



Dipco 20.0
Operating Manual

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A Dipco 20

General information	A.1.1
1 Prinect Dipco Elements - digital control elements	A.1.3
1.1 Production reliability thanks to a package of coordinated digital measuring elements ..	A.1.3
1.2 Delivery variants	A.1.4
1.3 Data formats of the control elements	A.1.6
1.4 Color abbreviations and color designations	A.1.6
1.5 Important when using third-party workflows - unique identifier (UID) of the quality control strip	A.1.6
1.6 General notes on use	A.1.9
1.7 What are the new features compared to previous Dipco versions?	A.1.10
Quality control elements	A.2.1
1 Quality control strips	A.2.3
1.1 Directories with quality control strips	A.2.3
1.2 Notes on positioning	A.2.4
1.3 GS quality control strips	A.2.5
1.4 S quality control strips	A.2.7
1.5 CS quality control strips	A.2.10
1.6 G7 quality control strips	A.2.12
1.7 Micro quality control strips	A.2.14
1.8 Micro quality control strips MicroDCB with control marks for die cutting	A.2.17
1.9 MS quality control strip	A.2.21
1.10 Structure and function of the individual measurement fields	A.2.21
2 Mini Spots	A.2.24
2.1 Naming conventions for Mini Spots	A.2.24
2.2 Field of application	A.2.24
2.3 Positioning	A.2.26
2.4 Mini Spots in detail	A.2.27
3 Control marks for Prinect Auto Register	A.2.34
3.1 General notes	A.2.34
3.2 Notes on assembly	A.2.36
4 Measuring marks for paper stretch compensation	A.2.38
4.1 Contents of the DipcoPSC directory	A.2.38
4.2 Field of application	A.2.38
4.3 Positioning	A.2.38
4.4 Notes on reading the measuring marks	A.2.39

4.5	Measuring marks for paper stretch compensation in detail	A.2.40
5	APSC measuring marks for automatic paper stretch compensation	A.2.42
5.1	Contents of the DipcoAPSC directory	A.2.42
5.2	Field of application	A.2.42
6	Control elements in the Discontinued directory	A.2.44
6.1	Contents of the Discontinued directory	A.2.44
6.2	Mini Spots without white patches	A.2.44
6.3	Prinect 6GS quality control strip	A.2.46
6.4	6PK (control element for CPC 41)	A.2.47
6.5	Prinect/FOGRA quality control strip	A.2.47
6.6	MB_Process step wedges	A.2.49

General information

1	Prinect Dipco Elements - digital control elements	A.1.3
1.1	Production reliability thanks to a package of coordinated digital measuring elements ..	A.1.3
1.2	Delivery variants	A.1.4
1.3	Data formats of the control elements	A.1.6
1.4	Color abbreviations and color designations	A.1.6
1.5	Important when using third-party workflows - unique identifier (UID) of the quality control strip	A.1.6
1.6	General notes on use	A.1.9
1.7	What are the new features compared to previous Dipco versions?	A.1.10

1 Prinect Dipco Elements - digital control elements

1.1 Production reliability thanks to a package of coordinated digital measuring elements

Heidelberg offers the appropriate control elements (Prinect Dipco Elements) tailored to suit all color-relevant Prinect products. This comprehensive package contains all necessary digital control elements for pre-press and printing, such as quality control strips, Mini Spots and control marks for Prinect Auto Register. The control elements on the print sheet can, for example, be positioned with the Prinect Signa Station imposition software.

Types of control elements

- Quality control strips

Quality control strips are important control elements for quality proofing in offset printing. They therefore contain various measurement fields for determining solids, ink trapping, dot gain, print contrast and gray balance and for measuring slurring and doubling. All digital quality control strips are well-suited to the ink zone width of Heidelberg presses and support the printer effectively. All Prinect color measuring systems can measure and evaluate the quality control strips and generate the control factors for online ink control from the resulting data.

- Mini Spots

Together with Prinect Image Control, Mini Spots enable faster reactions to altered conditions in the color workflow. They are used for monitoring both proofing and printing. The measured values determined by the Mini Spots help adapt existing characteristic curves, process calibrations and ICC profiles to changed printing conditions.

- Control marks for Prinect Auto Register.

The fully automatic inline measurement and control of the register in the printing press is carried out using the control marks for Prinect Auto Register. Special register marks support the printer in checking the register visually.

- Measuring marks for measuring paper stretch.

With the PSC (Paper Stretch Compensation) measuring marks and the APSC (Automatic Paper Stretch Compensation) measuring marks, you can measure paper distortion in every printing unit. Based on the measured values, the Prinect APSC software can calculate correction data to compensate for the expected paper distortion as early as during platemaking.

1.2 Delivery variants

The Dipco control elements are available in two different versions:

- A subfolder named *Dipco* is located in the *Prinect Signa Station* directory stored on the **USB stick for installing Prinect**. You can access this directory directly or open the *SetupPrinect.exe* file. Chapter B "*Installation using SetupPrinect.exe*" describes how to use *SetupPrinect.exe*. When the Prinect Signa Station is installed, the Dipco control elements are automatically stored in the "..\Marks\dipco" subfolder in the Signa station program folder.
- As download in the Prinect user portal (www.heidelberg.com - search term: dipco).

► **Note**

The control elements are supplied for the Prinect workflows (*Prinect* directory) and for third-party workflows with an output resolution of 2400 dpi (*foreign2400dpi* directory) and 2540 dpi (*foreign2540dpi* directory). If you use a third-party workflow with a different resolution, you may have to generate PDF files for this deviating resolution. Please refer to the chapter B "Generating PDF files" for more information".

Structure of the Dipco directory

The directory structure is arranged as follows:

Notes on use/Overview posters

- The notes on use can be found in the Handbuch.pdf/Manual.pdf file in the root directory. The overview posters are stored in the same directory in PDF format

Control elements from previous versions

- Discontinued
This directory contains all control elements that are no longer updated.

Control elements in eps format

- eps
This directory contains the control elements in eps format

Control elements for the Prinect workflow

- Prinect
This directory contains the current control elements for the Prinect workflow for all output resolutions.

Discontinued	16.04.2014 11:19
eps	16.04.2014 11:20
foreign2400dpi	16.04.2014 11:20
foreign2540dpi	16.04.2014 11:20
Prinect	16.04.2014 11:20
DipcoOverview.pdf	25.02.2014 14:45
DipcoPoster_Format_...	25.02.2014 14:45
DipcoUebersichten.pdf	25.02.2014 14:45
Handbuch.pdf	25.02.2014 14:45
Manual.pdf	25.02.2014 14:45
version.txt	25.02.2014 14:45

Fig. 1 Structure of the Dipco directory

Control elements for third-party workflows with 2400 dpi resolution

- foreign2400dpi
This directory contains the current control elements for third-party workflows that work with an output resolution of 2400 dpi. The subdirectories have the same structure as the *Prinect* directory.

Control elements for third-party workflows with 2540 dpi resolution

- foreign2540dpi
This directory contains the current control elements for third-party workflows that work with an output resolution of 2540 dpi. The subdirectories have the same structure as the *Prinect* directory.

Subdirectories with Dipco elements

The *Prinect*, *foreign2400dpi* and *foreign2540dpi* directories each have the following subdirectories.

Control marks for Prinect Auto Register

- DipcoAR
These directories contain the control marks for Prinect Auto Register.

Quality control strips

- DipcoFormat052
- DipcoFormat074 (also for the format category 75)
- DipcoFormat102+105 (also for the format categories 92 and 106)
- DipcoFormat145
- DipcoFormat162

These directories contain the quality control strips. The figures stand for the sheet size categories 52, 74/75, 92/102/105/106, 145 and 162 cm.

Mini Spots

- DipcoMB
This directory contains the Mini Spots.

Measuring marks for paper stretch compensation

- DipcoPSC
This directory contains the measuring marks for the paper stretch compensation.

Measuring marks for the automatic paper stretch compensation

- DipcoAPSC
This directory contains the measuring marks for the automatic paper stretch compensation.

 DipcoAR	16.04.2014 11:20
 DipcoFormat052	16.04.2014 11:20
 DipcoFormat074	16.04.2014 11:20
 DipcoFormat102+105	16.04.2014 11:20
 DipcoFormat145	16.04.2014 11:20
 DipcoFormat162	16.04.2014 11:20
 DipcoMB	16.04.2014 11:20
 DipcoPSC	16.04.2014 11:20
 DipcoAPSC	16.04.2014 11:20

Fig. 2 Substructure in the *Prinect* directory

1.3 Data formats of the control elements

The control elements are available in the data formats EPS and PDF. The individual formats are used in the following areas:

- PDF format (file extension .pdf):
The PDF format is for use in a composite PDF workflow. It can be used with Prinect Signa Station and third-party software.
- EPS format (file extension .eps):
The *.eps files can be found in the *eps* directory. The EPS format is for use in a Composite-PostScript™ workflow. It can be used in connection with other imposition software and can also be positioned directly, e.g. with QuarkXPress™ or Adobe InDesign™.

► **Note**
If you need the control element in PDF format, it is best to use the PDF file. These PDF files contain embedded "PostScript XObjects". If your workflow cannot edit these PDF files and has an output resolution other than 2400 or 2540 dpi, you can generate PDF files without embedded "PostScript XObjects" from the EPS files. Please refer to chapter B., "Generating PDF files" at the end of this documentation.

1.4 Color abbreviations and color designations

Color abbreviation	Color designation
B	Color designation of the 1st ink on the quality control strip (usually black, otherwise the darkest ink)
C	Color designation of the 2nd ink (usually cyan)
M	Color designation of the 3rd ink (usually magenta)
Y	Color designation of the 4th ink (usually yellow)
X	Color designation of the 5th ink
Z	Color designation of the 6th ink
U	Color designation of the 7th ink
V	Color designation of the 8th ink
S1 ... S8	Color designation of the 9th to the 16th ink

Tab. 1 Assignment of color abbreviation to color designation

1.5 Important when using third-party workflows - unique identifier (UID) of the quality control strip

If you use a third-party workflow: The color measurement system at the printing press requires the unique identifier (UID) of the quality control strip in order to find the strip automatically. The UID is shorter than the file

name. Here you can see the table with the UIDs of all quality control strips.

File name of the quality control strip	unique identifier UID
F052_4GS__510x10v20.1y.pdf	4GS_F52
F052_6GS99__510x10v20.1y.pdf	6GS99_F52
F052_6S__510x10v20.1y.pdf	6S_F52
F052_6S-BX__510x10v20.1y.pdf	6S-BX_F52
F052_6S-XC__510x10v20.1y.pdf	6S-XC_F52
F052_6S-XZ__510x10v20.1y.pdf	6S-XZ_F52
F052_7S__510x10v20.1y.pdf	7S_F52
F052_8GS__510x10v20.1y.pdf	8GS_F52
F052_CS-4__510x10v20.1y.pdf	CS-4_F52
F052_CS-5__510x10v20.1y.pdf	CS-5_F52
F052_CS-6__510x10v20.1y.pdf	CS-6_F52
F052_G7-4__510x10v20.1y.pdf	G7-4_F52
F052_Micro-6__510x7v20.1y.pdf	Micro-6_F52
F052_Micro-8__510x7v20.1y.pdf	Micro-8_F52
F074_4GS__740x10v20.1y.pdf	4GS_i_F74
F074_6GS99__740x10v20.1y.pdf	6GS99_i_F74
F074_6S__740x10v20.1y.pdf	6S_i_F74
F074_6S+__740x10v20.1y.pdf	6S+_i_F74
F074_6S-BX__740x10v20.1y.pdf	6S-BX_i_F74
F074_6S-XC__740x10v20.1y.pdf	6S-XC_i_F74
F074_6S-XZ__740x10v20.1y.pdf	6S-XZ_i_F74
F074_7S__740x10v20.1y.pdf	7S_i_F74
F074_8GS__740x10v20.1y.pdf	8GS_i_F74
F074_CS-4__740x10v20.1y.pdf	CS-4_i_F74
F074_CS-5__740x10v20.1y.pdf	CS-5_i_F74
F074_CS-6__740x10v20.1y.pdf	CS-6_i_F74
F074_G7-4__740x10v20.1y.pdf	G7-4_i_F74
F074_Micro-10__740x7v20.1y.pdf	Micro-10_i_F74
F074_Micro-6__740x7v20.1y.pdf	Micro-6_i_F74
F074_Micro-8__740x7v20.1y.pdf	Micro-8_i_F74
F074_MS-8__740x10v20.1y.pdf	MS-8_F74
F105_4GS__1040x10v20.1y.pdf	4GS_i_F105
F105_6GS99__1040x10v20.1y.pdf	6GS99_i_F105
F105_6S__1040x10v20.1y.pdf	6S_i_F105
F105_6S+__1040x10v20.1y.pdf	6S+_i_F105

File name of the quality control strip	unique identifier UID
F105_6S-BX___1040x10v20.1y.pdf	6S-BX_i_F105
F105_6S-XC___1040x10v20.1y.pdf	6S-XC_i_F105
F105_6S-XZ___1040x10v20.1y.pdf	6S-XZ_i_F105
F105_7S___1040x10v20.1y.pdf	7S_i_F105
F105_8GS___1040x10v20.1y.pdf	8GS_i_F105
F105_CS-4___1040x10v20.1y.pdf	CS-4_i_F105
F105_CS-5___1040x10v20.1y.pdf	CS-5_i_F105
F105_CS-6___1040x10v20.1y.pdf	CS-6_i_F105
F105_G7-4___1040x10v20.1y.pdf	G7-4_i_F105
F105_G7Micro-6___1040x7v20.1y.pdf	G7Micro-6_i_F105
F105_G7Micro-8___1040x7v20.1y.pdf	G7Micro-8_i_F105
F105_Micro-10___1040x7v20.1y.pdf	Micro-10_i_F105
F105_Micro-6___1040x7v20.1y.pdf	Micro-6_i_F105
F105_Micro-8___1040x7v20.1y.pdf	Micro-8_i_F105
F105_MicroDCB-6-L___1040x7v20.1y.pdf	MicroDCB-6-L_i_F105
F105_MicroDCB-6-S___1040x7v20.1y.pdf	MicroDCB-6-S_i_F105
F105_MicroDCB-7-L___1040x7v20.1y.pdf	MicroDCB-7-L_i_F105
F105_MicroDCB-7-S___1040x7v20.1y.pdf	MicroDCB-7-S_i_F105
F105_MS-8___1040x10v20.1y.pdf	MS-8_F105
F145_CS-4___1430x10v20.1y.pdf	CS-4_i_F145
F145_CS-5___1430x10v20.1y.pdf	CS-5_i_F145
F145_CS-6___1430x10v20.1y.pdf	CS-6_i_F145
F145_G7-4___1430x10v20.1y.pdf	G7-4_i_F145
F145_G7Micro-6___1430x7v20.1y.pdf	G7Micro-6_i_F145
F145_G7Micro-8___1430x7v20.1y.pdf	G7Micro-8_i_F145
F145_Micro-10___1430x7v20.1y.pdf	Micro-10_i_F145
F145_Micro-6___1430x7v20.1y.pdf	Micro-6_i_F145
F145_Micro-8___1430x7v20.1y.pdf	Micro-8_i_F145
F145_MicroDCB-6-L___1430x7v20.1y.pdf	MicroDCB-6-L_i_F145
F145_MicroDCB-6-S___1430x7v20.1y.pdf	MicroDCB-6-S_i_F145
F145_MicroDCB-7-L___1430x7v20.1y.pdf	MicroDCB-7-L_i_F145
F145_MicroDCB-7-S___1430x7v20.1y.pdf	MicroDCB-7-S_i_F145
F162_CS-4___1625x10v20.1y.pdf	CS-4_i_F162
F162_CS-5___1625x10v20.1y.pdf	CS-5_i_F162
F162_CS-6___1625x10v20.1y.pdf	CS-6_i_F162
F162_G7-4___1625x10v20.1y.pdf	G7-4_i_F162
F162_G7Micro-6___1625x7v20.1y.pdf	G7Micro-6_i_F162

File name of the quality control strip	unique identifier UID
F162_G7Micro-8___1625x7v20.1y.pdf	G7Micro-8_i_F162
F162_Micro-10___1625x7v20.1y.pdf	Micro-10_i_F162
F162_Micro-6___1625x7v20.1y.pdf	Micro-6_i_F162
F162_Micro-8___1625x7v20.1y.pdf	Micro-8_i_F162
F162_MicroDCB-6-L___1625x7v20.1y.pdf	MicroDCB-6-L_i_F162
F162_MicroDCB-6-S___1625x7v20.1y.pdf	MicroDCB-6-S_i_F162
F162_MicroDCB-7-L___1625x7v20.1y.pdf	MicroDCB-7-L_i_F162
F162_MicroDCB-7-S___1625x7v20.1y.pdf	MicroDCB-7-S_i_F162

Tab. 2 Unique identifiers of the quality control strip files

1.6 General notes on use

- Dipco 20 has been tested with Prinect Prepress systems. As a result of the variety of possible combinations of hardware platforms and application software Heidelberg cannot guarantee its suitability in third-party prepress systems!
- Some measurement fields (e.g. measurement fields for slurring and doubling) are only displayed coarsely on the screen. However, these measurement fields are output correctly if the output resolution and the handling of the PostScript XObjects in the workflow are set correctly. For third-party workflows with an output resolution other than 2400 or 2540 dpi, please refer to the notes in chapter B., "Generating PDF files".
- Position the control elements to their original scale! If you increase or decrease control elements, change the grid or size of the measurement field. The Prinect color measuring systems and Prinect Auto Register need the control elements to be in their original scale and cannot measure control elements that have been made smaller or larger.
 - ▶ **Note**
The control elements carry information on the overall size in the file name. For example: PCS_40AB__120x14v16 requires an area which is 120 mm wide and 14 mm high.
- Position the control elements on the sheet in such a way that the measurement fields are not cropped or covered. Bled measurement fields cause incorrect measurements and error messages or prevent the measuring system from recognizing the control element.
- Please be aware that digital control elements - in contrast to conventional sheet assembly - can be

influenced by the settings in prepress (calibration) and the geometric properties of the imagesetter. The correct geometric settings must be made on the imagesetter, for example to display measurement fields for slurring and doubling correctly.

