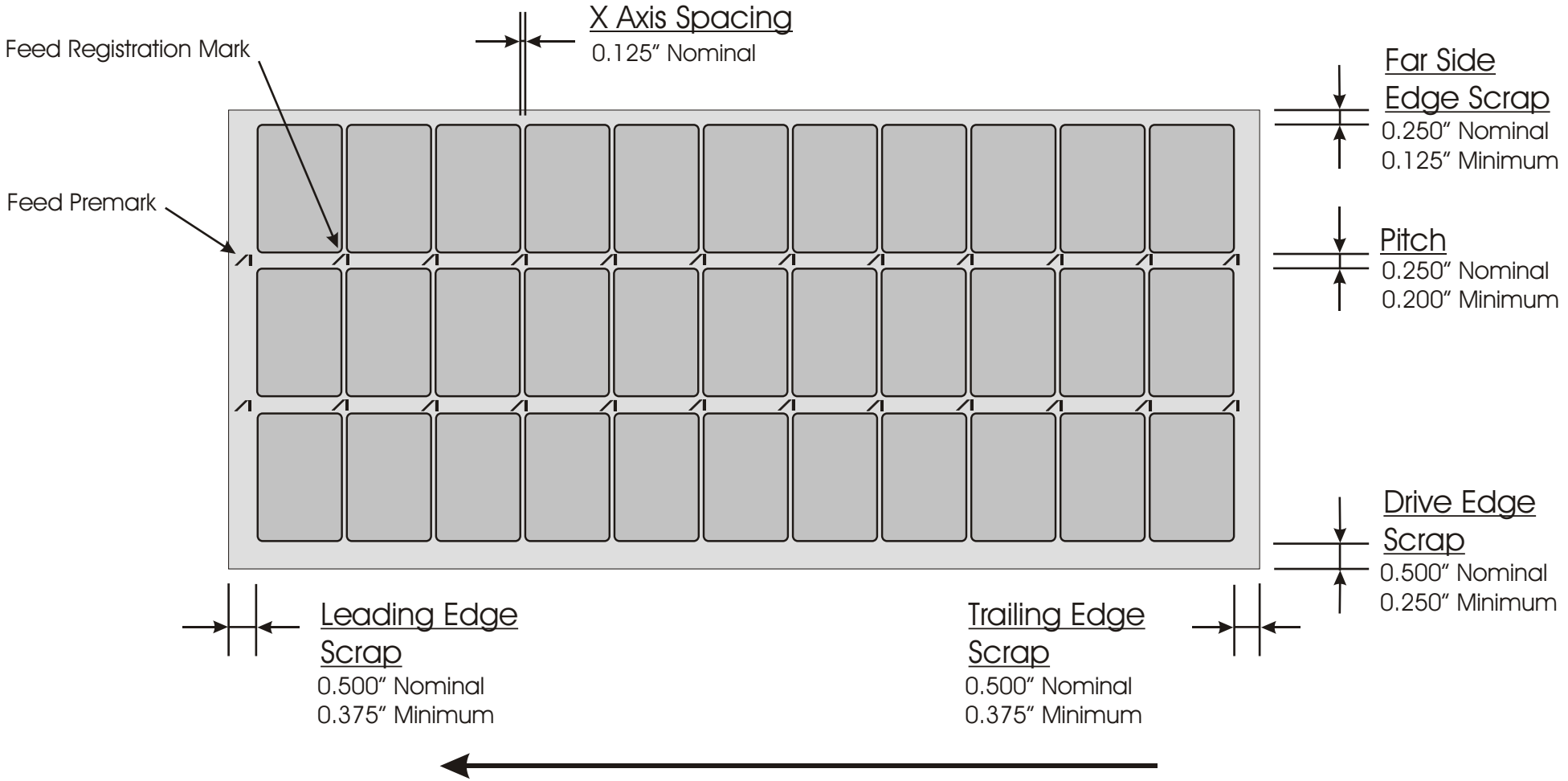
Spartanics

M500 Punching System

