



## PAPER and ENVELOPE SPECIFICATIONS

Model	Min Length	Max Length	Min Height	Max Height	Notes
<b>EAGLE</b>	<b>6.00</b>	<b>9.50</b>	<b>3.50</b>	<b>4.40</b>	Shorter envelopes preferred for speed
<b>System 150</b>	<b>6.00</b>	<b>9.50</b>	<b>3.50</b>	<b>4.40</b>	Shorter envelopes preferred for speed
<b>MPE 7.5</b>	<b>6.00</b>	<b>9.50</b>	<b>3.50</b>	<b>6.40</b>	1. Shorter envelopes preferred for speed 2. Variable Height requires operator adjustment.
<b>MPE 5.0 (standard)</b>	<b>6.00</b>	<b>9.50</b>	<b>3.50</b>	<b>4.375</b>	Shorter envelopes preferred for speed
<b>MPE 5.0 (tall machine)</b>	<b>6.00</b>	<b>9.50</b>	<b>4.50</b>	<b>5.75</b>	Shorter envelopes preferred for speed
<b>MPS 40</b>	<b>5.00</b>	<b>11.50</b>	<b>3.50</b>	<b>6.40</b>	
<b>MPS 30</b>	<b>5.00</b>	<b>11.50</b>	<b>3.50</b>	<b>6.12</b>	
<b>Mail Matrix</b>	<b>5.00</b>	<b>15.00</b>	<b>2.75</b>	<b>12.00</b>	Mixed media thickness: 0.007" to 1.00" weight: up to 32 oz.
<b>Model 60</b>	<b>5.50</b>	<b>9.50</b>	<b>3.50</b>	<b>5.50</b>	
<b>Model 51</b>	<b>5.00</b>	<b>11.50</b>	<b>3.50</b>	<b>6.375</b>	
<b>Model 50</b>	<b>5.00</b>	<b>10.50</b>	<b>3.50</b>	<b>5.00</b>	
<b>Model 72</b>	<b>5.00</b>	<b>11.50</b>	<b>3.50</b>	<b>6.38</b>	Up to 0.375" thick
<b>IQ Sort</b>	<b>6.00</b>	<b>9.00</b>	<b>2.75</b>	<b>4.25</b>	
<b>DS 1225</b>	<b>3.50</b>	<b>25.00</b>	<b>2.00</b>	<b>12.25</b>	Up to 1/16" thickness
<b>DS 2200</b>	<b>3.50</b>	<b>18.25</b>	<b>2.00</b>	<b>12.25</b>	Up to 1/16" thickness
<b>AS 3600</b>	<b>3.50</b>	<b>14.00</b>	<b>2.00</b>	<b>8.50</b>	Up to 1/16" thickness
<b>AS 3690</b>	<b>3.50</b>	<b>14.00</b>	<b>2.00</b>	<b>8.50</b>	Up to 1/16" thickness
<b>AS 7200</b>	<b>3.50</b>	<b>18.25</b>	<b>2.00</b>	<b>12.00</b>	Up to 1/16" thickness
<b>Falcon</b>	<b>3.50</b>	<b>25.50</b>	<b>2.00</b>	<b>12.25</b>	Up to 1/16" thickness
<b>AS 180</b>	<b>6.00</b>	<b>9.50</b>	<b>2.75</b>	<b>4.25</b>	0.0035" up to 0.007"
<b>Mini Mill</b>	<b>3.50</b>	<b>12.00</b>	<b>3.50</b>	<b>9.00</b>	No cardboard flats – thickness up to ¼"
<b>2100</b>	<b>3.50</b>	<b>12.00</b>	<b>3.50</b>	<b>9.00</b>	Will open FedEx up to ¼"
<b>2112</b>	<b>3.50</b>	<b>14.00</b>	<b>3.00</b>	<b>9.50</b>	Thickness Up to 0.188" Cut depth 0.01" to 0.07"
<b>206</b>	<b>6.00</b>	<b>13.50</b>	<b>Variable Height</b>		Up to ½" Thickness
<b>306 306s</b>	<b>3.50</b>	<b>13.50 11.50*</b>	<b>Variable Height</b>		Up to 0.500" thick. Max length is 11.5" for length sorting. 10-10.50" max length for thickness sorting. New "Allow sort of long pieces" feature halts length/thickness measurement to allow more time for sort decision.
<b>EV-2</b>	<b>6.00</b>	<b>9.50</b>	<b>Variable Height</b>		Up to ¼" Thickness

