



Barcode Recommendation

TJ International
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CONFIDENTIAL

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1. Document information

1.1. Version history

| Date | Vers. | Author | Comment | Status |
|---------------|-------|---------------|---------|------------|
| 22. März 2020 | 0.1 | Tobias Graser | Draft | Unreleased |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

All changes in the current version in relation to the last version are marked **in this way**.

1.2. Referenced documents

| Nr. | Version | Author | Document, comment |
|-----|--------------|----------------|---|
| [1] | 3040_9017_71 | André Schenker | Barcode specification for Vareo |
| [2] | V120 | Andre Schenker | Barcode specification for ESF 3683_BarcodeSpecification V120.pdf |
| [3] | 3677_9012_71 | Reto Peyer | Barcode specification for InfiniTrim (large barcode reader) |

1.3. Terms and abbreviations

| Term, abbreviations | Description |
|---------------------|-----------------------------|
| mm | Short form for Millimeters. |
| ESF | Endsheet Feeder |
| ID | Identification |

1.4. List of figures

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2. Introduction

The barcode specifications described in documents [1], [2] and [3] leave a great scope for designing the barcode workflow. This document recommends a simple and consistent design for customer.

3. Product Orientation

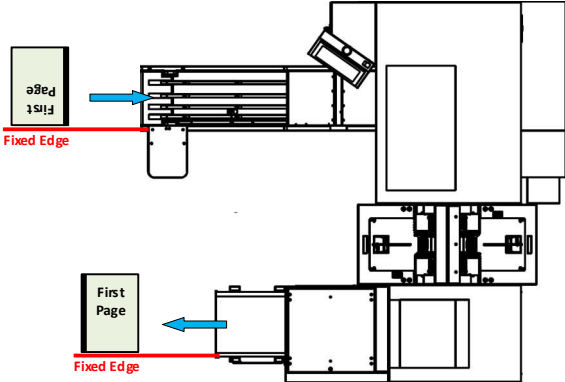
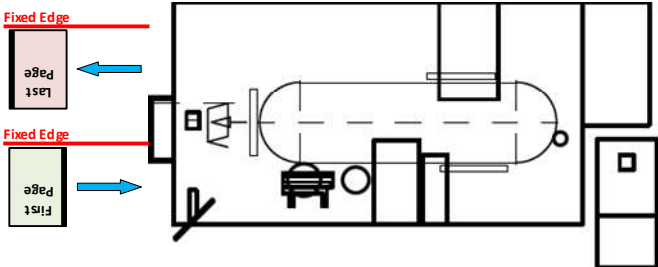
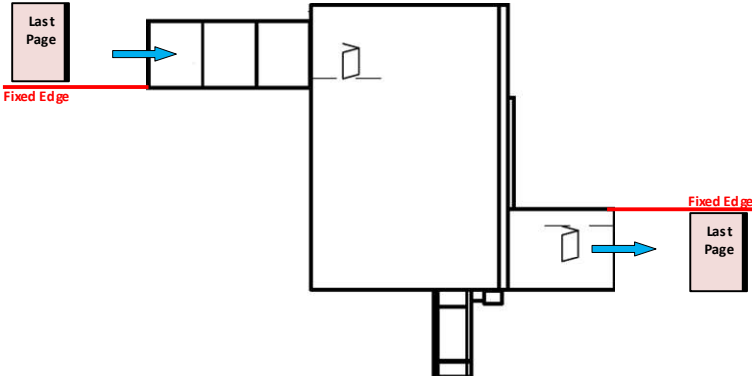
| Machine | Drawing |
|-----------------------|--|
| 3683 Endsheets Feeder |  |
| 3040 Vareo |  |
| 3677 InfiniTrim |  |

Figure 1: Product orientation

4. Barcode Parameters (summary)

The following table shows in summary the relevant barcode parameters with their limits. More details are shown in following chapters.

| Parameter | Value |
|------------------------------|---|
| Barcode Functionality | - Cover Matching (correct matching book block to cover; in Vareo) - Format Data Settings (setup machine to correct format; in ESF, Vareo and InfiniTrim) |
| Barcode Data | Job-ID Endsheet Height Block Thickness Block Height Final Height Final Width Cut-off Length (foot) Transfer station processing |
| Barcode Type | DataMatrix – 36 x 12 (max. numeric digits) |
| Barcode Module | 0.5 mm |
| Barcode Dimension | 18 x 6 mm |
| Barcode Clearance | 2 mm around |
| Error correction | ECC200 |
| Barcode Color | Black (on White) |
| Barcode Position | See following chapters |

Figure 2: Summary of barcode parameters

5. Barcode Data

The following pictures shows the relevant book data that are used in the barcode.