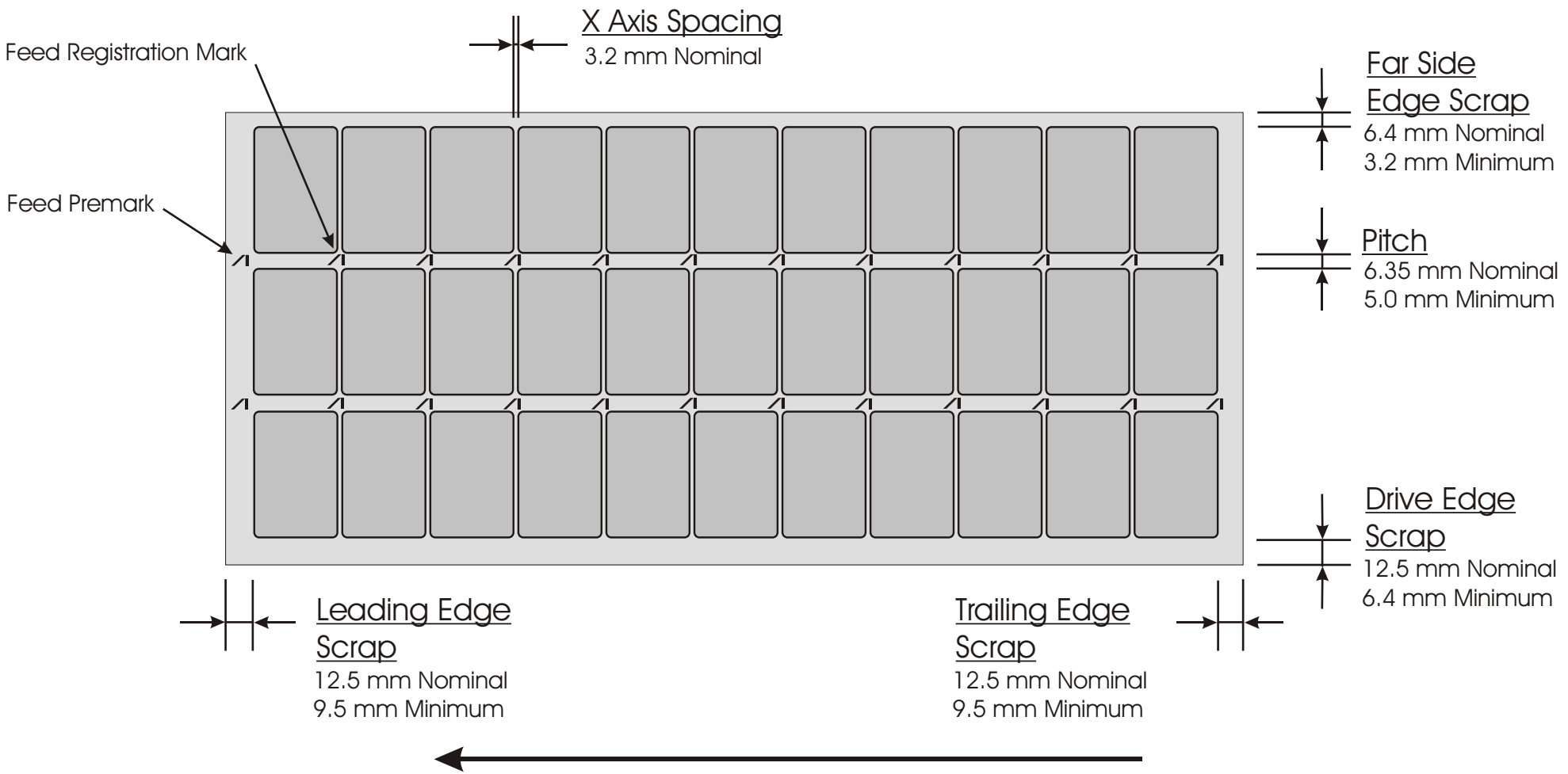
Typical Card Spacing and Scrap Allowances