All dimensions are in inches.

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## Paper Properties:

### I. Stiffness

High stiffness is always desirable. Basis weight may vary slightly from the values below if stiffness is maintained.

### II. Paper Basis Weight

Uncoated White Wove: 20# minimum Coated White Wove: 70# minimum, matte finish preferred Recycled: 24# minimum (request testing for lighter weights)

### III. Thickness

All envelopes to be run together as a single job must be of the same design and overall thickness. Envelope thickness variations exceeding .001" will degrade the quality of the extractor's thickness outsourcing. Although worst case paper thickness tolerances within the paper manufacturing industry allow greater variation than specified above, field experience has proven that real life variations can be maintained as specified by high quality vendors.

Single paper supply sourcing is highly recommended for each envelope size or style used.

### IV. Finish

Extremes of smoothness and coarseness should be avoided. Very smooth (highly calendared) envelopes may be slippery or retain ink poorly. Very coarse (toothy) envelopes are difficult to feed and stack.

### V. Porosity

Low paper porosity is preferred. Failed extractions due to "bleed through" will be reduced as the porosity is decreased.

### VI. Color

Image-based functions rely on print contrast against the paper. For this reason, dark colored paper should be avoided if image functions (Postnet Bar Code read, Change of Address, Mark Sense, Bent Corner detection) are desired.

## Printing on the envelope

1. Heavy printing under the glue line of the envelope flap will prevent the glue from adhering properly. If the flap or back seams are not fully sealed, an increase in paper jams and other serious extraction problems will occur.
2. Heavy printing, particularly on high gloss coated papers, will cause ink to transfer to paper handling components and increase down time for maintenance of those items.
3. Printing on the corners of the envelope will prevent optical detection of folded corners and should be avoided to optimize performance.

# ENVELOPE CONSTRUCTION

## General Construction

Envelope designs that result in damage from Post Office handling (torn windows or flaps, crumpled, previously opened etc.) will create problems for automated extraction equipment. The contact area of the envelope with the extraction mechanism must be structurally sound after cutting. The envelope sides must be connected securely to the contact area.

## Trapping of contents

Side seam envelope constructions may allow checks to become trapped under side seams, which may result in failed extractions. While these failed extractions may not cause the machine to jam, they will significantly increase manual processing of "reunites." The following are ways to minimize or eliminate the possibility of contents being trapped.

1. Shorten the length: If the envelope is short enough to prevent a 6" personal check from being inserted under the side seam, the problem is eliminated. This can be accomplished by either shortening the envelope or increasing the width of the side seam. (Side seam widths over 1" are not recommended, however, and the seam flap must be securely glued not more than 1/8" from its inside edge.)
2. Use a Back Window: Checks cannot be trapped under the flaps of a side seam envelope if the window is placed on the back of the envelope. The return document, correctly inserted by the customer, shields the check from the side seams.
3. Use a Diagonal Seam Construction: Checks cannot be trapped under the flaps when the envelope is constructed using the diagonal seam design.
4. Secure the Side Seams:

Specify that the side seams be **securely glued within 1/8" from the inside edge** of the seam. A double glue line rather than a wide glue line may be required to accurately secure the outside of the seam at the same time.