1.7 What are the new features compared to previous Dipco versions?

► Note

Dipco 20 has been specially developed for use with the current version of Prinect Signa Station. Due to comprehensive changes to the software, we cannot guarantee the functionality of Dipco 20 in connection with older versions of Signa Station. When using versions older than Prinect Signa Station 4.5 you should carry out an update or, to make sure, have the previous version of your Dipco elements at hand.

As of Prinect Signa Station 4.5, the contents of the Dipco package are also included in the Signa Station package. As of Prinect Signa Station 10.0 the contents of CtP-Tools 10.0 are also integrated.

A wizard tool for importing marks is available from Prinect Signa Station 10.0 onward, which simplifies the update or import of several marks significantly.

The wizard tool for importing marks cannot be started from the Dipco directory (it aborts the process with a warning message). Start the assistant for importing marks from one of the subdirectories "Prinect", "foreign2400dpi" or "foreign2540dpi".

New in Dipco 20, compared to Dipco 16

- Color reference strips G7Micro-6 und G7Micro-8 for print evaluation according to the US G7 standard (format 102 to 162).
- Quality control strips MS-8 specially for Prinect Easy Control. The quality control strip contains 8 inks in each ink zone.
- APSC-4 and APSC-8 measuring marks for use with Prinect Automatic Paper Stretch Compensation.

New features in Dipco 16 compared to Dipco 13.0

- New micro control elements with control marks for die cutting in formats 102/105/145/162 cm. These marks are available in 6 and 7 color versions. The file names are Fxxx_MicroDCB.

New features in Dipco 13.0 compared to Dipco 12.0

- As of Dipco 13.0, the *.pre files are no longer used as they are no longer needed for the Prinect

workflow. The *.eps files have been moved and are now located under the *eps* directory.

New features in Dipco 12.0 compared to Dipco 11.0

- New and shorter directory and file names, new marks: Micro-10 (sheet size 74 to 162) and G7-4 (sheet size 52 to 106).

New features in Dipco 11.0 compared to Dipco 10.0

- New directory structure, Dipco elements for third-party workflows with 2400 and 2540 dpi output resolution are supplied.

New features in Dipco 10.0 compared to Dipco 4.5

- New directory structure with one layer simplifies working with the assistant for importing marks.
- Measuring marks for paper stretch compensation: The measuring marks for 8, 10 and 12 colors have been added to the new version.

New features in Dipco 4.5 compared to Dipco 3.1

- New directory with measuring marks for paper stretch compensation.
- New Mini Spots have an additional white patch. The previous Mini Spots can be found in the *Discontinued* directory.
- As of version 3.1, the control elements for the format category 145 cm have been added.

New features in Dipco 3.1 compared to Dipco 3.0

- As of version 3.0, the control elements for the format category 162 cm have been added.

New features in Dipco 3.0 compared to Dipco 2.1

- Quality control strip "7S" for 7-color printing.
- Mini Spots for 5, 6 and 7-color printing.
- Modifications to "6S" with assignments for printing with special colors:
 - 6S-XZ (X, Z, U, V, S1, S2).
 - 6S-BX (B, X, Z, U, V, S1).
 - 6S-XC (X, C, M, Y, Z, U).
- Micro strips for Prinect Inpress Control.

New properties of the control elements

Recognition of cropped measurement fields

Cropped measurement fields cause problems in measurement. To prevent this, the quality control strips include integrated PostScript information that is read out by suitable workflows, such as Prinect Production Manager. If this contains information that individual measurement fields were bled by a clip path (bleed size of up to 0.5 mm is tolerated), the whole measurement

field is suppressed. The prerequisites for this function in the PDF workflow are as follows:

- The workflow allows processing of the integrated PostScript commands.
- The measurement field is actually cropped by a clip path. Subsequent overlaps by other objects are not recognized.

Assignment of color designation to color abbreviation

In a composite workflow the assignment of color designation to color abbreviation (X, Z, U, V...) is shown in the quality control strips directly below the measurement fields. This function is also executed through integrated PostScript commands. Prerequisite for this function:

- The workflow allows processing of the integrated PostScript commands.

Discontinued (not developed any further) control elements

Several control elements have been discontinued (not developed any further) or replaced by new ones. However, these control elements were added without change to the *Discontinued* directory.

► **Note**

Some of the discontinued control elements cannot automatically recognize cropped measurement fields or automatically assign color designations to color abbreviations.

Quality control elements

1	Quality control strips	A.2.3
1.1	Directories with quality control strips	A.2.3
1.2	Notes on positioning	A.2.4
1.3	GS quality control strips	A.2.5
1.4	S quality control strips	A.2.7
1.5	CS quality control strips	A.2.10
1.6	G7 quality control strips	A.2.12
1.7	Micro quality control strips	A.2.14
1.8	Micro quality control strips MicroDCB with control marks for die cutting	A.2.17
1.9	MS quality control strip	A.2.21
1.10	Structure and function of the individual measurement fields	A.2.21
2	Mini Spots	A.2.24
2.1	Naming conventions for Mini Spots	A.2.24
2.2	Field of application	A.2.24
2.3	Positioning	A.2.26
2.4	Mini Spots in detail	A.2.27
3	Control marks for Prinect Auto Register	A.2.34
3.1	General notes	A.2.34
3.2	Notes on assembly	A.2.36
4	Measuring marks for paper stretch compensation	A.2.38
4.1	Contents of the DipcoPSC directory	A.2.38
4.2	Field of application	A.2.38
4.3	Positioning	A.2.38
4.4	Notes on reading the measuring marks	A.2.39
4.5	Measuring marks for paper stretch compensation in detail	A.2.40
5	APSC measuring marks for automatic paper stretch compensation	A.2.42
5.1	Contents of the DipcoAPSC directory	A.2.42
5.2	Field of application	A.2.42
6	Control elements in the Discontinued directory	A.2.44
6.1	Contents of the Discontinued directory	A.2.44
6.2	Mini Spots without white patches	A.2.44
6.3	Prinect 6GS quality control strip	A.2.46
6.4	6PK (control element for CPC 41)	A.2.47
6.5	Prinect/FOGRA quality control strip	A.2.47
6.6	MB_Process step wedges	A.2.49

DP-901.0006-000FRONT_11

1 Quality control strips

1.1 Directories with quality control strips

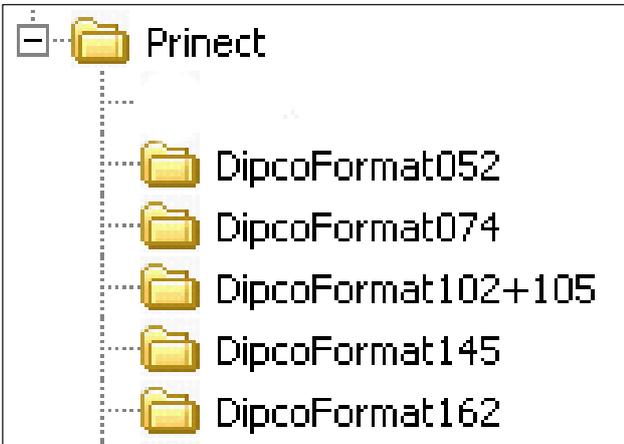


Fig. 1 Directories with quality control strips

There are 5 directories with quality control strips.

- *DipcoFormat052*
This directory contains quality control strips for presses with a sheet width of 52 cm.
- *DipcoFormat074*
This directory contains quality control strips for presses with a sheet width of 74/75 cm.
- *DipcoFormat102+105*
This directory contains quality control strips for sheet widths of 92 cm, 102 cm, 105 cm and 106 cm. The quality control strips are suitable for all 4 sheet widths.
- *DipcoFormat145*
This directory contains quality control strips for sheet widths of 145 cm.
- *DipcoFormat162*
This directory contains quality control strips for sheet widths of 162 cm.

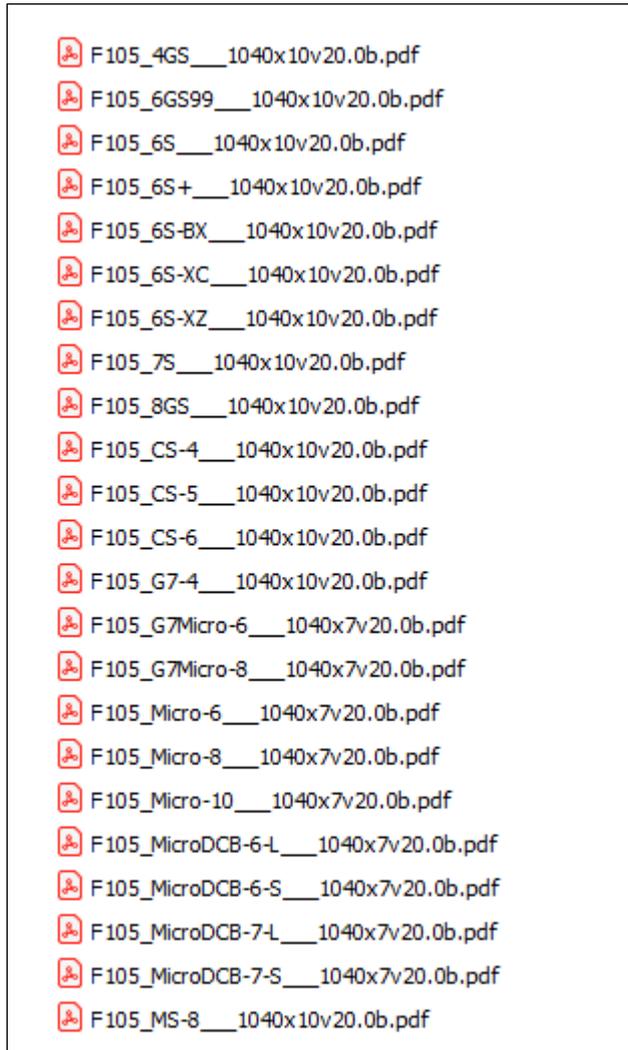


Fig. 2 DipcoFormat102+Format105 directory

The quality control strips available for the respective sheet size classes can be found in the directories. The individual quality control strips are explained in more detail in the following section.

Where are the FOGRA quality control strips?

The FOGRA quality control strips have been frozen to their condition of Dipco 2.1 and can be found in the *Discontinued* directory. FOGRA quality control strips cannot be assessed by Prinect Inpress Control. Alternatively you can use CS quality control strips, which also contain the 40% and 80% measurement fields.

► Note

In order to use the CS quality control strips on the Prinect Axis Control color measuring system on Prinect CP2000 Center, software version 47 or a corresponding service patch is needed here. For further information, please contact your local Heidelberg Service. Prinect Image Control software version 5 is required.

Naming conventions

The file name gives some information on the type of quality control strip.

Example: F105_8GS__1040x10v20

- F105 = sheet width (in this case for sheet widths of 92, 102, 105 and 106 cm).
- 8GS = type of quality control strip and number of colors (in this case GS quality control strip for 8 colors).
- 1040x10 = width x height of the quality control strip (in this case 1040 mm x 10 mm).
- v20 = version (in this case Dipco 20).

1.2 Notes on positioning

► Note

Notes on positioning for all Prinect measuring systems can be found in the section "Notes on assembling and positioning Dipco elements".

1.3 GS quality control strips

GS (Gray Solid): These quality control strips are for controlling the gray balance of the colors cyan, magenta and yellow with the Prinect Axis Control and Prinect Image Control (first generation) color measuring systems. There is at least one chromatic gray field in each ink zone. The number of solid tone patches is lower due to the gray fields, which is why S quality control strips are better suited for ink control by solids. All quality control strips with the exception of the 52 cm sheet size range are also suitable for use with Prinect Inpress Control.

1.3.1 Prinect 4GS

Control element	Prinect 4GS
	<p>The image shows a detailed layout of the Prinect 4GS quality control strip. It is divided into four main zones labeled 1, 2, 3, and 4. Zone 1 contains patches for B, C, M, Y, B70, C70, CMY, B, C, M, Y, M70, CMY, B, C, M, Y, CM, CY, CMY, B, C, M, Y, Y70, CMY, B, C, M, Y, M70. Zone 2 contains patches for M70, CMY, B, C, M, Y, slurC, CMY, B, C, M, Y, CMY, B, C, M, Y, B70, C70, CMY, B, C, M, Y, M70, CMY, Prinect 4GS iFormat 74, Dipco V3.0b Test20070629 (pdf), © 2007 Heidelberg, and a triangle symbol. Zone 3 contains patches for delberger Druckmaschinen AG, slurY, CMY, B, C, M, Y, C70, CMY, B, C, M, Y, slurB, CMY, B, C, M, Y, CMY, B, C, M, Y, B70, C70, CMY, B, C, M, Y, M70. Zone 4 contains patches for M70, CMY, B, C, M, Y, CM, CY, CMY, B, C, M, Y, Y70, CMY, B, C, M, Y, M70, CMY, CMY, B, C, M, Y, M70, CMY, B, C, M, Y.</p>
Description	Quality control strip for gray balance control of cyan, magenta and yellow for 4 colors (BCMY). The halftone patches and ink trapping fields make versatile evaluations possible.
Legend	Format (...)Prinect 4GS(i) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_4GS__510x10v20 74/75 cm: F074_4GS__740x10v20 92/102/105/106 cm: F105_4GS__1040x10v20

Tab. 1 Prinect 4GS

1.3.2 Prinect 6GS99

Control element	Prinect 6GS99
Description	<p>Quality control strip for gray balance control of cyan, magenta and yellow for 6 colors (BCMY + 2 special colors X, Z). The halftone patches and ink trapping fields make versatile evaluations possible.</p> <p>In combination with the Prinect 6S+ quality control strip up to 12 colors can be controlled. This function could only be used with the first generation of Prinect Image Control. This function is not possible with Prinect Image Control NG or Prinect Image Control 3.</p>
Legend	Prinect 6GS99(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_6GS99__510x10v20 74/75 cm: F074_6GS99__740x10v20 92/102/105/106 cm: F105_6GS99_1040x10v20

Tab. 2 Prinect 6GS99

1.3.3 Prinect 8GS

Control element	Prinect 8GS
Description	<p>Quality control strip for gray balance control of cyan, magenta and yellow for 8 colors (BCMY + 4 special colors X, Z, U, V). The halftone patches and ink trapping fields make versatile evaluations possible.</p>

1.4.2 Prinect 6S+

Control element	Prinect 6S+
Description	The Prinect 6S+ can be positioned as a second strip for controlling more than 6 (up to 12) colors, in addition to a Prinect 6S or 6GS99. This function could only be used with the first generation of Prinect Image Control. This function is not possible with Prinect Image Control NG or Prinect Image Control 3.
Legend	Prinect 6S+(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: Not available 74/75 cm: F074_6S+_740x10v20 92/102/105/106 cm: F105_6S+_1040x10v20

Tab. 5 Prinect 6S+

1.4.3 Prinect 6S-BX

Control element	Prinect 6S-BX
Description	Quality control strip for ink control by solids in 6 colors. (B + X, Z, U, V, S1). The reference color is black (B).
Legend	Prinect 6S-BX(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_6S-BX_510x10v20 74/75 cm: F074_6S-BX_740x10v20

Control element	Prinect 6S-BX
	92/102/105/106 cm: F105_6S-BX_1040x10v20

Tab. 6 Prinect 6S-BX

1.4.4 Prinect 6S-XC

Control element	Prinect 6S-XC
Description	Quality control strip for ink control by solids in 6 colors. (CMY + X, Z, U). The reference color is the special color X, which replaces black (B).
Legend	Prinect 6S-XC(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_6S-XC__510x10v20 74/75 cm: F074_6S-XC__740x10v20 92/102/105/106 cm: F105_6S-XC_1040x10v20

Tab. 7 Prinect 6S-XC

1.4.5 Prinect 6S-XZ

Control element	Prinect 6S-XZ
Description	Quality control strip for ink control by solids in 6 colors. (6 special colors X, Z, U, V, S1, S2). The reference color is the special color X.

Control element	Prinect 6S-XZ
Legend	Prinect 6S-XZ(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_6S-XZ__510x10v20 74/75 cm: F074_6S-XZ__740x10v20 92/102/105/106 cm: F105_6S-XZ__1040x10v20

Tab. 8 Prinect 6S-XZ

1.4.6 Prinect 7S

Control element	Prinect 7S
Description	Quality control strip for ink control by solids in 7 colors. (BCMY + X, Z, U). The reference color is black (B).
Legend	Prinect 7S-(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_7S__510x10v20 74/75 cm: F074_7S__740x10v20 92/102/105/106 cm: F105_7S__1040x10v20

Tab. 9 Prinect 7S

1.5 CS quality control strips

CS (Color Solution): These quality control strips are designed for ink control by solids. Produced by Heidelberg, they are an equal alternative to Fogra quality control strips, but are suitable for use with Prinect In-press Control. In addition the CS-4 and CS-5 variants allow register control.

