

EFI Metrix Tech Note:
Cutter Alignment Marks

Version 2020.2



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Cutter Alignment Marks

What it Is

Cutter Alignment Marks are used by digital cutting machines to maintain registration across the sheet while performing operations such as cutting and creasing. This is especially important for very large sheets or flexible substrates.

Cutter Alignment Marks can be placed individually or as groups. The size, type, and relative placement of Cutter Alignment Mark Groups are controlled by a set of rules defined in the database. Once the rules are configured, the user adds a Cutter Alignment Marks Group to a layout and then the algorithm automatically places marks around each instance. An orientation mark is placed in the specified corner of the sheet to prevent accidental improper rotation of nearly symmetrical jobs.

The algorithm requires all the parameters mentioned in the Fields/Attributes table below; each parameter is also described in the table.

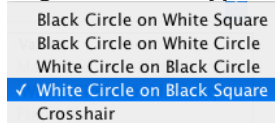
How it Works

Individual Cutter Alignment Marks

1. In the Layout View, open the Marks menu and select **Add Cutter Alignment Mark**. The mark is added to the lower-left corner of the sheet.

To edit the mark's properties:

1. **Alignment Mark Type:** There are five options:



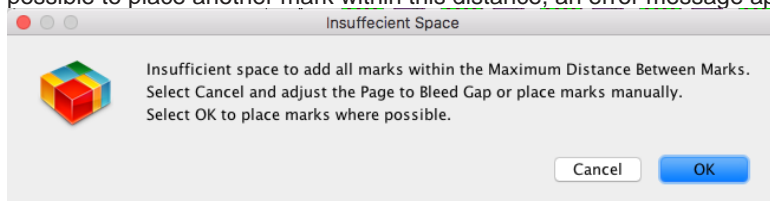
2. **Mark Anchor Point:** The point on the mark to use as an anchor.
3. **Layout Anchor Object:** Press Sheet, Press Plate, or Product Trim.
4. **Layout Anchor Point:** The point on the layout to use as an anchor.
5. **Horizontal Offset:** The horizontal distance to move the mark away from the anchor point. Positive values move up and right, negative values move left and down.
6. **Vertical Offset:** The vertical distance to move the mark away from the anchor point. Positive values move up and right, negative values move left and down.
7. **Spot Black: True / False**
When True, the black part of the mark prints in a pre-defined spot black ink. When False, 100% process black is used.
8. **Spot White: True / False:**
When True, the white part of the mark prints in a pre-defined spot white ink. When False, 0% CMYK is used (no ink, so it will be the color of the substrate).
9. **Inner Size:** Diameter of the inner mark (black circle or white circle).
10. **Outer Size:** Size of the outer mark (black or white square or circle).
11. **Placement: Front Only / Back Only / Both Front and Back**
The sheet sides for placement of the barcode mark.
12. **Mirror Backup: True/False**
When True, the position of the barcode mark on the Back mirrors the Front.
13. **Over Page Content: True / False**
When True, the barcode mark will overprint page content.
14. **Output: Print Report Only / Exported Output Only / Both Export and Report**
Where the barcode mark should appear.
15. **Ignore Overlapping Content: True / False**
When True, content or mark (whichever is on top) overprints. When False, content or mark knocks out.

Cutter Alignment Mark Groups

1. Open the database and select Cutter Alignment Mark Groups.
2. Click **Add New**. The New Cutter Alignment Mark Group dialog opens. Required fields are highlighted in red.

The screenshot shows a dialog box titled "New Cutter Alignment Mark Group". It contains several input fields and dropdown menus. The "Name" field is highlighted with a red border. Below it are "Orientation Mark Placement" (set to "Bottom Left"), "Offset from Trim" (0.125), "Minimum Distance Between Marks" (10), "Maximum Distance Between Marks" (50), "Alignment Mark Type" (set to "White Circle on Black Square"), "Inner Size" (0.125), "Outer Size" (0.25), "Spot Black" (True), and "Spot White" (True). At the bottom, a red error message reads: "Name must be between 1 and 250 characters long." There are "Cancel" and "OK" buttons at the bottom right.