## Glue

Exposed glue on the inside of the envelope is unacceptable. Special attention should be paid to the glue on the flap. Even when poorly closed, the glue should not be exposed on the inside of the envelope. Flaps and windows should be glued securely and as near to their edges as possible without exposing glue inside the envelope.

## Fold Quality

Folds should be adjusted such that the corners are perfect or open. Over-folded corners (ears) will require that the cut depth be increased to ensure complete opening.

## Throat

A tapered throat is preferred to enable full customer insertion of the documents. This minimizes the probability of the customer's documents being folded over with the glue flap.

## Flap Length

### EAGLE/System 150 / MPE 7.5

Long seal-flaps must fall at least 1/2" from the bottom edge of the envelope.

### System 100

Long seal-flaps must fall at least 2" from the bottom edge of the envelope.

### MPE 5.0

Long seal-flaps must fall at least 3/4" from the bottom edge of the envelope.

## Bangtail (advertising flap)

Bangtails can be accommodated, but should be designed to encourage easy removal. Attached bangtails sometimes cause misfeeds and will always result in reunites or other exceptions which must be handled manually.

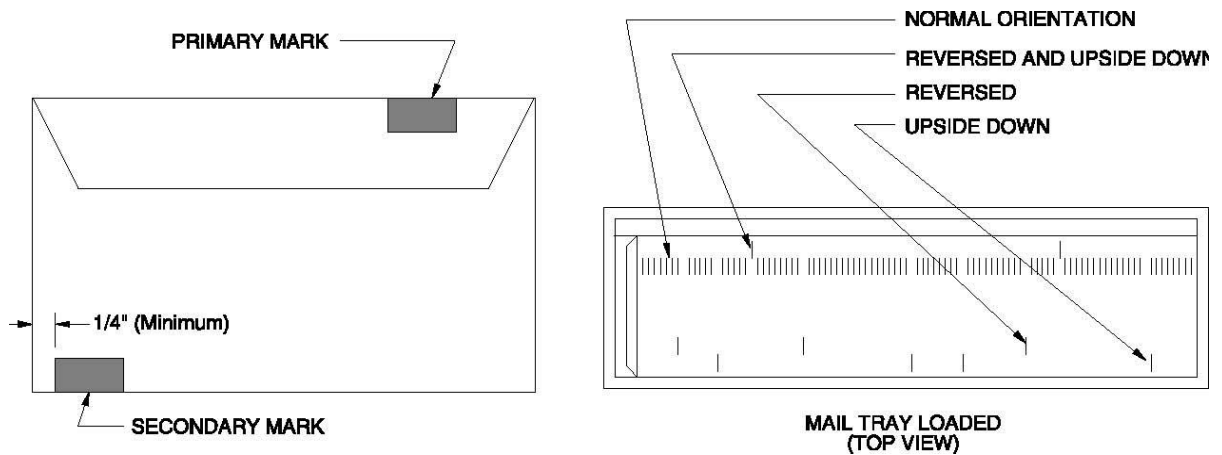
## Static Electricity

Control of static during the manufacture and insertion of envelopes, particularly those with covered windows, is recommended.

Laser printed documents should be discharged after printing.

## Orientation Marks

Orientation marks on the edges of envelopes are highly recommended to assist in confirming orientation during mail preparation. Misoriented input will cause either output rejects or misoriented documents in the output. A very effective dual orientation mark system is shown below that highlights all misorientations while the mail is still in the tray or on the feed conveyor.



## Windows and Window Location

While virtually any windowed envelope can be made to run on automated equipment, optimum performance is achieved by proper window placement and construction. Improper placement of the envelope window can severely degrade the performance of high speed automated extraction equipment. Two rules apply:

- 1 The opening mechanism (suction cup or friction) must not overlap uncovered windows.
- 2 The area (and closely adjacent areas) where the opening mechanism operates must be structurally intact and free of damage. A common problem of this type occurs when an uncovered window is located too near to the edge of the envelope and is torn by Post Office sorting equipment.