Spartanics

M500 Punching System

Typical Card Spacing and Scrap Allowances

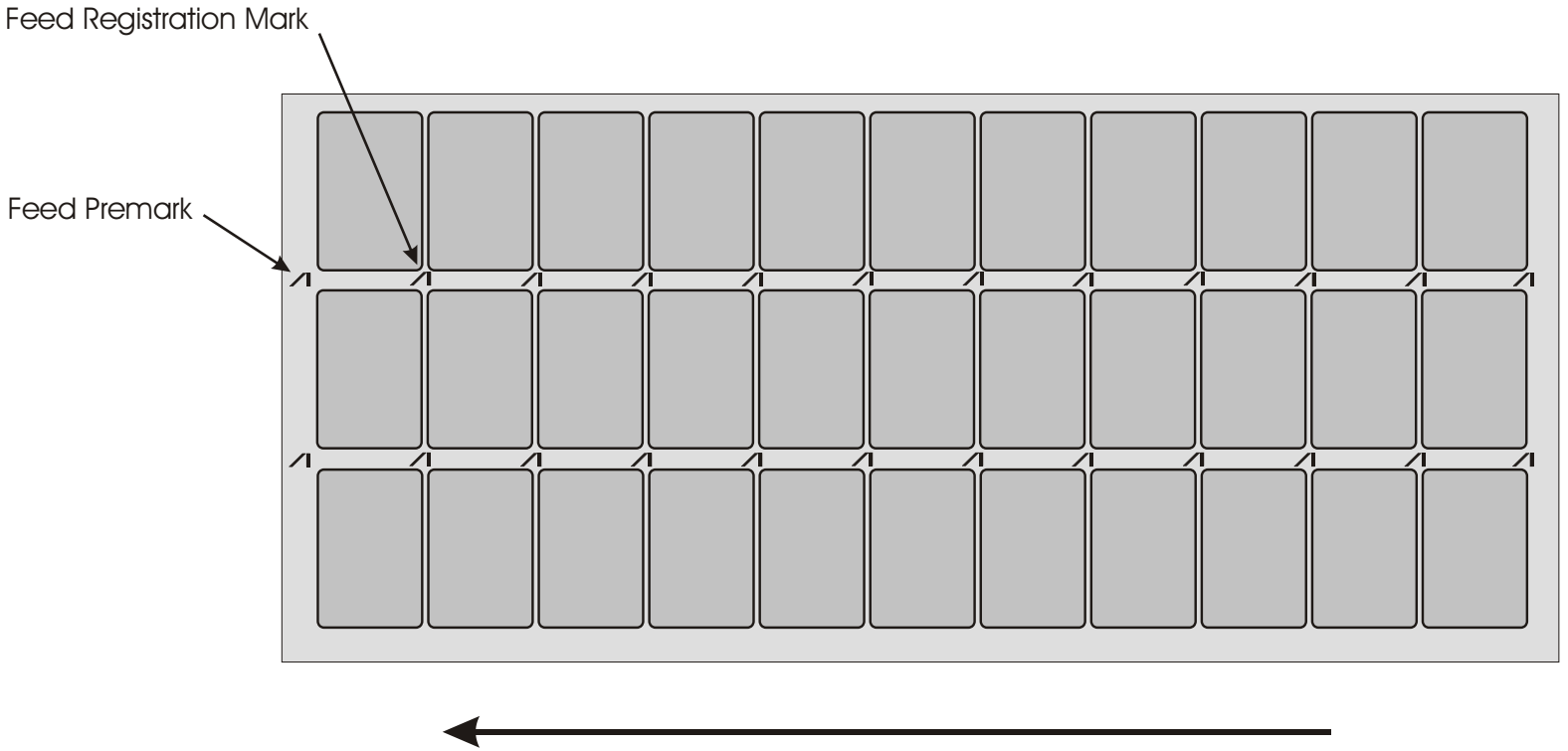


February 2003

Spartanics

M500 Punching System

Typical 2 Axis Feed Registration Mark Locations



Decorated Material Feeding Direction in Punching Press

The 2 Axis Registration Feed only needs one row of registration marks to be printed for proper cut to print registration. As shown in the drawing, they can be either in the space between the first and second