3. **Name:** Must be a unique name.
4. **Orientation Mark Placement:** Sets the position of the orientation mark in either the bottom left or bottom right corner of the sheet.
5. **Offset From Trim:** Sets the distance between the trim of the product and the outer edge of the Cutter Alignment Marks.
6. **Minimum Distance Between Marks:** Marks will be placed this distance apart. If it is not possible to place a mark this distance from another mark, it will be placed as close as possible.
7. **Maximum Distance Between Marks:** Marks will be placed no further than this distance apart. If it is not possible to place another mark within this distance, an error message appears:



8. **Alignment Mark Type:** There are five options:
 - Black Circle on White Square
 - Black Circle on White Circle
 - White Circle on Black Circle
 - White Circle on Black Square
 - Crosshair
9. **Inner Size:** Diameter of the inner mark (black circle or white circle).
10. **Outer Size:** Size of the outer mark (black or white square or circle).
11. **Spot Black:** When True, the black part of the mark prints in a pre-defined spot black ink. When False, 100% process black is used.

- 12. **Spot White:** When True, the white part of the mark prints in a pre-defined spot white ink. When False, 0% CMYK is used (no ink, so it will be the color of the substrate).

No Space on Sheet for Cutter Alignment Marks

In the User Preferences on the Auto Layout screen, there is a preference called “How to Handle No Space on Sheet for Cutter Alignment Marks.” The options are Ignore, Warning, and Error.

Using Cutter Alignment Mark Groups in Automation Mode

Cutter Alignment Mark Groups are supported in Metrix Automation via MXML.

Automatic Cutter Alignment Mark Group MXML command:

```
<AddCutterAlignmentMarks Name="Add Cutter Alignment Marks"/>
```

Database Mode:

You must first define a Cutter Alignment Mark Group in the Metrix database, and then refer to that group in the input project MXML:

```
<ResourcePool>
<CutterAlignmentMarkGroup Name="find by name" MIS_ID="find by MIS ID"/>
</ResourcePool>
```

(OR)

Memory Only Mode:

Provide the entire definition:

```
<CutterAlignmentMarkGroup CutterAlignmentInnerSize="0.2" CutterAlignmentOuterSize="0.3"
CutterAlignmentSpotBlack="true" CutterAlignmentSpotWhite="true"
CutterAlignmentType="WhiteCircleOnBlackSquare" GapMax="3.937008" GapMin="1.574803" ID="Ref_46"
MIS_ID="10046" Name="DemoCAM_WCBS" Orientation="BottomLeft" TrimOffset="0.15"/>
```

Fields / Attributes Table:

MXML Tag → CutterAlignmentMarkGroup

MXM Attribute Name =sample value	UI Mapping	Description
Name="DemoCAM_WCBS"	Name	Name of Cutter Alignment Mark Group resource
CutterAlignmentInnerSize="0.2"	Inner Size	Size of Inner Portion of Mark
CutterAlignmentOuterSize="0.3"	Outer Size	Size of Outer Portion of Mark
CutterAlignmentSpotBlack="true"	Spot Black	Toggle selection to mention Spot Black or Process Black
CutterAlignmentSpotWhite="true"	Spot White	Toggle selection to mention Spot White or Process White
CutterAlignmentType="WhiteCircleOnBlackSquare"	Alignment Mark Type	Type of Alignment Mark as per possible values
GapMax="3.937008"	Maximum Distance Between Marks	Maximum Distance Between Marks around each product instance on layout
GapMin="1.574803"	Minimum Distance Between Marks	Minimum Distance Between Marks around each product instance on layout
ID="Ref_46"	N/A	ID reference needed by MXML tag
MIS_ID="10046"	N/A	MIS_ID reference needed by MXML tag for integrations
TrimOffset="0.15"	Offset from Trim	Offset of mark placement from the product trim
Orientation="BottomLeft"	Orientation Mark Placement	Positions two dots to indicate the orientation of the sheet

Limitations:

Barcodes are not automatically placed as part of Cutter Alignment Mark Groups.

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