### Uncovered Windows

The key elements for good performance using an uncovered window are size and location.

Window size should be minimized. Large uncovered windows create structural weaknesses and Postal damage due to "snagging" in the stackers.

The window location must conform to the requirements for the extraction machine used to process the mail. (See diagrams on the next page.)

**Tip:** If the return address can be printed on the envelope and only the Company name shows through the window, a small uncovered window can be used resulting in a cost effective high performance design.

### Covered Windows

These are preferred when the window must be large or when the window location causes the problems mentioned above. The primary concern when using covered windows is the tendency for the covering material to develop and retain static electricity inside the envelope. If the window is in the extract area, this can cause contents to stick to the window and result in missed extractions (reunites). Reunites increase the customer's manual exception processing work.

Window patch material may not be located within 1/8" of any edge of the envelope to prevent slivers from being created during the cutting process.

### Covering materials:

Glassine holds much less static electricity than plastic patches. However, it is somewhat opaque (it looks like waxed paper) and may sometimes present problems reading a barcode through the window.

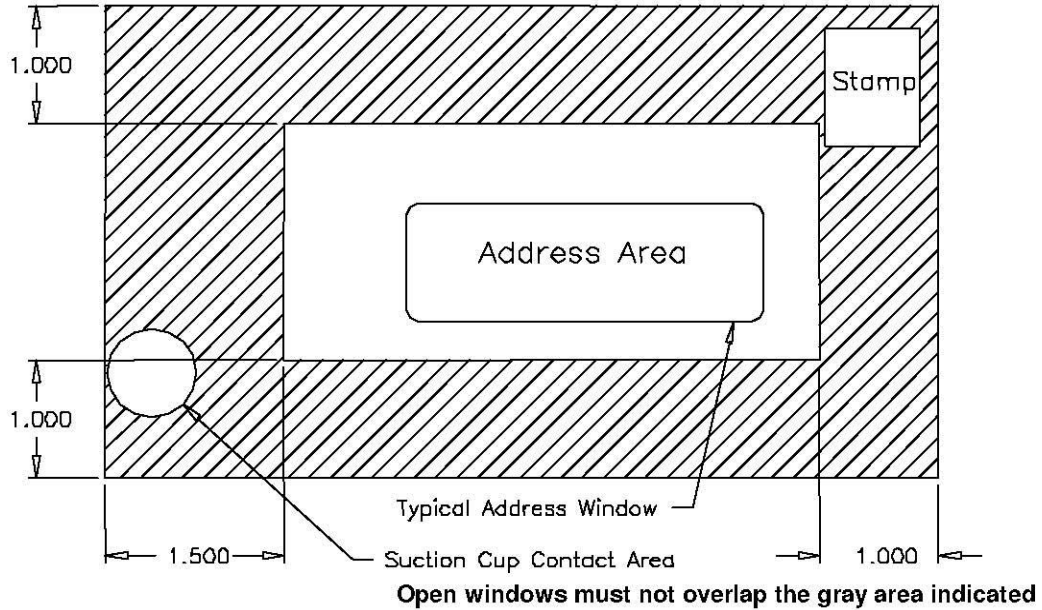
Plastic patch material is very clear, but can hold a significant static electric charge.