rows of cards or between the second and third rows of cards in a 3-up layout. To reduce the effect of any rotation that will not be corrected in a two axis feed, the registration marks should be toward the center of the sheet rather than the edges of the sheet. In a 2-up sheet, the registration marks should be located between the first and second rows of cards.

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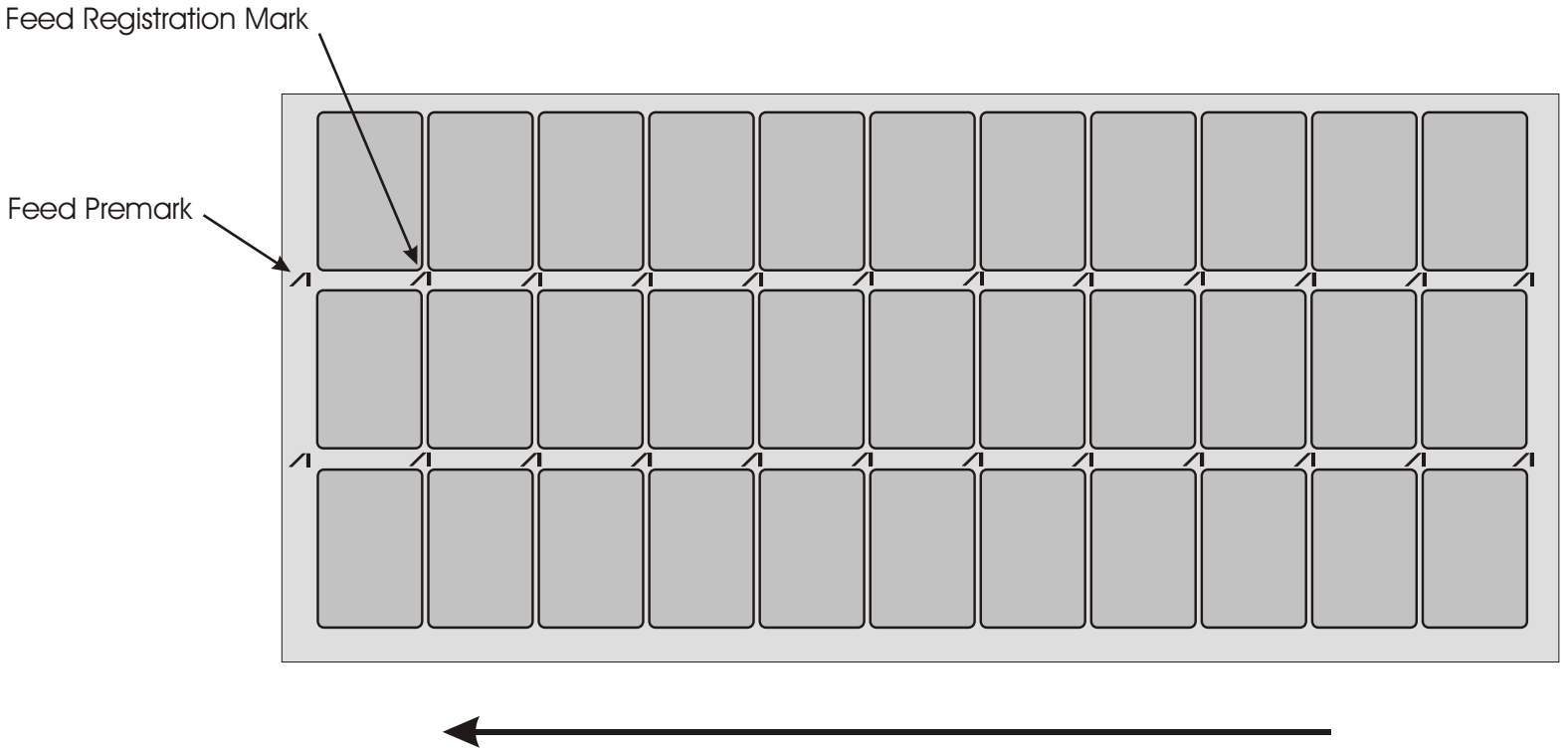
M500 Punching System