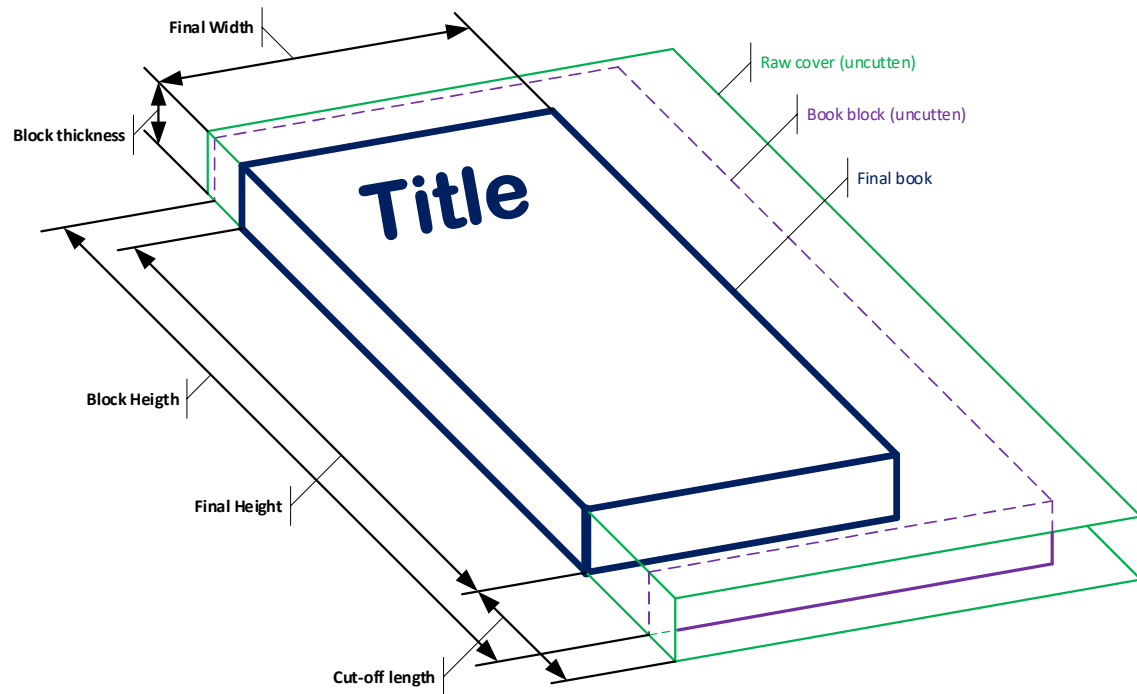


Figure 3: Book data definition for barcode

5.1. Barcode Encryption

| Book data | Start Position | Length (Digits) | Resolution | Range of value ⁽³⁾ | Used for | Remarks |
|-------------------------------------|----------------|-----------------|------------|-------------------------------|-------------------|---------|
| Job-ID / Product-ID ⁽¹⁾ | 1 | 13 | -- | -- | Vareo, InfiniTrim | Numeric |
| Endsheet height ⁽²⁾ | 14 | 4 | 1/10 mm | 0.0 .. 999.9 | ESF, Vareo | Numeric |
| Book block thickness ⁽⁴⁾ | 18 | 3 | 1/10 mm | 0.0 .. 99.9 | ESF, Vareo | Numeric |
| Book block height (length) | 21 | 4 | 1/10 mm | 0.0 .. 999.9 | ESF, Vareo | Numeric |
| Cut-off length (foot) | 25 | 4 | 1/10 mm | 0.0 .. 999.9 | InfiniTrim | Numeric |
| Final height | 29 | 4 | 1/10 mm | 0.0 .. 999.9 | InfiniTrim | Numeric |
| Final width | 33 | 4 | 1/10 mm | 0.0 .. 999.9 | InfiniTrim | Numeric |
| Transfer station processing (HC/SC) | 37 | 1 | | 0 .. 9 | Hunkeler | Numeric |

⁽¹⁾ Free ID defined by customer. Also used for cover matching.