### Diagrams:

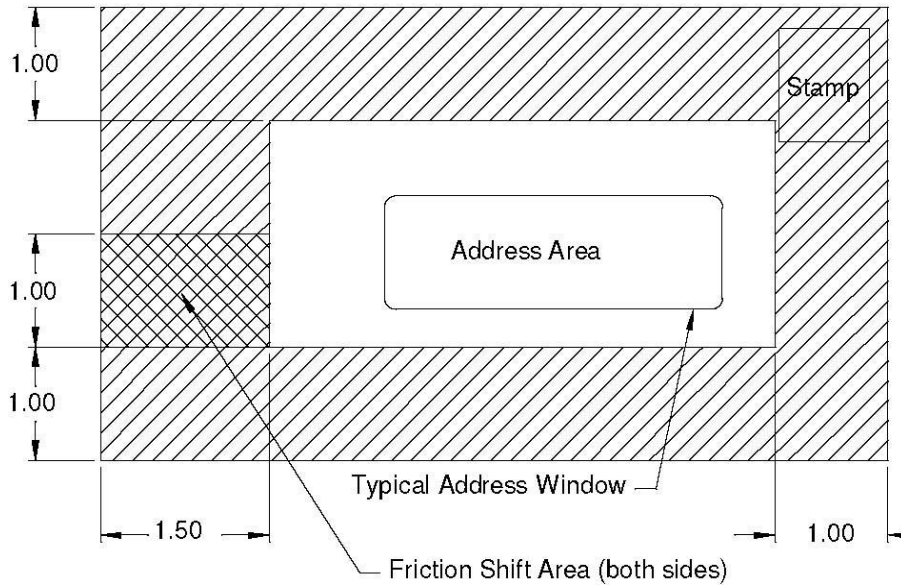
Both covered and uncovered window envelopes can be processed at peak performance if the envelope windows are located according to the following specifications.