Typical 2 Axis Feed Registration Mark Locations



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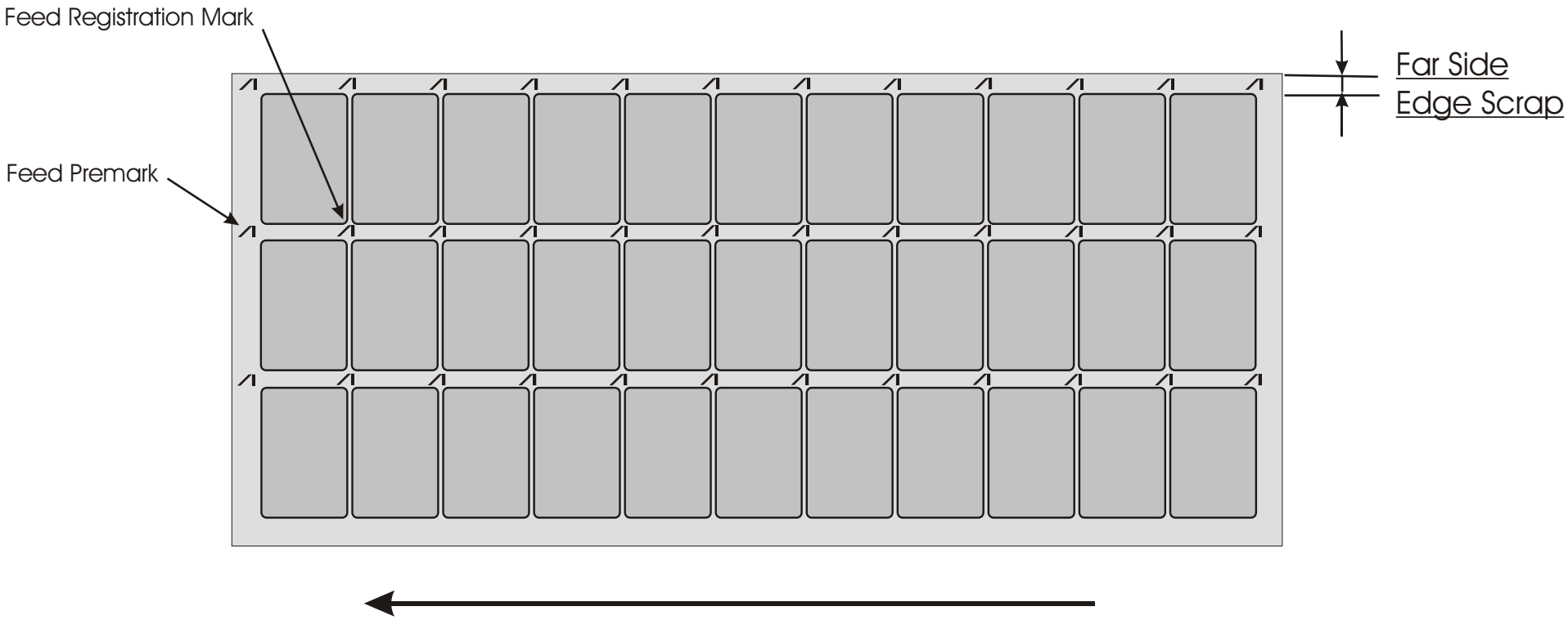
M500 Punching System

Typical 3 Axis Feed Registration Mark Locations



Decorated Material Feeding Direction in Punching Press

The 3 Axis Registration Feed requires two rows of registration marks to be printed for proper cut to print registration. As shown in the drawing, they can be either in the space between the first and second rows of cards, between the second and third rows of cards, or in the far side edge scrap in a 3-up layout. However, itis recommended that the two rows of registration marks be as far apart as possible in order to allow for maximum correction of rotation error. For example in the above drawing, the optimal location for the registration marks would be between the first and second row of cards and in the far side edge scrap.

