stock that is either too smooth or too rough will cause poor MICR print quality that may result in read errors of the MICR line in the check reader/sorter. Paper smoothness must be 100-170 Sheffield.

Reflectance

Reflectance should be 60% minimum.

Tear

Tear should be M.D. 55 and C.D. 67.0 minimum (Elmendorf).

Burst Strength

Burst represents a measure of internal strength relative to basic strength or handling of a finished document. Burst strength should be 24 lb. Minimum.

Perforations

Laser-cut perforations are strongly recommended. Perforations should be 90 degrees to the paper edges. Perforations, both horizontal and vertical, should permit easy separation but should not tear or catch in ordinary handling or feeding. Perforations must not cause excessive peaking or tenting of the form. Peaks shall not exceed .005" when the form is spread relaxed on a flat surface.

Packaging

Paper should be packed for shipment so it arrives at the destination in good condition without deformation, creasing, damaged corners, or other damage. The paper should be supplied in a box that can be easily opened. The box should be strong enough to protect the contents from damage during normal commercial handling stacking and transportation.

Preprinted Stock

If you are using pre-printed stock in the TROY MICR Printer, make sure it is pre-printed on the curl up surface (the natural curl direction of the paper). Make sure inks on this stock are heat resistant and are designed for use in xerographic copiers. Temperatures in the TROY printer fuser section reach approximately 183 degrees C (359 degrees F). Therefore, the ink should not melt or release hazardous gases or be flammable when subjected to such temperatures. The ink should be highly oil resistant, especially against silicon oil and should not be affected by resin components contained in toner.

Paper Storage

Paper rapidly and sometimes permanently becomes affected by variations in temperature and humidity during storage or use. Variation in the humidity is the more serious, since changes will affect size and strength characteristics. Paper should be stored and used at 40% to 60% relative humidity and 16 to 24 degrees C (60 to 75 degrees F).

TROY recommends that the paper be exposed to the environment of the printer room for a minimum of 24 hours before use. For more rapid conditioning, the box lids should be removed and boxes not stacked. Printer forms should be kept in the original boxes until ready for use. The boxes should be stacked with their lids up.

Getting More Help with Check Paper

Standards for testing the characteristics described in this chapter are available from:

>   Technical Association of Pulp and Paper Industry (TAPPI) Technology Park
>   P.O. Box 105113
>   Atlanta, GA 30348

These TAPPI tests are available:

Weight:	T410
Porosity:	T460
Smoothness:	T538
Burst:	T403
Stiffness:	T489 and T543
Tearing:	TT414
Grain Direction:	TAPPI T409
Moisture Content:	TAPPI T412

>   **NOTE:**   **If you are uncertain about the characteristics of your paper stock, TROY's state-of-the-art paper and print quality laboratory will test your paper forms and print quality for a nominal fee. For information on this service or to obtain TROY check paper, call: (949) 250-3280.**

Selecting MICR Toner

Use only TROY MICR Toner cartridges in the TROY MICR Printer. This is the only toner specifically designed for TROY MICR printing. Use of inferior toners may void your warranty and may cause internal damage that will lead to expensive repair. Use the TROY MICR toner cartridge with the TROY MICR font; both have been optimized to ensure proper density of MICR characters. Use of a non-TROY product may produce less than optimal results.

TROY recommends that samples of your documents be tested thoroughly before actual use for volume processing. Visually inspect documents for irregularities (light or faded print, extraneous marks, or other imperfections) that may make MICR characters unreadable to document processing equipment.

Always replace the TROY MICR toner cartridge when the printer first displays a **LOW TONER** message.

>   **NOTE:**   **The print quality of TROY MICR toner cartridges is specifically designed for MICR documents. For other applications, such as high-quality graphics, you may want to use the Hewlett-Packard toner cartridge when not printing checks. If a toner cartridge is removed, even for short periods of time, it should be placed in a light-proof container (preferably the original packaging) and stored under the conditions described in your HP printer user's manual.**

Toner Storage

Ferromagnetic toners used in the TROY MICR Printer are sensitive to heat and moisture. After your toner cartridge arrives, it could become damaged if it is not stored in the proper environment. If the temperature and moisture ranges in your transportation and/or storage area are not within the ranges listed below, please arrange new transportation or storage locations.

Temperature

Toner should not be stored in temperatures below zero degrees C (-32 degrees F) or above 35 degrees C (95 degrees F). Toner should not remain at these extremes for 12 hours or longer. Operating temperature should be between 10 degrees C (50 degrees F) and 32.5 degrees C (91 degrees F). Toner should be normalized at printing temperature for a minimum of 24 hours prior to use. Do not store toner in direct sunlight, near a heat source, or in dusty places.

Moisture

Do not store the toner in environments with higher than 65% or lower than 10% relative humidity; or with extreme changes in humidity. Operating relative humidity should be 20% to 80%.

Toner Recycling

TROY toner cartridges can be returned for recycling into non-MICR applications. Consult the *Installation and Recycling Instruction Guide* in the toner cartridge box for additional information.