## EAGLE/ System 150 / MPE 7.5 Window Placement Diagram

Open windows must not overlap the gray area indicated

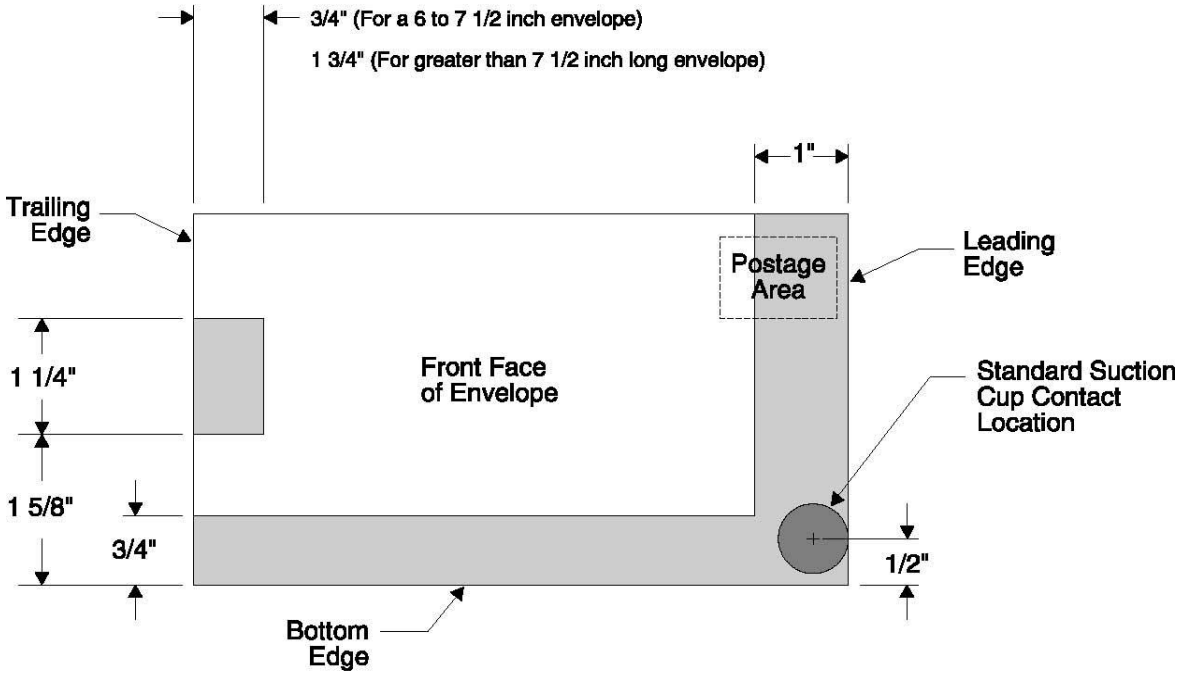


## System 100 Window Placement Diagram



## MPE 5.0 Window Placement Diagram

### MPE 5.0 Window Placement Diagram



ALL DIMENSIONS ARE IN INCHES

OPEN WINDOWS MUST NOT OVERLAP  
THE GRAY COLORED AREAS

# RETURN DOCUMENT SPECIFICATIONS

## Size

The return document should be sized for a comfortable fit within the return envelope. Recommended clearance is 1/8 inch all around. A fit which is too tight can cause folding and damage. A fit which is too loose requires a larger window.

A standard personal check is 6" x 2 3/4". The minimal length of an envelope for Eagle, System 150, MPE7.5 and MPE 5.0 is 6". With the recommended clearance of 1/8 inch on both sides, the minimal envelope size when processing checks is 6 1/4".

## Paper Basis Weight

18 to 24 lb. preferred (high stiffness preferred)

## Paper Thickness Variation:

All documents to be run together as a single "job" must be of the same size and thickness. Document thickness variations exceeding .0004" will degrade the quality of thickness outsourcing.

## Miscellaneous

Holes in the document are not allowable.

Perforated edges should be minimized. When they are needed, a fine perforation is required to prevent sloppy torn edges. If an edge is perforated, the top edge is preferred.

## Orientation Feature on the document:

A cut upper corner on the document can be helpful because mis-oriented items stand out in a finished stack of work.

## Document Orientation: Mark Sense

The Eagle, System 150, System 100, and MPE 7.5 are capable of determining the orientation of documents. This optional feature acquires images of both sides of the document and determines document orientation based on the location of characteristic marks. In order for a feature on a document to be used as an orientation mark, it must meet three requirements.