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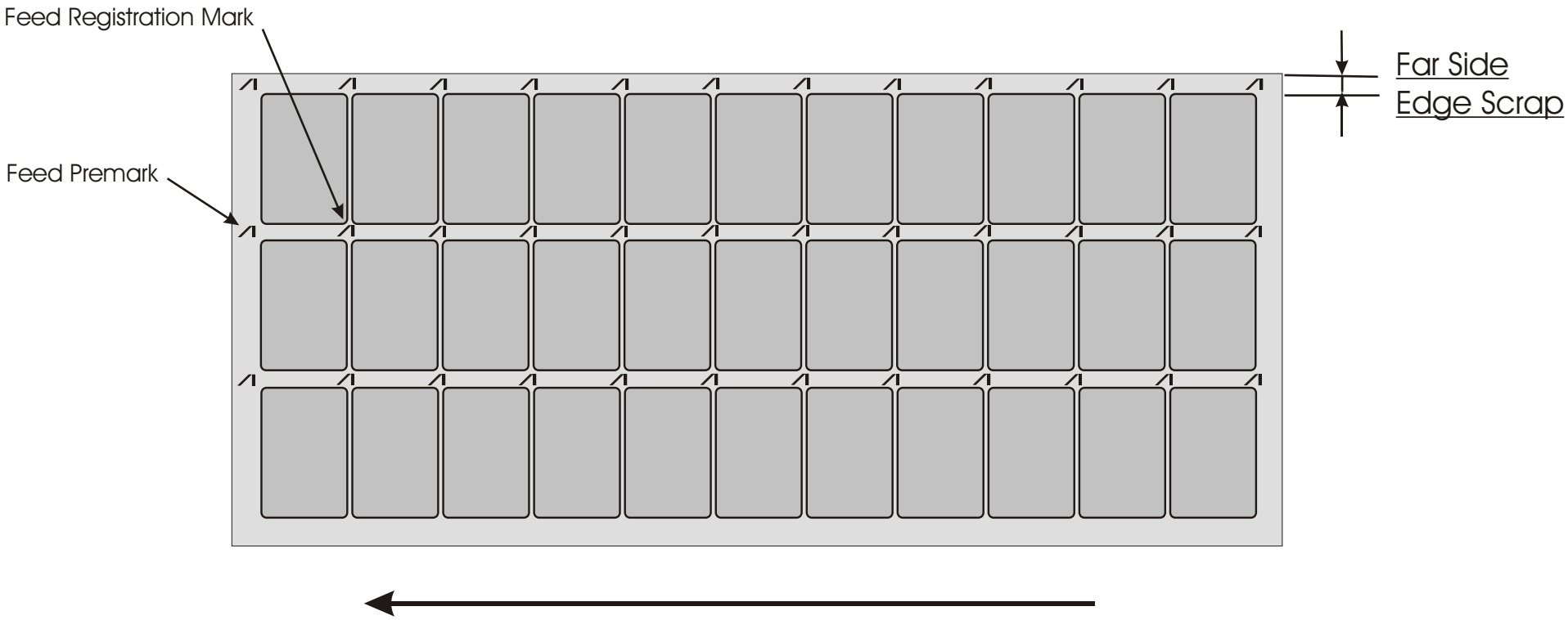
M500 Punching System

Typical 3 Axis Feed Registration Mark Locations



Decorated Material Feeding Direction in Punching Press

The 3 Axis Registration Feed requires two rows of registration marks to be printed for proper cut to print registration. As shown in the drawing, they can be either in the space between the first and second rows of cards, between the second and third rows of cards, or in the far side edge scrap in a 3-up layout. However, itis recommended that the two rows of registration marks be as far apart as possible in order to allow for maximum correction of rotation error. For example in the above drawing, the optimal location for the registration marks would be between the first and second row of cards and in the far side edge scrap.