1.5.1 Prinect CS-4

Control element	Prinect CS-4
Description	Quality control strip for ink control by solids in 4 colors (BCMY). This quality control strip also contains measuring elements for register control with Prinect Inpress Control. The halftone patches and ink trapping fields make versatile evaluations possible.
Legend	Prinect CS-4(i) Format (...) Dipco 20 © 2019 Heidelberg Druckmaschinen AG
File names	52 cm: F052_CS-4__510x10v20 74/75 cm: F074_CS-4__740x10v20 92/102/105/106 cm: F105_CS-4__1040x10v20 145 cm: F145_CS-4__1430x10v20 162 cm: F162_CS-4__1625x10v20

Tab. 10 Prinect CS-4

1.5.2 Prinect CS-5

Control element	Prinect CS-5
Description	Quality control strip for ink control by solids in 5 colors (BCMY + X). This quality control strip also contains measuring elements for register control with Prinect Inpress Control.
Legend	Prinect CS-5(i) Format (...) Dipco 20 © 2019 Heidelberg Druckmaschinen AG
File names	52 cm: F052_CS-5__510x10v20 74/75 cm: F074_CS-5__740x10v20

Control element	Prinect CS-5
	92/102/105/106 cm: F105_CS-5_1040x10v20 145 cm: F145_CS-5_1430x10v20 162 cm: F162_CS-5_1625x10v20

Tab. 11 Prinect CS-5

1.5.3 Prinect CS-6

Control element	Prinect CS-6
Description	Quality control strip for ink control by solids in 6 colors (BCMY + X, Z).
Legend	Prinect CS-6(i) Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_CS-6_510x10v20 74/75 cm: F074_CS-6_740x10v20 92/102/105/106 cm: F105_CS-6_1040x10v20 145 cm: F145_CS-6_1430x10v20 162 cm: F162_CS-6_1625x10v20

Tab. 12 Prinect CS-6

1.6 G7 quality control strips

G7 quality control strips are for application of the G7 method. They meet the full requirements of the G7 method.

1.6.1 Prinect G7-4

Control element	Prinect G7-4
Description	Quality control strips for gray balance control of 4 colors (BCMY) in accordance with the G7 method. The quality control strip contains halftone patches with 25%, 50% and 75% for the individual colors and for combined printing.
Legend	Prinect G7-4 Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_G7-4__510x10v20 74/75 cm: F074_G7-4__740x10v20 92/102/105/106 cm: F105_G7-4__1040x10v20 145 cm: F145_G7-4__1430x10v20 162 cm: F162_G7-4__1625x10v20

Tab. 13 Prinect G7-4

1.6.2 Prinect G7Micro-6i

Control element	Prinect G7Micro-6i
Description	Quality control strips for gray balance control of 6 colors (BCMY + X, Z, U, V) in accordance with the G7 method. The quality control strip contains halftone patches with 25%, 50% and 75% for the individual colors and for combined printing.

Control element	Prinect G7Micro-6i
Legend	Prinect G7Micro-6i Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	92/102/105/106 cm: F105_G7Micro-6__1040x7v29 145 cm: F142_G7Micro-6__1430x7v20 162 cm: F162_G7Micro-6__1625x7v20

Tab. 14 Prinect G7Micro-6i

1.6.3 Prinect G7Micro-8i

Control element	Prinect G7Micro-8i
Description	Quality control strips for gray balance control of 8 colors (BCMY + X, Z, U, V) in accordance with the G7 method. The quality control strip contains halftone patches with 25%, 50% and 75% for the individual colors and for combined printing.
Legend	Prinect G7Micro-8i Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	92/102/105/106 cm: F105_G7Micro-8__1040x7v29 145 cm: F142_G7Micro-8__1430x7v20 162 cm: F162_G7Micro-8__1625x7v20

Tab. 15 Prinect G7Micro-8i

1.7 Micro quality control strips

The micro quality control strips can be used in connection with Prinect Inpress Control, Prinect Axis Control on Prinect Press Center (from software version S10A), Prinect Press Center XL2 and Prinect Image Control NG and Prinect Image Control 3. Due to the minimum space requirement, the small measurement fields enable ink control and, in connection with Prinect Inpress Control, also register control to be performed. You cannot use the micro quality control strips if other measuring systems requiring larger measurement fields are to be used.

► **Note**
 On Prinect Micro-10i, no register control with Prinect Inpress Control is possible. In 2 zones, the color field S2 is no longer used in order to accommodate the position marks. Ink control is performed via the neighboring zones!

1.7.1 Prinect Micro-6i

Control element	Prinect Micro-6i
Description	Quality control strip for color and register control of max. 6 colors (BCMY + X, Z).
Legend	Prinect Micro-6i Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_Micro-6__510x_7v20 74/75 cm: F074_Micro-6__740x_7v20 92/102/105/106 cm: F105_Micro-6__1040x_7v20 145 cm: F145_Micro-6__1430x_7v20 162 cm: F162_Micro-6__1625x_7v20

Tab. 16 Prinect Micro-6i

1.7.2 Prinect Micro-8i

Control element	Prinect Micro-8i
Description	Quality control strip for color and register control of max. 8 colors (BCMY + X, Z, U, V).
Legend	Prinect Micro-8i Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_Micro-8__510x_7v20 74/75 cm: F074_Micro-8__740x_7v20 92/102/105/106 cm: F105_Micro-8__1040x_7v20 145 cm: F145_Micro-8__1430x_7v20 162 cm: F162_Micro-8__1625x_7_v20

Tab. 17 Prinect Micro-8i

1.7.3 Prinect Micro-10i

Control element	Prinect Micro-10i
Description	Quality control strip for ink control of max. 10 colors (BCMY + X, Z, U, V, S1, S2).
Legend	Prinect Micro-10i Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	52 cm: F052_Micro-10__510x_7v20 74/75 cm: F074_Micro-10__740x_7v20 92/102/105/106 cm: F105_Micro-10__1040x_7v20 145 cm: F145_Micro-10__1430x_7v20

Control element	Prinect Micro-10i
	162 cm: F162_Micro-10__1625x_7_v20

Tab. 18 Prinect Micro-10i

1.8 Micro quality control strips MicroDCB with control marks for die cutting

These micro quality control strips contain additional control marks for the Bobst® Power Register® die cutter. They can be used in connection with Prinect Inpress Control, Prinect Axis Control on Prinect Press Center from software version S10A), Prinect Press Center XL2 and Prinect Image Control NG and Prinect Image Control 3.

Note: on software versions before S14B or 2014, the MicroDCB quality control strips are included in the color strip database so that the measuring systems can identify them.

Due to the minimum space requirement, the small measurement fields enable ink control and, in connection with Prinect Inpress Control, also register control to be performed. You cannot use the micro quality control strips if other measuring systems requiring larger measurement fields are to be used.

These micro quality control strips are available in 6 and 7-color versions for sheet size ranges 92 to 162. There are two versions for every sheet size range, which are indicated by the letters L and S at the end.

- L = Large: use this quality control strip if you intend to process large sheet sizes close to the maximum sheet size. The two control marks for die punching are relatively far apart. Prerequisite for using the "L" variants:
 - On machines with a sheet size of 92/102/105/106 cm, the quality control strip must be printed with a minimum width of 720 mm.
 - On machines with a sheet size of 145/162 cm, the quality control strip must be printed with a minimum width of 1120 mm.
- S = Small: use this quality control strip if you intend to process smaller sheet sizes. The two control marks for die punching are relatively close together.

► **Note**

The two control marks for die punching are black strips about the same width as an ink zone. The measuring fields in the adjacent zones are used for the ink control in these zones.

1.8.1 Prinect MicroDCB-6-L

Control element	Prinect MicroDCB-6-L
<p>Description</p>	<p>Quality control strip for color and register control of max. 6 colors (BCMY + X, Z) with control marks for the die cutter.</p> <p>L = control marks far apart for die cutting with large sheet sizes. Prerequisite for using the Prinect MicroDCB-6-L:</p> <p>Note: This quality control strip is not suitable for the 92 and 102 press formats with Prinect Inpress Control! If necessary, contact your local Heidelberg Service agency.</p> <ul style="list-style-type: none"> • On machines with a sheet size of 105/106 cm, the quality control strip must be printed with a minimum width of 720 mm. • On machines with a sheet size of 145/162 cm, the quality control strip must be printed with a minimum width of 1120 mm.
<p>Legend</p>	<p>Prinect MicroDCB-6-L Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG</p>
<p>File names</p>	<p>105/106 cm: F105_MicroDCB-6-L__1040x7v20 145 cm: F145_MicroDCB-6-L__1430x7v20 162 cm: F162_MicroDCB-6-L__1625x7v20</p>

Tab. 19 Prinect MicroDCB-6-L

1.8.2 Prinect MicroDCB-6-S

Control element	Prinect MicroDCB-6-S
Description	Quality control strip for color and register control of max. 6 colors (BCMY + X, Z) with control marks for the die cutter. S = control marks close together for die punching with smaller sheet sizes.
Legend	Prinect MicroDCB-6-S Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	92/102/105/106 cm: F105_MicroDCB-6-S__1040x7v20 145 cm: F145_MicroDCB-6-S__1430x7v20 162 cm: F162_MicroDCB-6-S__1625x7v20

Tab. 20 Prinect MicroDCB-6-S

1.8.3 Prinect MicroDCB-7-L

Control element	Prinect MicroDCB-7-L
Description	Quality control strip for color and register control of max. 7 colors (BCMY + X, Z, U) with control marks for the die cutter. L = control marks far apart for die cutting with large sheet sizes. Prerequisite for using the Prinect MicroDCB-7-L: <ul style="list-style-type: none"> On machines with a sheet size of 92/102/105/106 cm, the quality control strip must be printed with a minimum width of 720 mm. On machines with a sheet size of 145/162 cm, the quality control strip must be printed with a minimum width of 1120 mm.

Control element	Prinect MicroDCB-7-L
Legend	Prinect MicroDCB-7-L Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	92/102/105/106 cm: F105_MicroDCB-7-L__1040x7v20 145 cm: F145_MicroDCB-7-L__1430x7v20 162 cm: F162_MicroDCB-7-L__1625x7v20

Tab. 21 Prinect MicroDCB-7-L

1.8.4 Prinect MicroDCB-7-S

Control element	Prinect MicroDCB-7-S
Description	Quality control strip for color and register control of max. 7 colors (BCMY + X, Z, U) with control marks for the die cutter. S = control marks close together for die punching with smaller sheet sizes
Legend	Prinect MicroDCB-7-S Format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG
File names	92/102/105/106 cm: F105_MicroDCB-7-S__1040x7v20 145 cm: F145_MicroDCB-7-S__1430x7v20 162 cm: F162_MicroDCB-7-S__1625x7v20

Tab. 22 Prinect MicroDCB-7-S

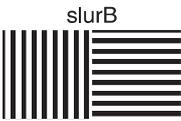
1.9 MS quality control strip

Control element	Prinect MS-8
	<p>The MS-8 (medium size) color reference strip was developed especially for Prinect Easy Control to enable reliable color control for up to 8 colors per ink zone. Due to its special design, it can only be used with Prinect Easy Control and Prinect Inpress Control. It is not suitable for use with Prinect Axis Control or Prinect Image Control (all versions)!</p>
Description	<p>Quality control strip for ink control of max. 8 colors (BCMY + X, Z, U, V). 8 solid patches per zone, patch width 4.06 mm, patch height 6 mm.</p> <p>This color reference strip can be used with Prinect Easy Control and Prinect Inpress Control.</p>
Legend	<p>Prinect MS-8 format (...) Dipco 20 © 2019 Heidelberger Druckmaschinen AG</p>
File names	<p>74/75 cm: F074_MS-8__740x_10v20</p> <p>92/102/105/106 cm: F105_MS-8__1040x10v20</p>

Tab. 23 Prinect MS-8

1.10 Structure and function of the individual measurement fields

	Designation	Function
	<p>Solid tone patch</p> <p>The color abbreviation is shown above the solid tone patch.</p>	<p>Solid tone patches check that the inking is even across the entire width of the sheet.</p>
	<p>Halftone patch</p> <p>The color abbreviation and tone value in% are shown above the halftone patch.</p>	<p>Halftone patches are used for evaluating the dot gain.</p>

	Designation	Function
	<p>Slurring fields (slurring and doubling field)</p> <p>"Slur" and the color abbreviation are shown above the fields</p>	<p>Slurring fields consist of horizontal and vertical lines.</p> <p>Both fields should possess an identical tone value (around 50%). Deviations indicate slurring or doubling.</p>
	<p>Slurring and doubling field with Prinect/FOGRA quality control strip.</p>	<p>In the 4-color version the slurring/doubling fields have the standard measurement field size and can thus be assessed using measurement technology. The angling of the line fields by 60°/0°/120° enables an exact assessment of what proportion of the dot gain can be attributed to slurring or doubling.</p> <p>In the 5-color version the same line arrangement is concentrated in one field. This field is assessed visually.</p>
	<p>Ink trapping fields</p> <p>The color abbreviations of colors printed on top of each other are shown above the fields.</p>	<p>Measurement fields for assessing ink trapping in 2- and 3-color composite printing.</p>
	<p>Gray fields</p> <p>The left-hand gray field is a composite of cyan, magenta and yellow. The right-hand gray field is a half-tone patch in black.</p>	<p>The gray fields are used for gray balance control, visual checks and evaluation according to the G7 method.</p> <p>Under standardized conditions, the CMY gray field and the B gray field should look virtually the same.</p>
	<p>Position mark for Prinect Inpress Control.</p>	<p>This field requires Prinect Inpress Control in order to automatically recognize the position of the quality control strip on the sheet.</p>
	<p>Measuring elements for register control with Prinect Inpress Control.</p>	<p>Prinect Inpress Control requires these fields for automatic register control.</p>

	Designation	Function
	Register marks	For visual register control.
	Process check box (only on Prinect/FOGRA_4)	<p>The left-hand part consists of a fine screen strip and a line screen as a comparison scale. While the fine screen reacts very sensitively to process fluctuations, the tone value of the comparison scale remains virtually stable. Generally, step 3 of the tone value should correspond with the fine screen.</p> <p>The right-hand part enables observation of the highlight dots. The 4 fields contain dots with a tone value of 2% to 5%. The figures indicate the corresponding tone values.</p>

Tab. 24 Measurement fields

2 Mini Spots

2.1 Naming conventions for Mini Spots



Fig. 3 Directory for Mini Spots

► **Note**

The Mini Spots are in the DipcoMB directory. The file names serve as a classification characteristic.

- *MB_100_0_70_SLUR* (color abbreviation) *30x8v13g*

These Mini Spots consist of a solid tone patch, white patch, 70% halftone patch and slurring patches. Space requirement: 30x8 mm.

- *MB_100_0_75_50_25* (color abbreviation) *30x8v13g*

These Mini Spots consist of a solid tone patch, white patch and 75%, 50% and 25% halftone patches. Space requirement: 30x8 mm.

- *MB_100_0_80_40* (color abbreviation) *24x8v13g*

These Mini Spots consist of a solid tone patch, white patch and 80% and 40% halftone patches. Space requirement: 24x8 mm.

- *MB_Process* (color abbreviation) *90x10v13g*

These Mini Spots are used for monitoring the process calibration. These Mini Spots consist of a 13-level scale with halftone patches and slurring fields. Space requirement: 90x10 mm.

- *12MB_100_72x8v20, PCS_40A_240x8v20, PCS_40AB_120x14v20, PCS_60A_360x8v20, PCS_60AB_180x14v20, MB_100_70_40_CMYK_78x8v20, MB_100_75_50_25_CMYK_102x8v20, MB_100_80_40_5C_96x8v20, MB_100_80_40_6C_114x8v20, MB_100_80_40_7C_132x8v20, MB_100_80_40_CMYK_78x8v20*

These are the "multicolored" Mini Spots.

► **Note**

The size of the measurement field is 6 x 6 mm for all Mini Spots.

2.2 Field of application

Using Mini Spots and Prinect ImageControl you can check the quality of your proofing and printing process and correct process calibrations and profiles. The Mini Spots are particularly suited to correcting individual parameters of the printing process, e.g. changing the paper or color series.

An advantage of Mini Spots is that very little space is needed on the printing form. Therefore Mini Spots can often run with standard production jobs and thus significantly reduce the need for special test proofs.

The basis for the successful use of Mini Spots is an optimal and constant print setting and ongoing monitoring of the process parameters of the printing press. The ideal fields of application are print motifs with an area coverage of more than 30% and homogeneous form design.

Mini Spots for correcting ICC profiles

With the Mini Spots PCS_40A/AB or PCS_60A/AB, it is possible to check (ICC) profiles and correct them if necessary.

Mini Spots for correcting process calibrations

If you want to check and correct a process calibration (dot gain), Mini Spots with 13 measurement fields are adequate (e.g. MB_100_70_40_CMYK or MB_100_80_40_CMYK). There are also Mini Spots with 17 measurement fields (MB_100_75_50_25_CMYK) and with measurement fields with finer gradations (MB_Process_13).

- Mini Spots are only suitable for correcting and customizing existing process calibrations and profiles. The number of measurement fields is insufficient for processing a totally new profile or process calibration.

2.3 Positioning



Fig. 4 Position on the print sheet

► **Note**

Important: Do not scale the Mini Spots. Leave the size unchanged. Otherwise Prinect Image Control cannot find the Mini Spots.

- The positioning of the Mini Spots depends on their intended purpose. Mini Spots for determining the color space and for proof correction should be arranged vertically and within one ink zone where possible. Mini Spots for monitoring the tone value should be arranged horizontally and only positioned in areas with ink coverage in the printed image.
- Do not position the Mini Spots near the outer edges or at the lead edge of print (the shaded areas in Fig. 4), as this can affect the lateral distribution of the inking. Mini Spots only cover a small measuring surface. This means that they react much more strongly to fluctuations in the process, especially inking.

- For greater measuring reliability, position two Mini Spots on the sheet and/or measure several consecutive print sheets if possible, and calculate the average of the measuring results.
- Prinect Signa Station - mark type: Mini Spots are color control marks.