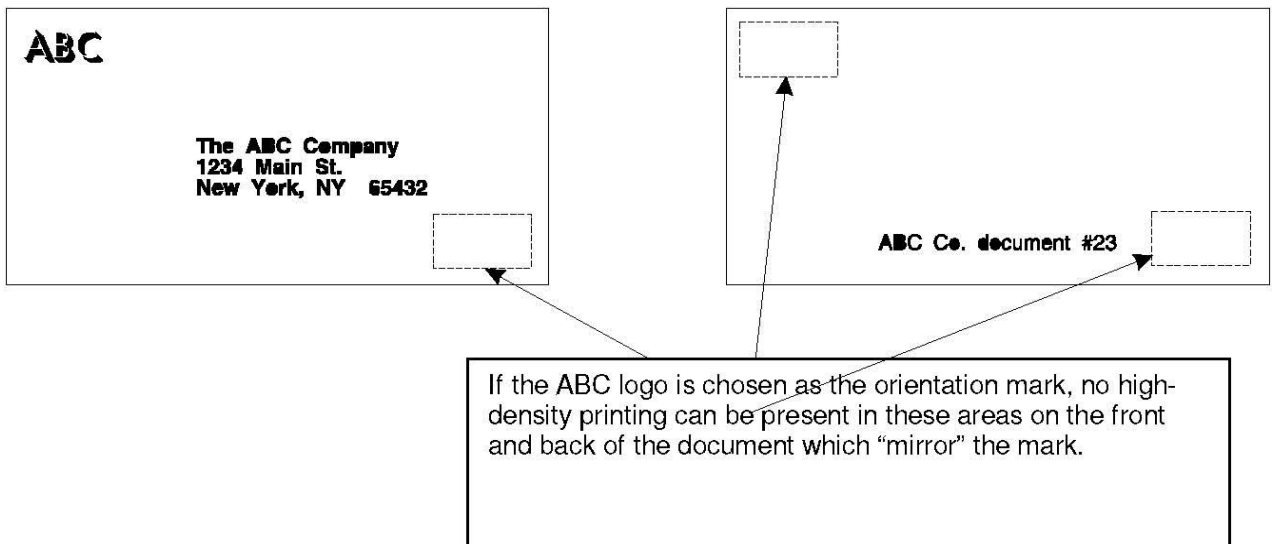
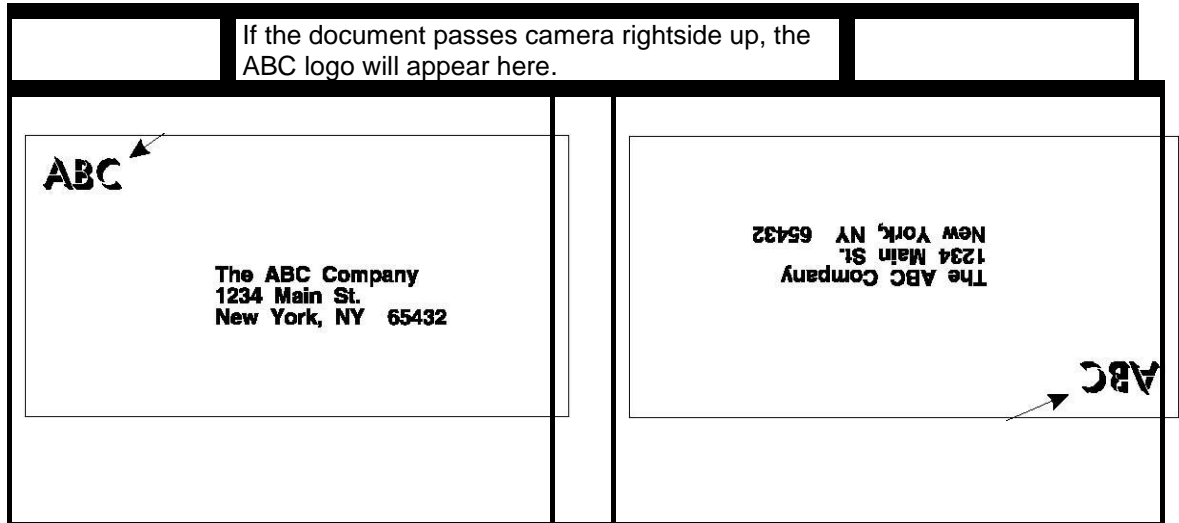
1 The mark must be recognizable to the scan system. A mark will be recognized by the scan system if there is a significant difference in contrast between the mark and the background area surrounding the mark.

2 The orientation mark must not be located near the center of the document. A mark near the center of the document will provide no useful orientation information. An off-center mark will appear to change position when the document orientation is changed. On the sample document shown below, the ABC logo would satisfy requirement three. The example illustrates how the mark will appear to change position if the document is viewed right side up and upside down.



If the document passes camera upside down, the logo will appear here.

3. An orientation mark must be chosen so that the areas on the document which "mirror" the mark do not contain any high density printing. The drawing on the next page illustrates this requirement.



### **Document Orientation by Barcode:**

In addition to mark-based orientation outlined above, the System 150, EAGLE and MPE 7.5 can determine the orientation of a document **based on the presence of a PostNet Barcode**. This is particularly useful when the document has much data and little white space.

### **MICR: Magnetic Printing on Documents**

Magnetic detection is used to determine the orientation of checks. Magnetic printing on documents can disable this function in some instances.

#### **Documents processed by the EAGLE, System 150, System 100, MPE 7.5**

Check orientation is determined after extraction, and each item is scanned individually. Therefore, some MICR on the document can be tolerated, if either the length of the document or its magnetic profile do not match those of a valid check. If a windowless envelope is being used, the document must not have Magnetic Printing.

#### **Documents processed by the MPE 5.0, MPS-30 Sorter, MPS-40 Sorter**

Check orientation is determined before extraction (through the envelope.) Therefore, no MICR on the document can be tolerated.