⁽²⁾ For softcover productions, this value is not required.

⁽³⁾ Format value has to be within the machine limits.

⁽⁴⁾ This value is only used for quality control.

Figure 4: Barcode data encryption

5.1.1. Barcode Example

This is an example with free chosen format values.

| Parameter | Data | Start position | Length (Digits) | Data encrypted |
|-------------------------------------|----------------|----------------|-----------------|----------------------------|
| Job-ID | 12345678910123 | 1 | 13 | 1234567890123 |
| Endsheet height | 230.0 mm | 14 | 4 | 2300 |
| Book block thickness | 16.3 mm | 18 | 3 | 163 |
| Book block height | 240.8 mm | 21 | 4 | 2408 |
| Cut-off length | 12.8 mm | 25 | 4 | 0128 |
| Final Height | 210.0 mm | 29 | 4 | 2100 |
| Final Width | 148.5 mm | 33 | 4 | 1485 |
| Transfer station processing (HC/SC) | 1 | 37 | 1 | 1 (upper or lower deck) |

The diagram illustrates the process of encoding the parameters from the table into a barcode. The parameters and their values are: Job ID (12345678910123), Endsheets height (230.0 mm), Book block thickness (16.3 mm), Book block height (240.8 mm), Cut-off length (12.8 mm), Final Height (210.0 mm), Final Width (148.5 mm), and Transfer station processing (1). These values are concatenated into a single string: 1234567890123230016324080128210014851. This string is then encoded into a Data Matrix barcode (12 x 36).

Figure 5: Barcode encryption example

5.2. Barcode Dimension

The barcode dimension 18 x 6 mm is given through the barcode type (DataMatrix, 36 x 12) and the barcode module (0.5 mm). This barcode has to be cleared in the range of 2 mm around it.

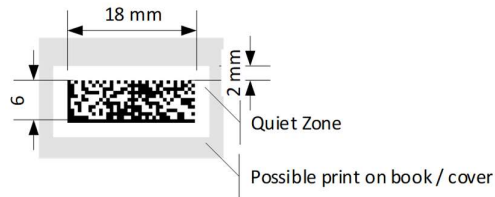


Figure 6: Barcode dimension

6. Barcode Position (for Softcover Productions)

The same barcode must be printed 3 times. 1 time on the book block and 2 times on the cover.