2.4 Mini Spots in detail

2.4.1 MB_100_70_SLUR

Control element	MB_100_0_70_SLUR_color abbreviation
<p>Description</p>	<p>Single-line Mini Spot with a solid tone patch, white patch, 70% field and 2 slurring fields The control element is 30 mm long and 8 mm high.</p>
<p>Recommended use</p>	<ul style="list-style-type: none"> • Mini Spot for monitoring dot gain taking into account the slurring and doubling behavior of the printing press.
<p>File names</p>	<p>MB_100_0_70_SLUR_(color abbreviation*)__30x8v20 * = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)</p>

Tab. 25 MB_100_70_SLUR

2.4.2 MB_100_75_50_25

Control element	MB_100_0_75_50_25_color abbreviation
Description	Single-line Mini Spot with solid tone patch, white patch, 75% field, 50% field and 25% field The control element is 30 mm long and 8 mm high. The tone values 25 %, 50 % and 75 % correspond to IdeAlliance specifications for G7 evaluation.
Recommended use	<ul style="list-style-type: none"> Mini Spot for checking linearizations and process calibrations for film and plate
File names	MB_100_0_75_50_25_(color abbreviation*)__30x8v20 * = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)

Tab. 26 MB_100_75_50_25

2.4.3 MB_100_0_80_40

Control element	MB_100_0_80_40_color abbreviation
Description	Single-line Mini Spot with solid tone patch, white patch, 80% field and 40% field The control element is 24 mm long and 8 mm high. The tone value fields 40 % and 80 % correspond to the specifications of ISO 12647-2 and the PSO.
Recommended use	<ul style="list-style-type: none"> Mini Spot for checking linearizations and process calibrations for film and plate
File names	MB_100_80_40_(color abbreviation*)__24x8v20 * = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)

Tab. 27 MB_100_0_80_40

2.4.4 MB_Process_13

Control element	MB_Process_color abbreviation
Description	Single-line control element with a 13-stage scale with halftone patches and slurring fields The control element is 90 mm long and 10 mm high.
Recommended use	<ul style="list-style-type: none"> Color strip for creating and checking linearizations and process calibrations for film and plate
File names	MB_Process_(color abbreviation*)_90x10v20 * = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)

Tab. 28 MB_Process_13

2.4.5 12MB_100

Control element	12MB_100
Description	Single-line control element with solid tone patches in 12 colors The control element is 72 mm long and 8 mm high.
Recommended use	<ul style="list-style-type: none"> For copy-related ink control (for instance, packaging with special colors) or controlling individual motifs on mixed forms. For checking the chromaticity locus and density of the solids
File names	12MB_100__72x8v20

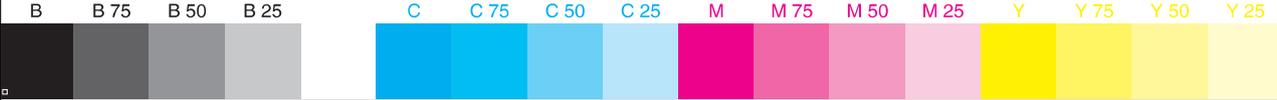
Tab. 29 12MB_100

2.4.6 MB_100_70_40_CMYK

Control element	MB_100_70_40_CMYK
	
Description	<p>Single-line control element with solid tone patch, 70% and 40% field in 4 colors for process monitoring</p> <p>The control element is 78 mm long and 8 mm high.</p>
Recommended use	<ul style="list-style-type: none"> • Color strips for quality analyses in printing (solids, dot gain) • Color strips for monitoring process calibrations
File names	MB_100_70_40_CMYK__78x8v20

Tab. 30 MB_100_70_40_CMYK

2.4.7 MB_100_75_50_25_CMYK

Control element	MB_100_75_50_25_CMYK
	
Description	<p>Single-line control element with solid tone patch, 75%, 50% and 25% field in 4 colors for process monitoring</p> <p>The control element is 102 mm long and 8 mm high.</p>
Recommended use	<ul style="list-style-type: none"> • Color strips for quality analyses in printing (solids, dot gain) • Color strips for monitoring process calibrations
File names	MB_100_75_50_25_CMYK__102x8v20

Tab. 31 MB_100_75_50_25_CMYK

2.4.8 MB_100_80_40

Control element	MB_100_80_40_(CMYK, 5c, 6c, 7c)
Description	<p>Single-line control element with solid tone patch, 80% and 40% field in 4, 5, 6 or 7 colors for process monitoring.</p> <p>Size of measuring elements: Princt MB_100_80_40_CMYK___78x8v20 78 mm long and 8 mm high. Princt MB_100_80_40_5c___96x8v20 = 96 mm long and 8 mm high. Princt MB_100_80_40_6c___114x8v20 = 114 mm long and 8 mm high. Princt MB_100_80_40_7c___132x8v20 = 132 mm long and 8 mm high.</p>
Recommended use	<ul style="list-style-type: none"> • Color strips for quality analyses in printing (solids, dot gain) • Color strips for monitoring process calibrations
File names	MB_100_80_40_CMYK___78x8v20 MB_100_80_40_5c___96x8v20 MB_100_80_40_6c___114x8v20 MB_100_80_40_7c___132x8v20

Tab. 32 MB_100_80_40

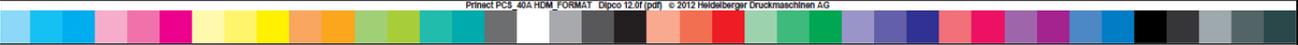
2.4.9 PCS 40AB Control Strip

Control element	PCS 40AB Control Strip
Description	<p>2-lined control element with 40 fields for process monitoring and color measuring data in 4 colors</p> <p>The control element is 120 mm long and 14 mm high.</p>
Recommended use	<ul style="list-style-type: none"> • Color strip for quality evaluation of proofing and printing (solids, dot gain, color space size)

Control element	PCS 40AB Control Strip
	<ul style="list-style-type: none"> Color strip for monitoring ICC profiles and process calibrations
File names	PCS_40AB__120x14v20

Tab. 33 PCS 40AB Control Strip

2.4.10 PCS 40A Control Strip

Control element	PCS 40A Control Strip
	
Description	<p>Single-line control element with 40 fields for process monitoring and conversion of color measuring data in 4 colors</p> <p>The same values as PCS Control Strip 40 (second line attached to the first)</p> <p>The control element is 240 mm long and 8 mm high.</p>
Recommended use	<ul style="list-style-type: none"> (Solids, dot gain, color space size) Color strip for monitoring ICC profiles and process calibrations
File names	PCS_40A__240x8v20

Tab. 34 PCS 40A Control Strip

2.4.11 PCS 60AB Control Strip

Control element	PCS 60AB Control Strip
	
Description	<p>2-line control element with 60 fields for process monitoring and converting color measuring data to 4 colors.</p> <p>The control element is 180 mm long and 14 mm high.</p>
Recommended use	<ul style="list-style-type: none"> Color strip for quality evaluations of proof and print (solids, dot gain, color space size) Color strip for monitoring ICC profiles and process calibrations
File names	PCS_60AB__180x14v20

Tab. 35 PCS 60AB Control Strip

2.4.12 PCS 60A Control Strip

Control element	PCS 60A Control Strip
	
Description	<p>Single-line control element with 60 fields for process monitoring and converting color measuring data</p> <p>The same values as PCS Control Strip 60 (second line attached to the first)</p> <p>The control element is 360 mm long and 8 mm high.</p>
Recommended use	<ul style="list-style-type: none"> Color strip for quality evaluations of proof and print (solids, dot gain, color space size)

Control element	PCS 60A Control Strip
	<ul style="list-style-type: none">• Color strip for monitoring ICC profiles and process calibrations
File names	PCS_60A__360x8v20

Tab. 36 PCS 60A Control Strip

3 Control marks for Prinect Auto Register

3.1 General notes

Prinect Auto Register is no longer manufactured. However, there are many printing presses that are equipped with Prinect Auto Register.

Control marks for Prinect Auto Register

The control marks for Prinect Auto Register are in the directory *DipcoAR*.

Naming conventions

Example: 4AR_R___106x90v13.Og.pdf

1 Color number

The file name starts with the color number (in the example: 4 colors).

The control marks are available from 4 to 16 colors in gradations of 2: 4AR, 6AR, 8AR ... 16AR.

2 Mark type

The following letters identify the type of mark (in the example: A control mark with search mark for the right-hand side of the sheet).

AR = control mark without search mark.

AR_L = control mark with search mark for the left-hand side of the sheet.

AR_R = control mark with search mark for the right-hand side of the sheet.

3 Size

The following part of the file name indicates the size (width x height) of the control mark (in the example: The control mark is 106x90 = 106 mm wide and 90 mm high).

4 Version

The file name ends with the version number.

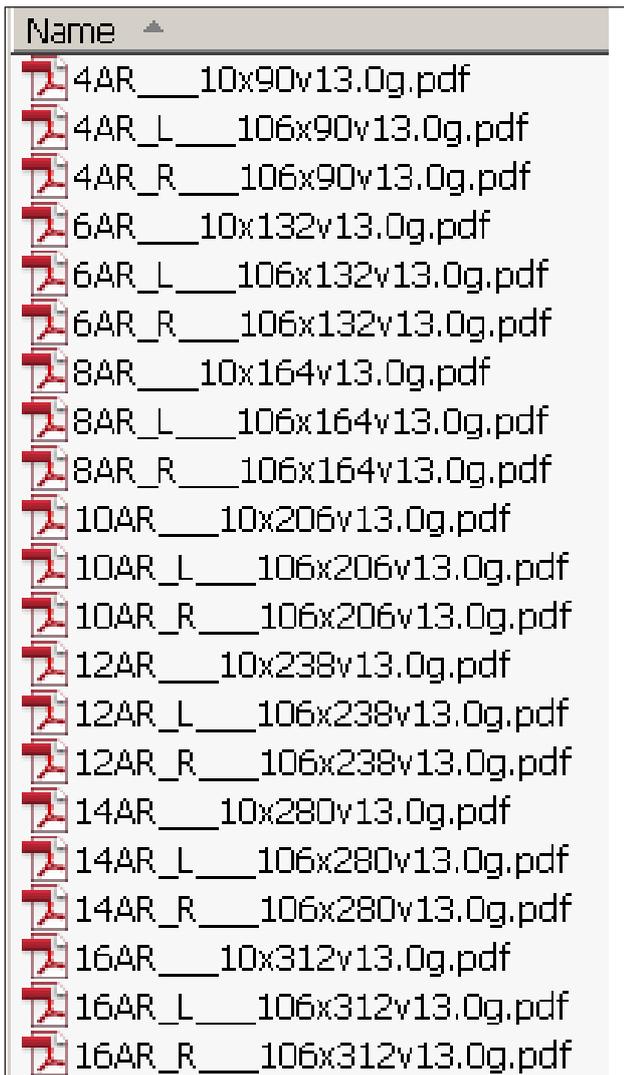


Fig. 5 Files in the directory

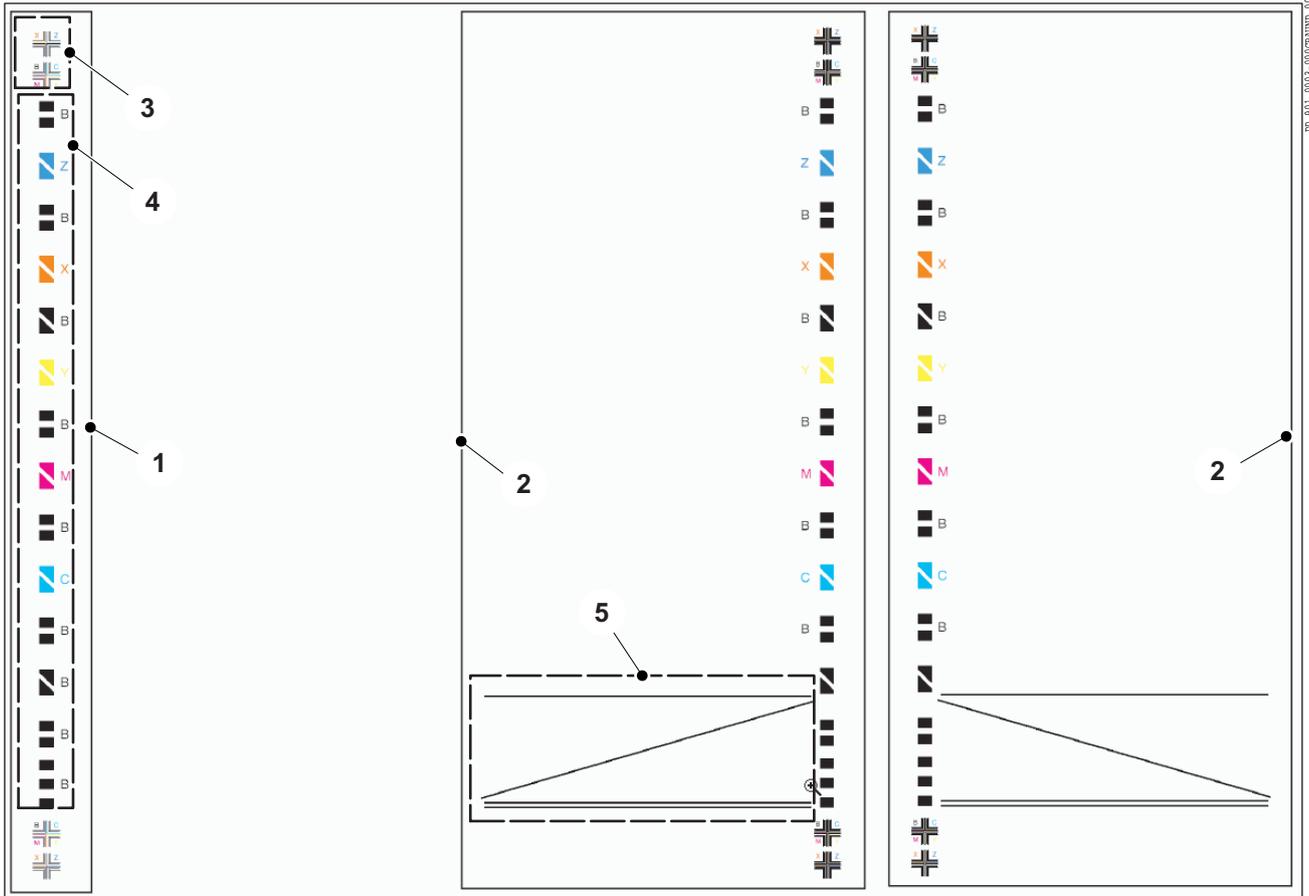


Fig. 6 Control marks

Control mark without search mark (AR)

- This control mark with no search mark (Fig. 6/1) can be positioned on both the left and right-hand edge of the sheet. This control mark consists of the crosshairs for visual monitoring (Fig. 6/3) and the measurement fields area for Prinect Auto Register (Fig. 6/4).

Control marks with search mark (AR_L and AR_R)

The control marks AR_L and AR_R, Fig. 6/2 consist of crosshairs, measurement fields and the additional search mark (Fig. 6/5), which enable the exact position of the control mark to be found quickly without user input.

Mode of operation: The Prinect Auto Register sensors position themselves on the edges of the sheet on the basis of the print material format entered. From here they gradually move toward the center of the press and search for the search marks. The exact position of the control mark is then calculated from the sensing ratio between the diagonal lines and the parallel lines. Thus it is no longer necessary to enter the control mark positions in mm or use the ink zone control panel.

3.2 Notes on assembly

The control marks carry the HEIDELBERG color abbreviation: B C M Y X Z U V S1 S2 S3 ... Furthermore there are crosshairs in front of and behind the control marks, enabling visual register control. With the defined line spacing of 0.2 mm in color separation B, register deviations can be estimated very accurately.

The following applies to all control marks:

- The control marks should start at least 100 mm from the lead edge of sheet (reflections on the grippers cause the Prinect Auto Register sensor to malfunction).
- Position the control marks as far as possible from the rear edge of the sheet (measuring errors can arise from the sheet turning up or fluttering after the printing nip).

The following applies to the control marks with a search mark:

- There are control marks with a search mark (Fig. 7/1 and 8/1) for the left-hand (AR_L) and right-hand edge of the sheet (AR_R) respectively. They have to be positioned in such a way that the search marks print beyond the edge of the sheet (Fig. 7/2 and 8/2). The following figures show examples of assembly for a small (Fig. 7) and large (Fig. 8) distance of the search mark from the sheet edge.



Fig. 7 Assembly with a small distance from the sheet edge



Fig. 8 Assembly with a large distance from the sheet edge

4 Measuring marks for paper stretch compensation

4.1 Contents of the *DipcoPSC* directory

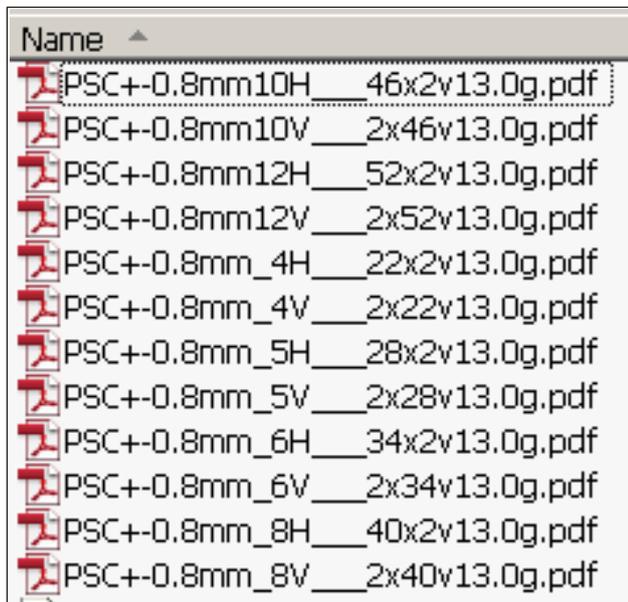


Fig. 9 Contents of the DipcoPSC directory

The directory contains the files of the measuring marks for the paper stretch compensation.

Naming conventions

The file name provides some information on the type of the measuring marks.