Premark and Registration Mark Design For Automatic Registration Feeds

Spartanics
3605 Edison Place
Rolling Meadows, IL 60008-1077
Phone: 847-394-5700
FAX Sales: 847-394-0409
FAX Service: 847-394-9349

A. Introduction

The feed performs the specific function of aligning strip and coil material to allow the punching/die cutting press it is installed on to cut parts from the material with excellent cut to print accuracy.

For maximum accuracy, the registration mark should be printed on the material so that it is not under the sensor of the feed when the material is properly positioned for cutting in the die. The sensor will only recognize a mark when the material is moving.

B. Material Specifications

Strip Length Range
12" minimum or coil.

Width Range
0.75" - 20.00"

Thickness Range
0.010” - .062" for sheet
0.002” – 0.062” for coil

Step Up Range
The step up is the distance between the center of one part on the strip and the center of the next part on the strip.

0.25" - 15"

Materials
Metal, plastic, and paper including these same materials that have been embossed

C. Registration Marks

The feed requires a premark and a registration mark in order to calculate the part's position in the material for accurate cut to print registration.

To support Y axis registration, the required premark and registration marks are an angled line followed by a vertical line (/ | or \ | "angle and line"). The angled line should be at a 45 degree angle from the vertical line. Both lines should be of equal width and printed in the critical registration color. The mark should be at the trailing edge of the part and must by placed in the original artwork for that part prior to any step and repeat operation. The general location of these marks is shown on the accompanying drawings **"Typical Feed Premark and Feed Registration Mark Positions"** and **"Typical 2 Axis Feed Registration Mark Locations"**.

To support R axis or rotation registration, a second required registration mark is an angled line followed by a vertical line (/ | or \ | "angle and line") or just a vertical line. The angled line should be at a 45 degree angle from the vertical line. The comments made for the Y axis mark relative to line width, angle, color, and location of the mark apply for this mark also. This mark should be placed immediately opposite the first registration mark with respect to the X axis of the feed. The general location of the second set of registration marks for a 3 Axis Feed is shown on the accompanying drawing **"Typical 3 Axis Feed Registration Mark Locations"**.

The required marks are shown in the accompanying drawing **"Decorated Material Feed Premark and Registration Mark"**. A brief description of the main features of the mark follows:

Mark Angle

The required angle is 45 degrees. Variations of more than " 1 degree will degrade theY-Axis registration accuracy.

Mark Height

The recommended mark height is 0.250". A shorter mark may be adequate, however, the sensing head positioning on the feed during set up will be more critical. The Y-axis correction range is a total of 0.150". With a short mark, the feed could make a Y-Axis correction for one part, but then miss the mark for the second part. It is strongly recommended that the mark height be at least 0.200" for ease of the set up of the feed. In no case, should the mark height be less than 0.125".

Line Width
The recommended line width is 0.025 – 0.030". The line width must be no less than 0.020". Lines widths greater than 0.030" offer no increase in registration performance.

Gap
The recommended gap between the angle and the straight lines is 0.030". The registration feed sensor cannot read the portion of the mark were the gap is less than 0.020". A gap larger than 0.030" is acceptable, but a larger than required gap increases the total registration mark width.

Mark Color
The mark should be printed in the most critical registration color with the highest contrast possible.

Clear Window
The window areas of 0.150" before the registration mark, and 0.040" after the registration mark must be free of any artwork or markings except for the registration mark itself.

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A. Introduction

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For maximum accuracy, the registration mark should be printed on the material so that it is not under the sensor of the feed when the material is properly positioned for cutting in the die. The sensor will only recognize a mark when the material is moving.