6.1. Book Block

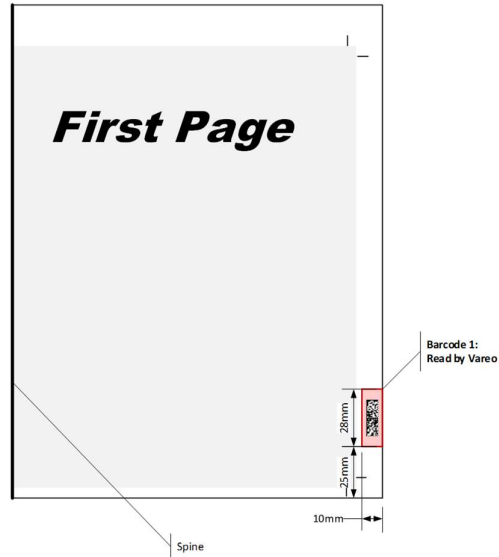


Figure 7: Barcode position on book block

6.2. Book Cover

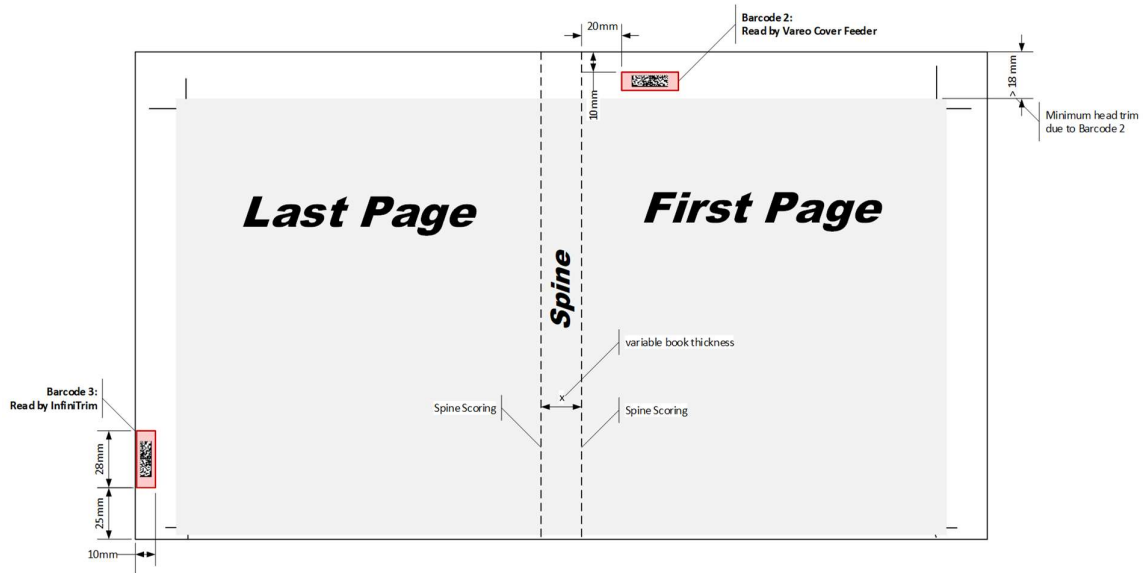


Figure 8: Barcode position on book cover

Important:

- If a laminated book cover is used, the laminate should completely cover the barcode (including quiet zone) to avoid an optical edge within the barcode data. Otherwise this could lead to problems when reading the barcode.

7. Barcode Position (for Hardcover Productions)

The same barcode must be printed 3 times. 2 times on the first page and 1 time on the last page.

7.1. Book Block

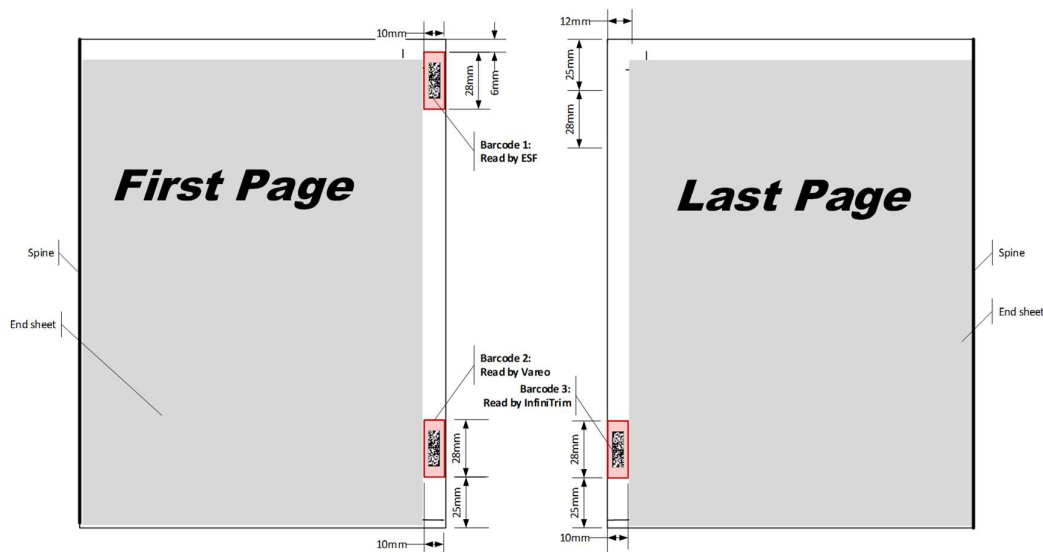


Figure 9: Barcode position on book block (first page)

Barcode position on book block (last page)

Important:

- The end sheets must not cover the barcodes under any circumstances.