Example: PSC+-0.8mm_4V__2x22v20

- PSC+-0.8mm_ = paper stretch compensation measuring range +/- 0.8 mm.
- 4 = number of colors.
There are measuring marks for 4, 5, 6, 8, 10 and 12 colors.
- V = for vertical assembly.
H = for horizontal assembly.
- 2x22 = width x height of the measuring mark, in this case 2 mm x 22 mm.
- v20 = version.

4.2 Field of application

The paper can stretch while traveling from printing unit to printing unit during the printing process, as a result of which the individual separations might not match up precisely. The "paper stretch compensation" function in Prinect Production Manager (MetaDimension, renderer) compensates this stretching with a digital distortion by the same factor as the paper had stretched when arriving at the respective printing unit.

With the aid of the measuring marks for paper stretch compensation, the paper stretch is detected in a range of +/-0.8 mm. You then enter the recorded measured values in Prinect Production Manager.

4.3 Positioning

You need at least 4 measuring marks, which you place in the corners of the print sheet. Prinect Production Manager can take a maximum of 9 measuring marks on a print sheet into consideration. You can find notes regarding use and placement in the Prinect Production Manager manual.

► Note

Important: The measuring marks must not be turned during assembly. This leads to the prefixes (+ or -) of the reading value becoming mixed up.

4.4 Notes on reading the measuring marks

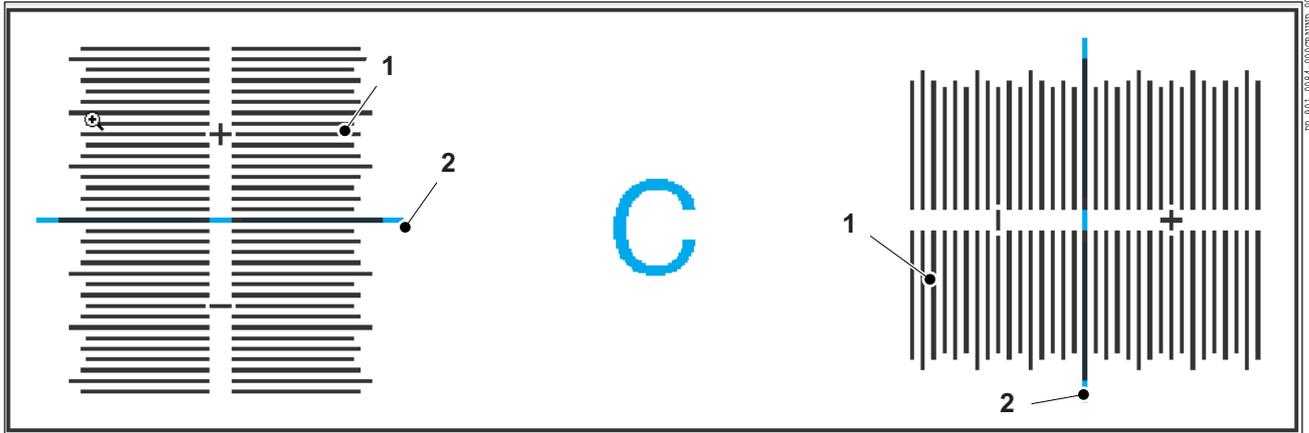


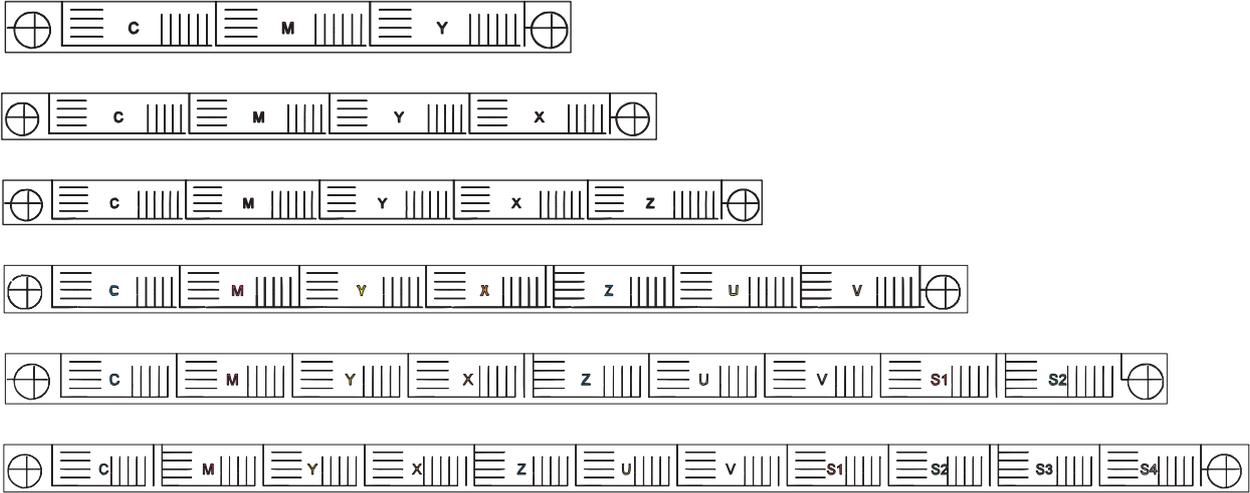
Fig. 10 Evaluation black/cyan

The measuring marks consist of a "rule" (the reference, Fig. 10/1) and individual lines (Fig. 10/2). The "rule" is firmly assigned to the color abbreviation "B". To improve reading accuracy, ensure that the darkest color is always assigned to "B" (and thereby the "rule"). The individual lines (Fig. 10/2) are printed in the other colors.

The lines deviate from the zero line of the "rule" depending on the extent to which the paper is stretched. Read off these deviations of the print sheet. Enter the values in Prinect Production Manager into the corresponding table in the "Compensation values" tab. You also have to determine where the individual measuring marks are situated on the print sheet in the "Reference points" tab.

4.5 Measuring marks for paper stretch compensation in detail

4.5.1 PSC+-0.8mm_4/5/6/8/10/12H

Control element	PSC+-0.8mm_4/5/6/8/10/12H
	
<p>Description</p>	<p>Horizontal measuring marks for compensating the paper stretch</p> <p>Dimensions of the control elements:</p> <ul style="list-style-type: none"> • 4 colors: 22 mm x 2 mm • 5 colors: 28 mm x 2 mm • 6 colors: 34 mm x 2 mm • 8 colors: 40 mm x 2 mm • 10 colors: 46 mm x 2 mm • 12 colors: 52 mm x 2 mm
<p>File names</p>	<ul style="list-style-type: none"> • 4 colors: PSC+-0.8mm_4H__22x2v20 • 5 colors: PSC+-0.8mm5_H__28x2v20 • 6 colors: PSC+-0.8mm6_H__34x2v20 • 8 colors: PSC+-0.8mm8_H__40x2v20 • 10 colors: PSC+-0.8mm10H__46x2v20 • 12 colors: PSC+-0.8mm12H__52x2v20

Tab. 37 PSC+-0.8mm_4/5/6/8/10/12H

4.5.2 PSC+-0.8mm_4/5/6/8/10/12V

Control element	PSC+-0.8mm_4/5/6/8/10/12V
<p>Description</p>	<p>Horizontal measuring marks for compensating the paper stretch</p> <p>Dimensions of the control elements:</p> <ul style="list-style-type: none"> • 4 colors: 2 mm x 22 mm • 5 colors: 2 mm x 28 mm • 6 colors: 2 mm x 34 mm • 8 colors: 2 mm x 40 mm • 10 colors: 2 mm x 46 mm • 12 colors: 2 mm x 52 mm
<p>File names</p>	<ul style="list-style-type: none"> • 4 colors: PSC+-0.8mm_4V__2x22v20 • 5 colors: PSC+-0.8mm_5V__2x28v20 • 6 colors: PSC+-0.8mm_6V__2x34v20 • 8 colors: PSC+-0.8mm_8V__2x40v20 • 10 colors: PSC+-0.8mm10V__2x46v20 • 12 colors: PSC+-0.8mm12V__2x52v20

Tab. 38 PSC+-0.8mm_4/5/6/8/10/12V

5 APSC measuring marks for automatic paper stretch compensation

5.1 Contents of the *DipcoAPSC* directory

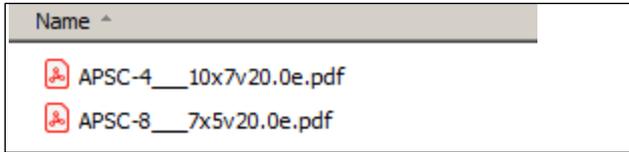


Fig. 11 Contents of the DipcoAPSC directory

The directory contains the files of the measuring marks for the automatic paper stretch compensation.

Naming conventions

The file name provides some information on the type of the measuring marks.

Example: APSC-4__10x7v20

- APSC = Automatic Paper Stretch Compensation.
- 4 = number of colors.
There are measuring marks for 4 and 8 colors.
- 10x7 = width x height of the measuring mark, in this case 10 mm x 7 mm.
- v20 = version (in this case Dipco 20).

5.2 Field of application

The paper can stretch while traveling from printing unit to printing unit during the printing process, as a result of which the individual separations might not match up precisely.

With the APSC measuring marks and a USB digital microscope, you can measure paper stretch for up to 8 printing units. The APSC software automatically calculates the correction parameters, either by means of measurement series with different papers and color assignments or by means of individual compensation. The paper stretch is corrected using a digital distortion by the same factor that is applied during plate imaging.

The APSC-8 measuring mark (Fig. 12) is new. The colors on this mark are BCMYXZUV. You can also use the mark if you want to measure fewer than 8 colors.

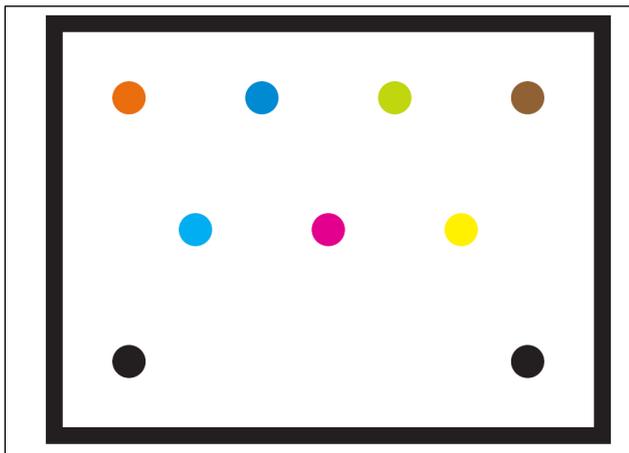


Fig. 12 APSC-8 measuring mark

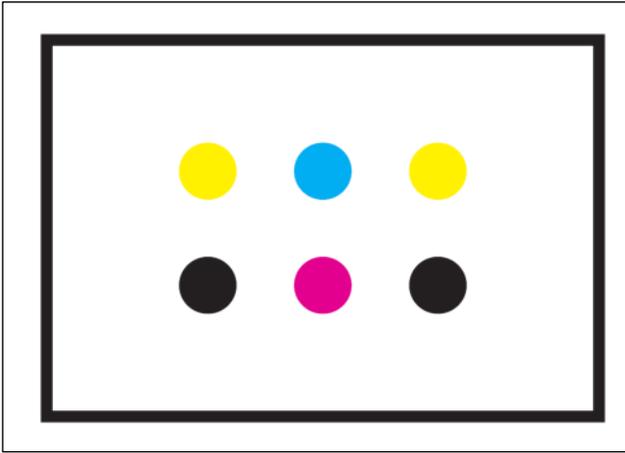


Fig. 13 APSC-4 measuring mark

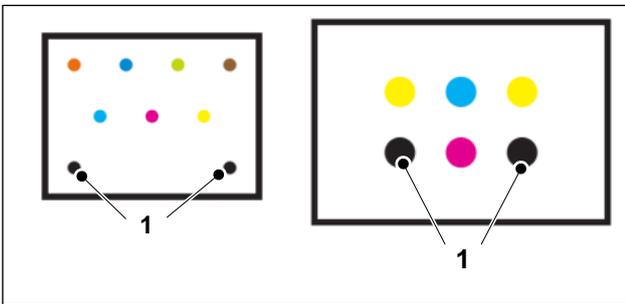


Fig. 14 Reference dots

The APSC-4 measuring mark (Fig. 13) is compatible with the TECHKON® iRegister measuring mark. The colors on this mark are BCMY. The mark can be measured with a digital microscope or with a smartphone using the TECHKON® iRegister Pro app.

Information on the measuring mark

- The two reference dots (black color dots in the bottom row, Fig. 14/1) must face toward the gripper edge/lead edge of print.
- Every measuring mark contains color dots that are printed in a specific printing unit. Every color dot has a defined position within the measuring mark. The paper stretch is determined through a comparison of the actual position with the reference position and the two reference dots.

► **Note**

For information on positioning the measuring marks and performing the measurement, see chapter *B Other*, section *Information on APSC measuring marks* and the online help of Prinect Automatic Paper Stretch Compensation.

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6 Control elements in the *Discontinued* directory

6.1 Contents of the *Discontinued* directory

The directory contains all control elements that have been "frozen" to their condition from an earlier version. These control elements have not been developed further. You can continue to use these control elements in order to maintain continuity with your previous workflow.

► **Note**

The control elements from Dipco 2.1 have no "intelligent" functions (crop recognition, automatic acceptance of color designation) and are not suitable for use with Prinect Inpress Control. We therefore recommend that you use the new control elements. The Mini Spots are at version 4.5 and have the "intelligent" functions.

Please be aware that Heidelberg no longer offers maintenance of these control elements. This might result in the output of incorrect data, particularly when using new workflows, RIPs or PDF versions. Heidelberg accepts no responsibility for this and is not obliged to adapt these control elements to the new conditions in any way.

6.2 Mini Spots without white patches

6.2.1 MB_100_70_SLUR

Control element	MB_100_70_SLUR *
Description	Single-line Mini Spot with a solid tone patch, 70% field and 2 slurring fields The control element is 24 mm long and 8 mm high.
Recommended use	<ul style="list-style-type: none"> Mini Spot for monitoring dot gain taking into account the slurring and doubling behavior of the printing press.
File names	Files: MB_100_70_SLUR_*__24x_8_V4.5

Control element	MB_100_70_SLUR *
	* = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)

Tab. 39 MB_100_70_SLUR

6.2.2 MB_100_75_50_25

Control element	MB_100_75_50_25 *
Description	Single-line Mini Spot with solid tone patch, 75% field, 50% field and 25% field The control element is 24 mm long and 8 mm high.
Recommended use	<ul style="list-style-type: none"> Mini Spot for checking linearizations and process calibrations for film and plate
File names	Files: MB_100_75_50_25_*_24x_8_V4.5 * = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)

Tab. 40 MB_100_75_50_25

6.2.3 MB_100_80_40

Control element	MB_100_80_40 *
Description	Single-line Mini Spot with solid tone patch, 80% field and 40% field The control element is 18 mm long and 8 mm high.

Control element	MB_100_80_40 *
Recommended use	• Mini Spot for checking linearizations and process calibrations for film and plate
File names	Files: MB_100_80_40_*__18x_8_V4.5 * = Color abbreviation (B, C, M, Y, X, Z, U, V, S1, S2, S3, S4)

Tab. 41 MB_100_80_40

6.3 Prinect 6GS quality control strip

Control element	Prinect 6GS
Description	<p>Quality control strip for gray balance control of cyan, magenta and yellow for 6 colors (BCMY + 2 special colors X, Z). The halftone patches and combined printing fields enable versatile evaluations.</p> <p>In combination with the Prinect 6S+ quality control strip, up to 12 colors can be controlled with the first generation of Prinect Image Control. This function is not possible with Prinect Image Control NG or Prinect Image Control 3.</p>
Legend	Prinect 6GS Dipco 2.1 Format (...) © 2004 Heidelberger Druckmaschinen AG
File names	<p>52 cm: 6GS_F52_510x12</p> <p>74/75 cm: 6GS_F74_740x12</p> <p>102/105/106 cm: 6GS_F102_1040x12</p>

Tab. 42 Prinect 6GS

6.4 6PK (control element for CPC 41)

Control element	6PK
Description	Control element for register controlling with CPC 41 (register reader) for a maximum of 6 colors
File names	6PK_27x27

Tab. 43 6PK

6.5 Prinect/FOGRA quality control strip

6.5.1 Prinect/FOGRA 4

Control element	Prinect/FOGRA 4
Description	Quality control strip for ink control by solids in 4 colors (BCMY). The additional halftone patches, slurring and doubling fields and plate imaging control fields allow more evaluations.
Legend	Prinect/FOGRA 4 Dipco 2.1 Format (...) © 2004 FOGRA/Heidelberger Druckmaschinen AG
File names	52 cm: FOGRA_4_F52_510x10 74/75 cm: FOGRA_4_F74_740x10 102/105/106 cm: FOGRA_4_F102_1040x10

Tab. 44 Prinect/FOGRA 4

6.5.2 Prinect/FOGRA 5

Control element	Prinect/FOGRA 5
Description	Quality control strip for ink control by solids in 5 colors (BCMY + special color X). The additional halftone patches, slurring and doubling fields and plate imaging control fields allow more evaluations.
Legend	Prinect/FOGRA 5 Dipco 2.1 Format (...) © 2004 FOGRA/Heidelberger Druckmaschinen AG
File names	52 cm: FOGRA_5_F52_510x10 74/75 cm: FOGRA_5_F74_740x10 102/105/106 cm: FOGRA_5_F102_1040x10