B. Material Specifications

Strip Length Range
305 mm minimum or coil.

Width Range
19 mm - 500 mm

Thickness Range
0.25 mm - 1.6 mm for sheet
0.05 mm – 1.6 mm for coil

Step Up Range
The step up is the distance between the center of one part on the strip and the center of the next part on the strip.

6.4 mm - 380 mm

Materials
Metal, plastic, and paper including these same materials that have been embossed

C. Registration Marks

The feed requires a premark and a registration mark in order to calculate the part's position in the material for accurate cut to print registration.

To support Y axis registration, the required premark and registration marks are an angled line followed by a vertical line (/ | or \ | "angle and line"). The angled line should be at a 45 degree angle from the vertical line. Both lines should be of equal width and printed in the critical registration color. The mark should be at the trailing edge of the part and must by placed in the original artwork for that part prior to any step and repeat operation. The general location of these marks is shown on the accompanying drawings **"Typical Feed Premark and Feed Registration Mark Positions"** and **"Typical 2 Axis Feed Registration Mark Locations"**.

To support R axis or rotation registration, a second required registration mark is an angled line followed by a vertical line (/ | or \ | "angle and line") or just a vertical line. The angled line should be at a 45 degree angle from the vertical line. The comments made for the Y axis mark relative to line width, angle, color, and location of the mark apply for this mark also. This mark should be placed immediately opposite the first registration mark with respect to the X axis of the feed. The general location of the second set of registration marks for a 3 Axis Feed is shown on the accompanying drawing **"Typical 3 Axis Feed Registration Mark Locations"**.

The required marks are shown in the accompanying drawing **"Decorated Material Feed Premark and Registration Mark"**. A brief description of the main features of the mark follows:

Mark Angle

The required angle is 45 degrees. Variations of more than " 1 degree will degrade theY-Axis registration accuracy.

Mark Height

The recommended mark height is 6.5 mm. A shorter mark may be adequate, however, the sensing head positioning on the feed during set up will be more critical. The Y-axis correction range is a total of 3.8 mm. With a short mark, the feed could make a Y-Axis correction for one part, but then miss the mark for the second part. It is strongly recommended that the mark height be at least 5.0 mm for ease of the set up of the feed. In no case, should the mark height be less than 3.2 mm.

Line Width

The recommended line width is 0.64 –0.75 mm. The line width must be no less than 0.50 mm. Lines widths greater than 0.75 mm offer no increase in registration performance.

Gap

The recommended gap between the angle and the straight lines is 0.75 mm. The registration feed sensor cannot read the portion of the mark were the gap is less than 0.50 mm. A gap larger than 0.75 mm is acceptable, but a larger than required gap increases the total registration mark width.

Mark Color

The mark should be printed in the most critical registration color with the highest contrast possible.

Clear Window

The window areas of 4 mm before the registration mark, and 1 mm after the registration mark must be free of any artwork or markings except for the registration mark itself.

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To support R axis or rotation registration, a second required registration mark is an angled line followed by a vertical line (/ | or \ | "angle and line") or just a vertical line. The angled line should be at a 45 degree angle from the vertical line. The comments made for the Y axis mark relative to line width, angle, color, and location of the mark apply for this mark also. This mark should be placed immediately opposite the first registration mark with respect to the X axis of the feed. The general location of the second set of registration marks for a 3 Axis Feed is shown on the accompanying drawing **"Typical 3 Axis Feed Registration Mark Locations"**.

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Line Width

The recommended line width is 0.64 –0.75 mm. The line width must be no less than 0.50 mm. Lines widths greater than 0.75 mm offer no increase in registration performance.

Gap

The recommended gap between the angle and the straight lines is 0.75 mm. The registration feed sensor cannot read the portion of the mark were the gap is less than 0.50 mm. A gap larger than 0.75 mm is acceptable, but a larger than required gap increases the total registration mark width.

Mark Color

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