Tab. 45 Prinect/FOGRA 5

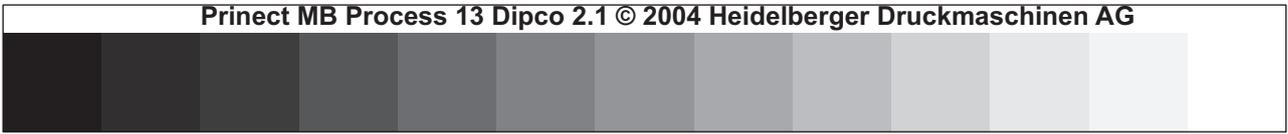
6.5.3 Prinect/FOGRA 6

Control element	Prinect/FOGRA 6
Description	Quality control strip for ink control by solids in 6 colors (BCMY + special colors X and Z). The additional halftone patches and plate imaging control fields allow more evaluations.
Legend	Prinect/FOGRA 6 Dipco 2.1 Format (...) © 2004 FOGRA/Heidelberger Druckmaschinen AG
File names	52 cm: FOGRA_6_F52_510x10 74/75 cm: FOGRA_6_F74_740x10 102/105/106 cm: FOGRA_6_F102_1040x10

Tab. 46 Prinect/FOGRA 6

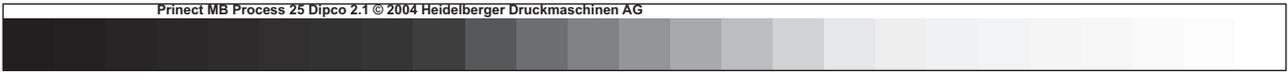
6.6 MB_Process step wedges

6.6.1 MB_Process_13

Control element	MB_Process_13
 <p>Prinect MB Process 13 Dipco 2.1 © 2004 Heidelberger Druckmaschinen AG</p>	
Description	Single-line control element with 13 steps for plate monitoring
Recommended use	<ul style="list-style-type: none"> Control element for creating and checking linearizations and process calibrations for film and plate
Legend	Prinect MB Process 13 Dipco 2.1 © 2004 Heidelberger Druckmaschinen AG
File names	MB_Process_13_78x8

Tab. 47 MB_Process_13

6.6.2 MB_Process_25

Control element	MB_Process_25
 <p>Prinect MB Process 25 Dipco 2.1 © 2004 Heidelberger Druckmaschinen AG</p>	
Description	Single-line control element with 25 steps for plate monitoring
Recommended use	<ul style="list-style-type: none"> Control element for creating and checking linearizations and process calibrations for film and plate
Legend	Prinect MB Process 25 Dipco 2.1 © 2004 Heidelberger Druckmaschinen AG
File names	MB_Process_25_150x8

Tab. 48 MB_Process_25

B Other

Other	B.1.1
1 Notes on assembling and positioning Dipco elements	B.1.1
1.1 General notes for prepress	B.1.1
1.2 Horizontal alignment	B.1.1
1.3 General notes for the printer	B.1.3
2 Information on APSC measuring marks	B.1.5
2.1 Placement	B.1.5
2.2 Measuring device	B.1.6
2.3 Initial setup - creating profiles for the measuring marks and digital microscope	B.1.6
2.4 Measurement and evaluation	B.1.8
3 Prinect Easy Control	B.1.11
3.1 Notes on assembly	B.1.11
4 Prinect Axis Control on Prinect CP2000 Center	B.1.12
4.1 Notes on assembly	B.1.12
5 Prinect Axis Control on Prinect Press Center and Press Center XL 2	B.1.13
5.1 Notes on assembly	B.1.13
6 Prinect Inpress Control	B.1.17
6.1 Printing with the minimum sheet size	B.1.17
6.2 Notes on assembly	B.1.18
6.3 Notes for measuring chromatic colors on an opaque white surface	B.1.20
7 Prinect Image Control manufactured up to 2010	B.1.22
7.1 Notes on assembly	B.1.22
8 Prinect Image Control NG and Prinect Image Control 3	B.1.23
8.1 Notes on assembly	B.1.23
8.2 Notes for controlling opaque white	B.1.24
9 Generating PDF files	B.1.27
9.1 When do you not have to generate any PDF files yourself?	B.1.27
9.2 When do you have to generate PDF files yourself?	B.1.27
9.3 Setting the output resolution	B.1.28
9.4 Generating PDF files without "PostScript XObjects"	B.1.28

DP_901_0012-000FRANK_03

1 Notes on assembling and positioning Dipco elements

1.1 General notes for prepress

- You must not alter the dimensions of the quality control strips (compressing, distorting).
- Do not crop the height of the measurement fields of the quality control strips.
- Ensure that no elements to be printed, e.g. crop marks or side marks, are within the quality control strips or at the side of them.
- Some measuring systems require a gap between the quality control strip and the left or right edge of the sheet (please note the following notes for the Prinect measuring systems). This gap (maximum 5 mm) is needed for the detection of the paper white and the position of the quality control strip.
- You must choose color reference strips that are suitable for the model line (sheet width) of the press. This also applies when the minimum sheet size is used. If the sheet width is smaller than the width of the quality control strip, you have to cut off the protruding ends of the quality control strip. Prinect Signa Station usually does this automatically in the Prinect workflow.

1.2 Horizontal alignment

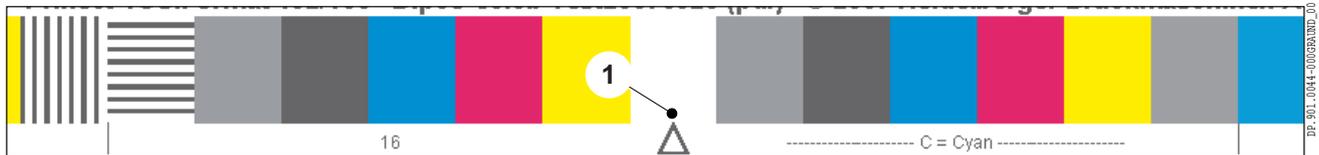


Fig. 1 Center mark

Always align to the center of the press

Position the quality control strips centrally toward the center of the press. This also applies to off-center printing. Generally the center of the sheet is also the center of the press. With quality control strips the center is marked by a small triangle (▲) (Fig. 1/1) in the line below the measurement fields.

- Sheet width 52 cm: The press has 16 ink zones. The center of the press is between ink zones 8 and 9.
- Sheet width 74/75 cm: The press has 23 ink zones. The center of the press is in the center of ink zone 12.
- Sheet width 102/105/106 cm: The press has 32 ink zones. The center of the press is between ink zones 16 and 17.

- Sheet width 145 cm: The press has 44 ink zones. The center of the press is between ink zones 22 and 23.
- Sheet width 162 cm: The press has 50 ink zones. The center of the press is between ink zones 25 and 26.



Fig. 2 Quality control strip, cropped field

- The quality control strips must end in line with a full measurement field on the left and right (Fig. 2/1). Bled measurement fields (Fig. 2/2) result in incorrect measurements.

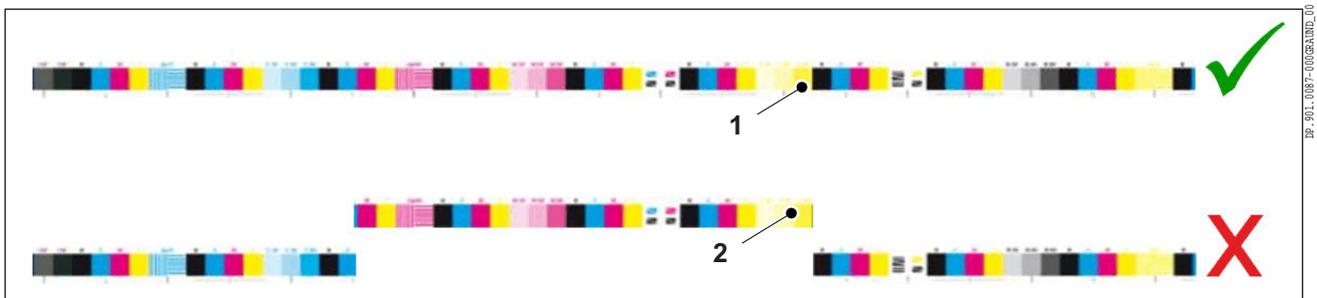


Fig. 3 Quality control strip, partially offset

- Prinect color measuring systems only process quality control strips on one level (Fig. 3/1). Interrupted and offset quality control strips (Fig. 3/2) cannot be measured.
- To facilitate identification of colors, ink zones and other information you should not cut off the legend of the quality control strips. The empty space between the measurement fields and the printed image or the sheet edge guarantees the perfect functioning of the Prinect color measuring systems.
- In addition, in cases where no paper white is necessary between the measurement field and the printed image you should always provide at least 1 mm of paper white at the top and bottom to ensure a trouble-free measuring procedure. This also applies when positioning at the gripper edge. This can prevent an unclean print.

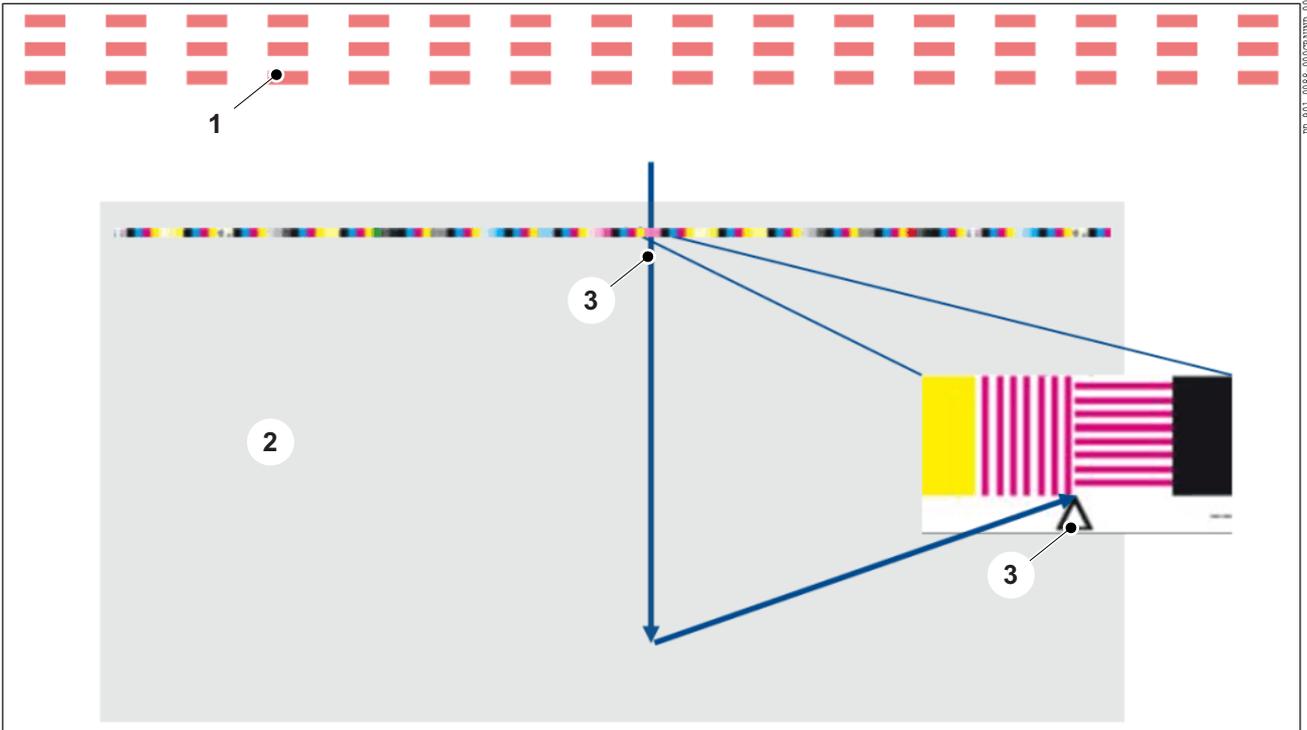


Fig. 4 Off-center printing material

Off-center printing

You must always mount the quality control strip centered to the center of the press (Fig. 4/3). This also applies when the printing material (Fig. 4/2) runs off-center through the press. Only alignment to the center of the press allows correct control of the ink zones (Fig. 4/1).

1.3 General notes for the printer

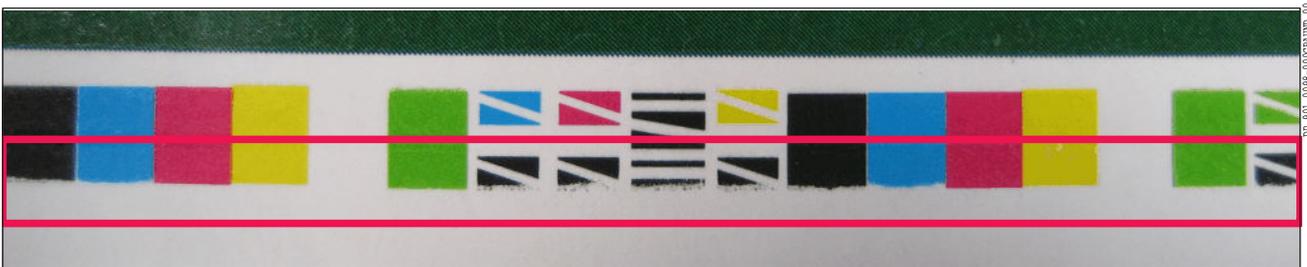


Fig. 5 Incorrectly printed quality control strip

- Ensure that the quality control strips are printed completely and with sharp, clean edges (not as in Fig. 5 in the area in the red box). The quality control strips must never protrude into the gripper margin or over the rear edge of the sheet and must not print at the edge of the blanket.
- Avoid smearing and scumming when printing.
- Correct measuring results are only achieved when the quality control strips are printed on a white background.

Note: An opaque white background cannot be measured and controlled with most Prinect color measuring systems. As the coloring depends on the thickness of the opaque white, fluctuating measured values may result. Heidelberg does not guarantee correct results.

- If individual measurement fields were cut out in prepress, e.g. to prevent smearing caused by the sheet brakes, you have to disable the ink zones concerned on the Prinect color measuring system and control them manually.

Coating

Coat the quality control strips either completely or not at all. Partial coating causes incorrect measurements. If you coat the quality control strips, you need to adapt the target color values accordingly.

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2 Information on APSC measuring marks

2.1 Placement

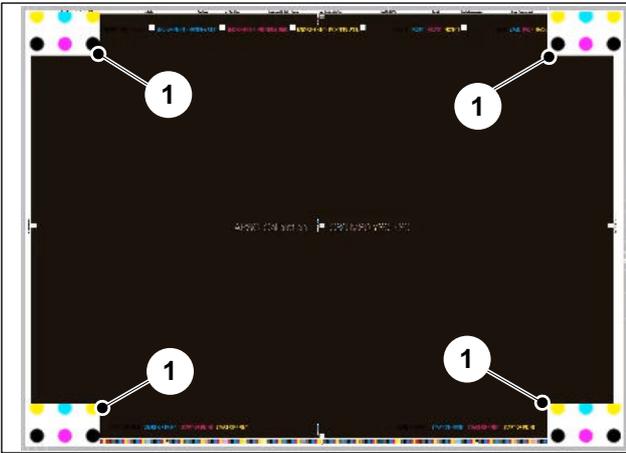


Fig. 6 4 measuring marks

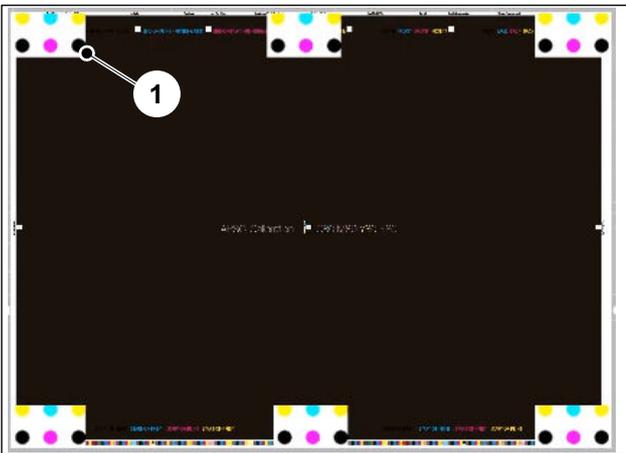


Fig. 7 6 measuring marks

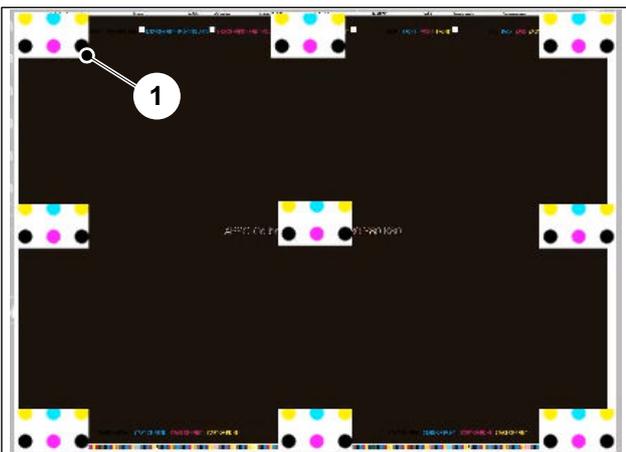


Fig. 8 9 measuring marks

You need 4 or 6 or 9 measuring marks. The more measuring marks you use, the more accurate the compensation. See figures 6, 7 and 8 for possible layouts. For more information on the use and placement of the marks, see the online help of Prinect Automatic Paper Stretch Compensation.

- ▶ **Note**
Place the measuring marks (except the ones in the center of the sheet) 15 mm away from the sheet edge. Do not rotate or scale the measuring marks. The two reference dots (black dots printed with B) must face toward the gripper edge/lead edge of print.

2.2 Measuring device

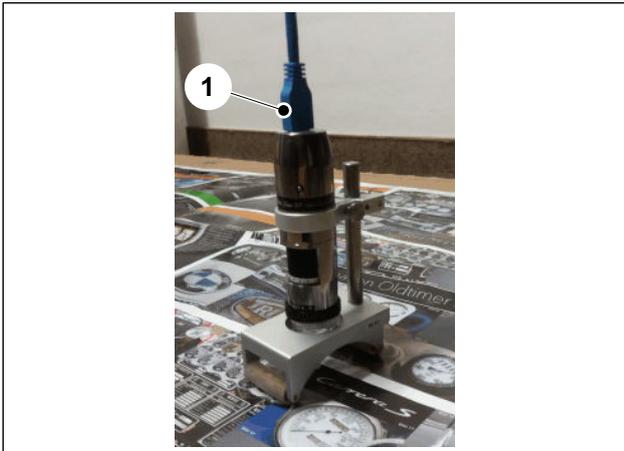


Fig. 9 Digital microscope

You need a digital microscope (Fig. 9) for the measurement. Equipment features:

- Resolution at least 1280 x 1024 pixels
- Polarization Filter
- USB port
- Integrated white light source

You can use the digital microscope Dino-Lite AM4515ZT, for instance.

For the APSC-4 measuring mark, you can also use a smartphone with the TECHKON® iRegister Pro app. For more information, see the online documentation for Prinect APSC.

2.3 Initial setup - creating profiles for the measuring marks and digital microscope

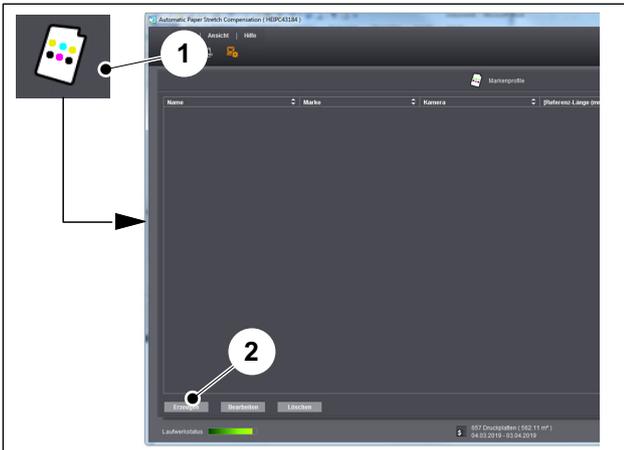


Fig. 10 Dialog box for creating profiles

For the initial setup, you must create a profile in Prinect Automatic Paper Stretch Compensation (Prinect APSC) for each measuring mark type and each digital microscope or other image capture device.

- You need a print sheet from the press with printed measuring marks, no proofs or inkjet prints.
- The print sheet must be flat during the measurement. It must not be folded, creased or damaged.
- The measuring marks must be printed in perfect quality.

1. Start the Prinect APSC software. Go to **Settings**. Select *Mark profiles* (Fig. 10/1).
2. Select *Create* (Fig. 10/2). The dialog box "Create profile" (Fig. 11) is displayed.

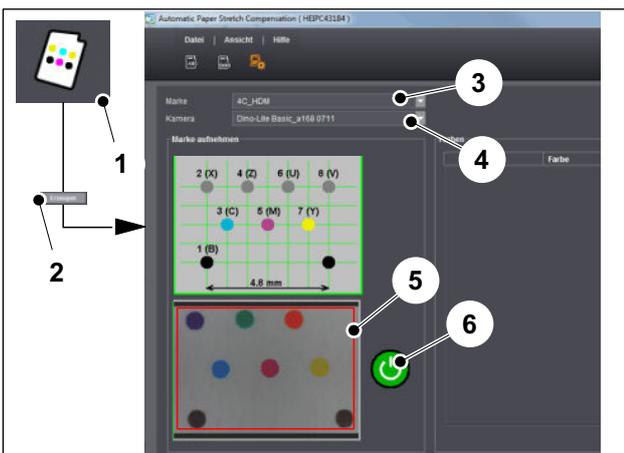


Fig. 11 Dialog box "Create profile"

3. Select the measuring mark type (APSC 4 or APSC 8) from the list box **Mark** (Fig. 11/3).
4. The list box **Camera** shows all image capture devices connected to the computer. If only one digital microscope is connected, it will be displayed here. If several digital microscopes/image capture devices are connected: Select the digital microscope you want to use for the measurement (Fig. 11/4).

5. Place the digital microscope on the mark to be measured.

The preview (Fig. 11/5) shows the image of the microscope.

6. Adjust the digital microscope until all color dots are within the red frame (Fig. 11/5). The black frame of the measuring mark must be outside the

red frame. You can adjust the size of the red frame in case of need.

- When the red frame is positioned correctly, take a picture of the measuring mark (green image button, Fig. 11/6).

The dialog box **Assign colors** is displayed.

Assign colors

The dialog box **Assign colors** consists of the pattern (Fig. 12/1), the preview (Fig. 12/2) and the **Colors** table (Fig. 12/4).

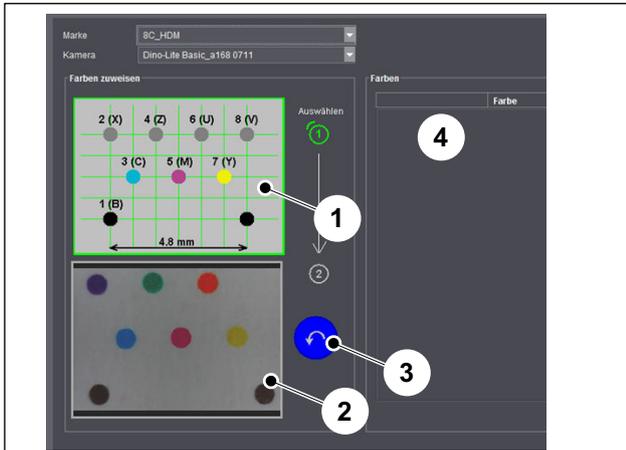


Fig. 12 Dialog box "Assign colors"

- Click on a color dot in the pattern (Fig. 12/1). Then click on the corresponding color point in the microscope image (Fig. 12/2).

You can only assign color dots that were printed. The example in Fig. 12 shows a printed 7-color form. In this example, you cannot assign color 8 (X).

When you have assigned a color, the color is displayed in the **Colors** list (Fig. 12/4). In the case of special colors, the color dot in the pattern is not displayed in gray, but in the respective color.

- You can undo a color assignment with the *Undo* button (Fig. 12/3).

- When all colors have been assigned (in the list in Fig. 13/1), save the mark profile with the *Save as* button (Fig. 13/2).

The mark profile will be saved with the specified name and is then ready for use.



Fig. 13 Dialog box "Assign colors"

2.4 Measurement and evaluation

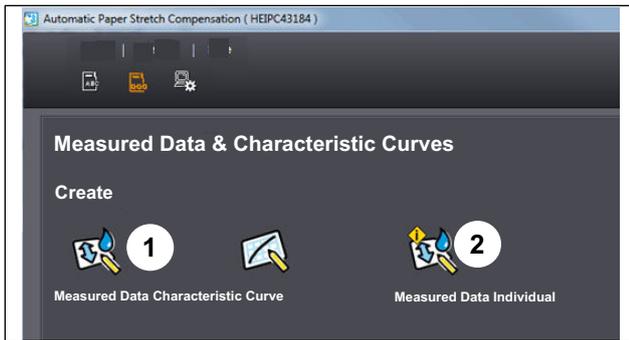


Fig. 14 Panel "Measurement data and characteristic curves"

Measure

1. Open the panel **Measurement data and characteristic curves** (Fig. 14).
2. Select **Measured Data Characteristic Curve** (Fig. 14/1) if you plan to use the measurement data to create a general correction based on a characteristic curve.

Select **Measured Data Individual** (Fig. 14/2) if you want to use the data to correct an individual job.

For more details regarding these options, see the Prinect APSC documentation.

The job list of the measurement editor (Fig. 15) is displayed.

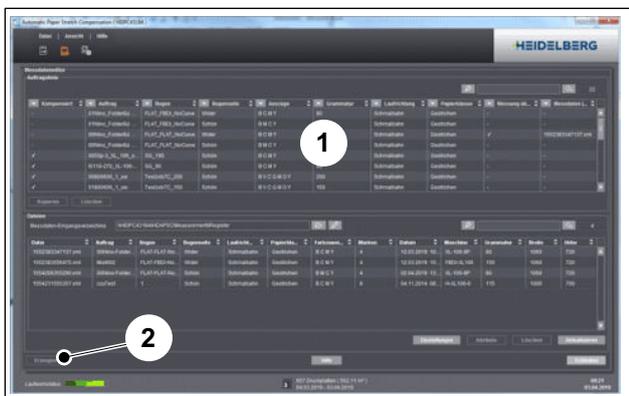


Fig. 15 Measurement editor, job list

3. Select a job from the **Job List** (Fig. 15/1).
4. Click **Create** (Fig. 15/3).

The dialog box for the measurement data (Fig. 16) opens.

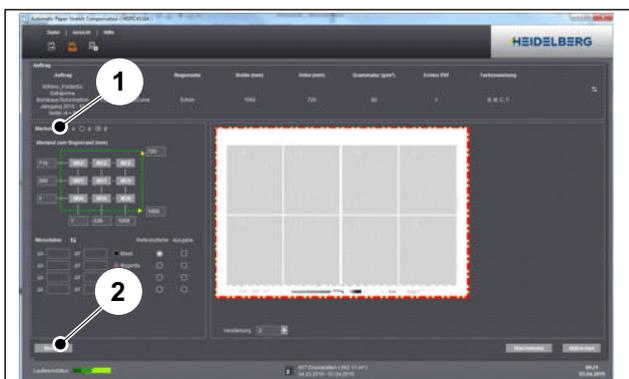


Fig. 16 Dialog box "Measurement data"

5. In the selection area **Marks**, choose the number of measuring marks (4, 6 or 9) (Fig. 16/1).
6. Click **Measure** (Fig. 16/2).

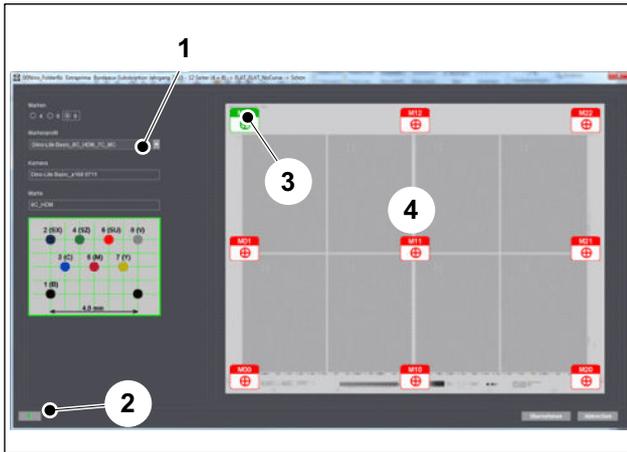


Fig. 17 Dialog box "Measurement editor"

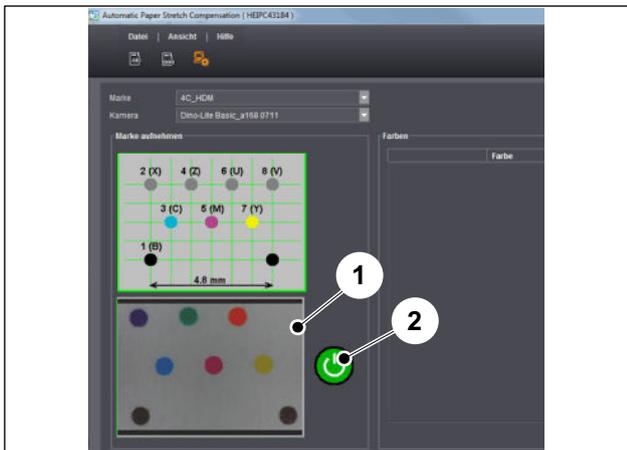


Fig. 18 Dialog box "Camera before image capture"

7. Select the measuring mark profile (Fig. 17/1). This will automatically select the correct measuring mark and digital microscope.
8. Double-check to ensure that the correct measuring mark and digital microscope have been selected.
 - You need a print sheet from the press with printed measuring marks, no proofs or inkjet prints.
 - The print sheet must be flat during the measurement. It must not be folded, creased or damaged.
 - The measuring marks must be printed in perfect quality.
9. You can now measure the marks manually or using the wizard.
 - With the wizard: Click on the green arrow (Fig. 17/2). In the measuring marks panel (Fig. 17/4), the next mark to be measured displayed in black/yellow. The sequence is left to right and top row (tail edge) to bottom row (lead edge of print).
 - Manually: In the measuring marks panel, click on the mark (Fig. 17/3) you want to measure.

Once the mark to be measured is selected or displayed, the camera dialog (Fig. 19) is opened.

10. Place the digital microscope on the mark to be measured.
11. Adjust the digital microscope until all color dots are visible in the preview box (as in Fig. 18/1).
12. Take a picture of the measuring mark.
 - Measurement with the wizard: The digital microscope takes a picture of the measuring mark after a set delay. The seconds remaining are displayed as red dots in the preview box (Fig. 18/1).
 - Manual measurement: Press the green image button (Fig. 18/2).

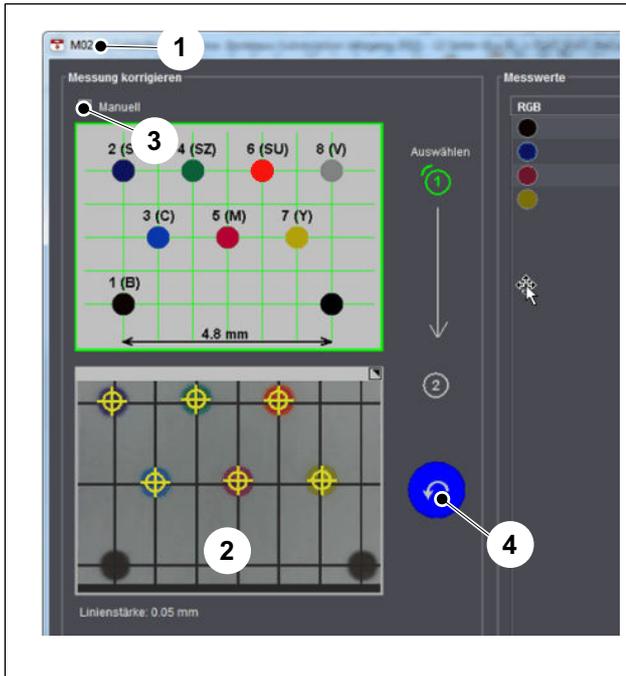


Fig. 19 Dialog box "Camera after image capture"

All detected color dots are marked with a yellow circle. The measurement is good if the centers of the yellow circles coincide with the centers of the color dots and the cross-hatch lines intersect in the centers of the reference dots (Fig. 19/1).

13. You can repeat the measurement with the blue *Back* button (Fig. 19/4).
14. If a color is not detected, choose the selection field *Manual*. Click on the undetected color dot in the pattern and pull the dot onto the corresponding color dot in the preview (Fig. 19/2).

If you are using the 4-color measuring mark for a 7-color multicolor measurement, the missing colors are assigned average values from the adjacent printing units.

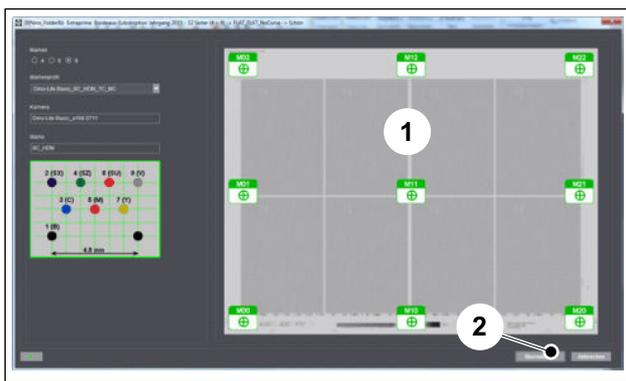


Fig. 20 Dialog box "Measurement editor"

If the measurement was successful, the measured mark is turns green.

15. When all measuring marks are green (Fig. 20/1), the measurement cycle is complete. Click *Apply* (Fig. 20/2) to save the measuring results and begin the calculation.

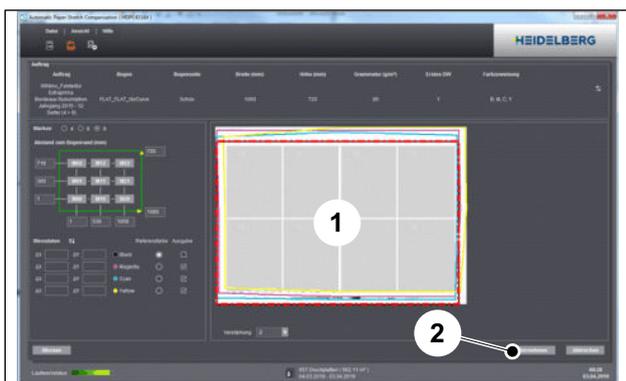


Fig. 21 Display of paper stretch

Paper stretch is calculated and displayed in the panel (Fig. 21/1).

16. Apply the calculation with the *Apply* button (Fig. 21/2).

The measurement process is complete.

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3 Prinect Easy Control

3.1 Notes on assembly

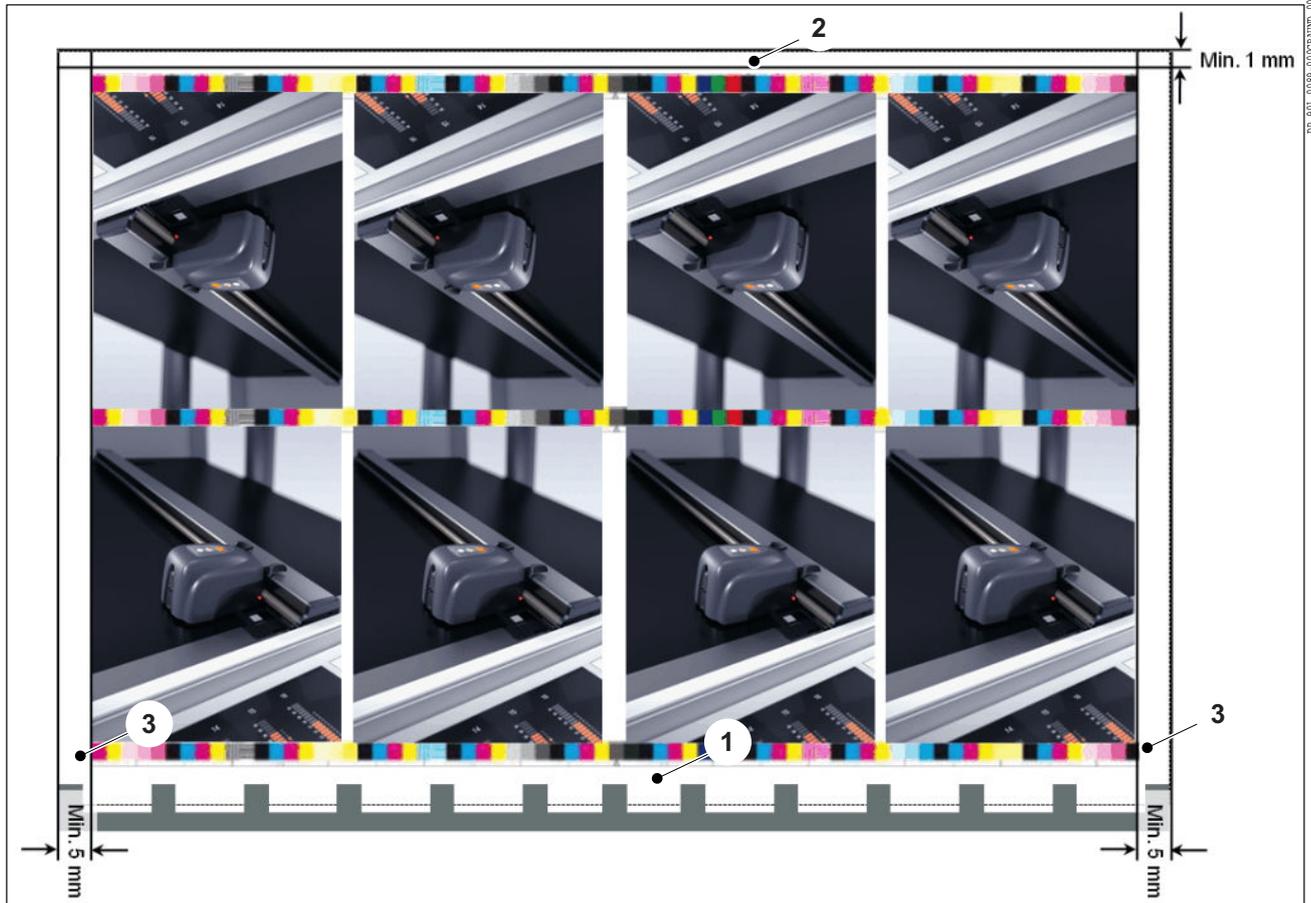


Fig. 22 Mounting Prinect Easy Control

- You can mount the quality control strip at any position you wish between the gripper margin (Fig. 22/1) and the rear edge of sheet (Fig. 22/2).
- In order to facilitate the automatic paper white measurement and detection of the quality control strip, there must be at least 5 mm of paper white between the lateral sheet edges and the start of the quality control strip (Fig. 22/3).
- You can position the quality control strip directly next to the printed image or inside the trim zone. To avoid incorrect measurements you should provide 1 mm of paper white at the top and bottom between the measurement fields and the printed image.
- Prinect Easy Control requires quality control strips with a measurement field size 5 mm wide and 6 mm high or the Prinect MS-8 quality control strip.

4 Prinect Axis Control on Prinect CP2000 Center

4.1 Notes on assembly

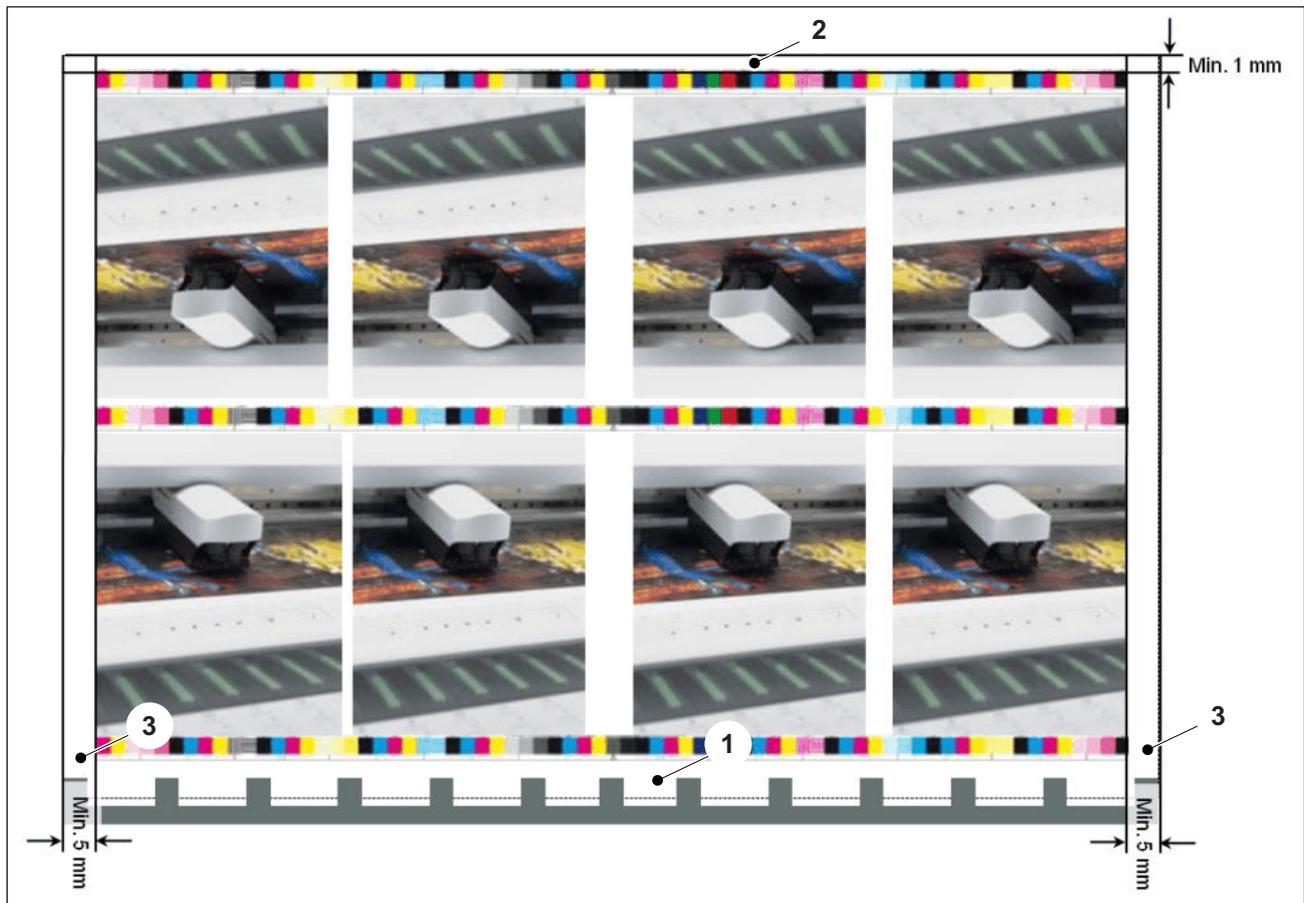


Fig. 23 Mounting Prinect Axis Control on Prinect CP2000 Center

- You can mount the quality control strip at any position you wish between the gripper margin (Fig. 23/1) and the rear edge of sheet (Fig. 23/2).
- In order to facilitate the automatic paper white measurement and detection of the quality control strip, there must be at least 5 mm of paper white between the lateral sheet edges and the start of the quality control strip (Fig. 23/3).
- You can position the quality control strip directly next to the printed image or inside the trim zone. To avoid incorrect measurements you should provide 1 mm of paper white at the top and bottom between the measurement fields and the printed image.
- Prinect AxisControl on Prinect CP2000 Center requires a measurement field size 5 mm wide and 6 mm high.

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5 Prinect Axis Control on Prinect Press Center and Press Center XL 2

5.1 Notes on assembly

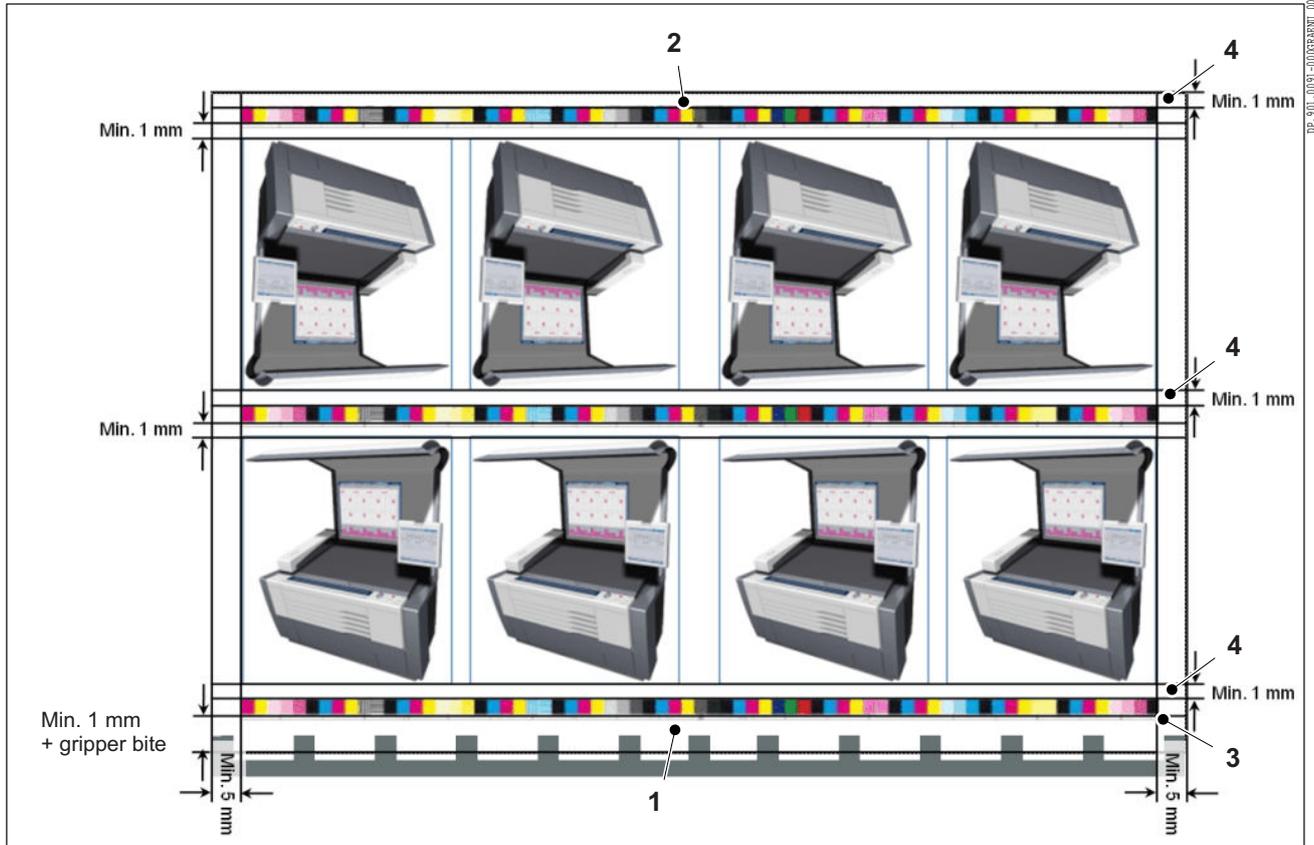


Fig. 24 Mounting Prinect Axis Control on Prinect Press Center and Press Center XL 2

- You can mount the quality control strip at any position you wish between the gripper margin (Fig. 24/1) and the rear edge of sheet (Fig. 24/2).
- In order to facilitate the automatic paper white measurement and detection of the quality control strip, there must be at least 5 mm of paper white between the lateral sheet edges and the start of the quality control strip (Fig. 24/3).

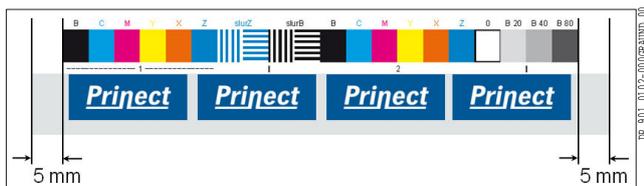


Fig. 25 Lateral minimum distance

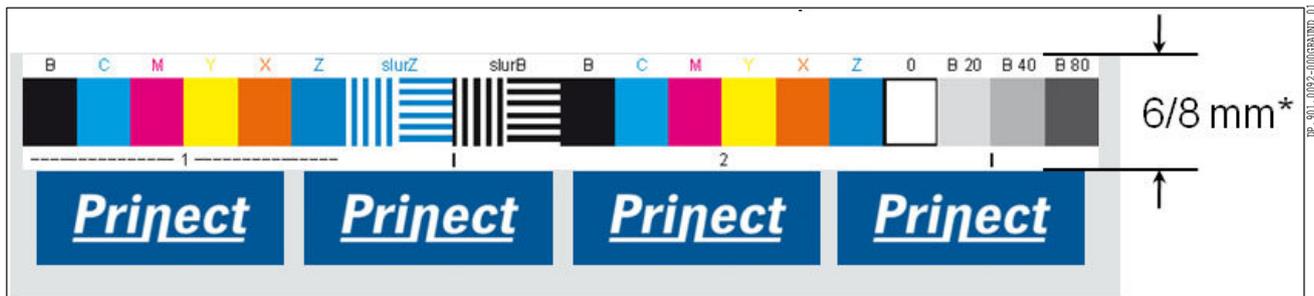


Fig. 26 Measurement field size with auto tracking up to software version S11B

Auto tracking up to software version S11B

- If you are working with auto tracking, there must be a gap of at least 1 mm of paper white from the color measurement field to the printed image and to the rear edge of sheet (Fig. 24/4).

*The space required for the measurement fields plus paper white is at least:

6 mm with micro quality control strips.

8 mm with other quality control strips.

We recommend that you always use auto tracking.

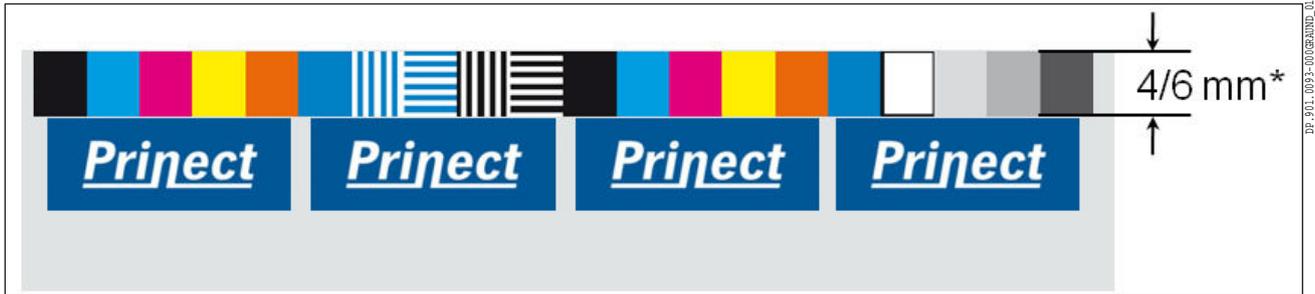


Fig. 27 Measurement field size with auto tracking, from software version S12A

Auto tracking from software version S12A

- The paper white is no longer needed as of software version S12A (Fig. 27).

*The space required for the measurement fields is at least:

4 mm with micro quality control strips.

6 mm with other quality control strips.

We recommend that you always use auto tracking.

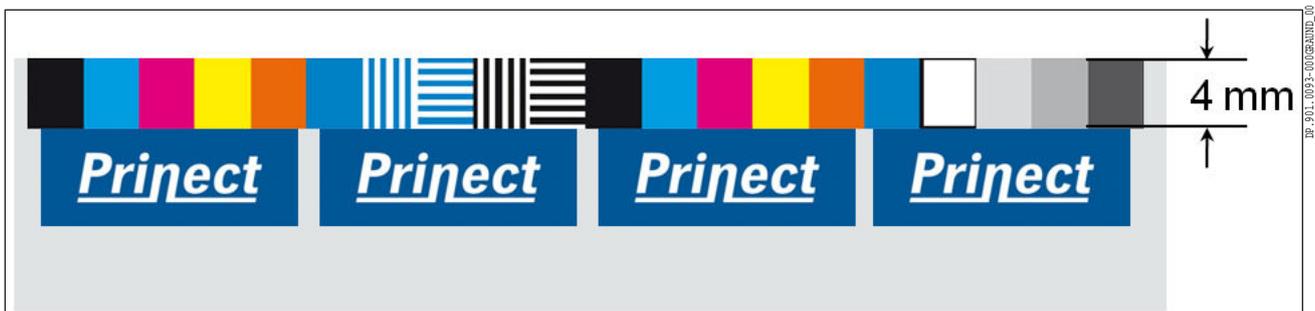


Fig. 28 Measurement field size without auto tracking

Notes for packaging printers

In order to save cardboard, the quality control strip can be mounted directly between the printed image and the rear edge of sheet or gripper margin.

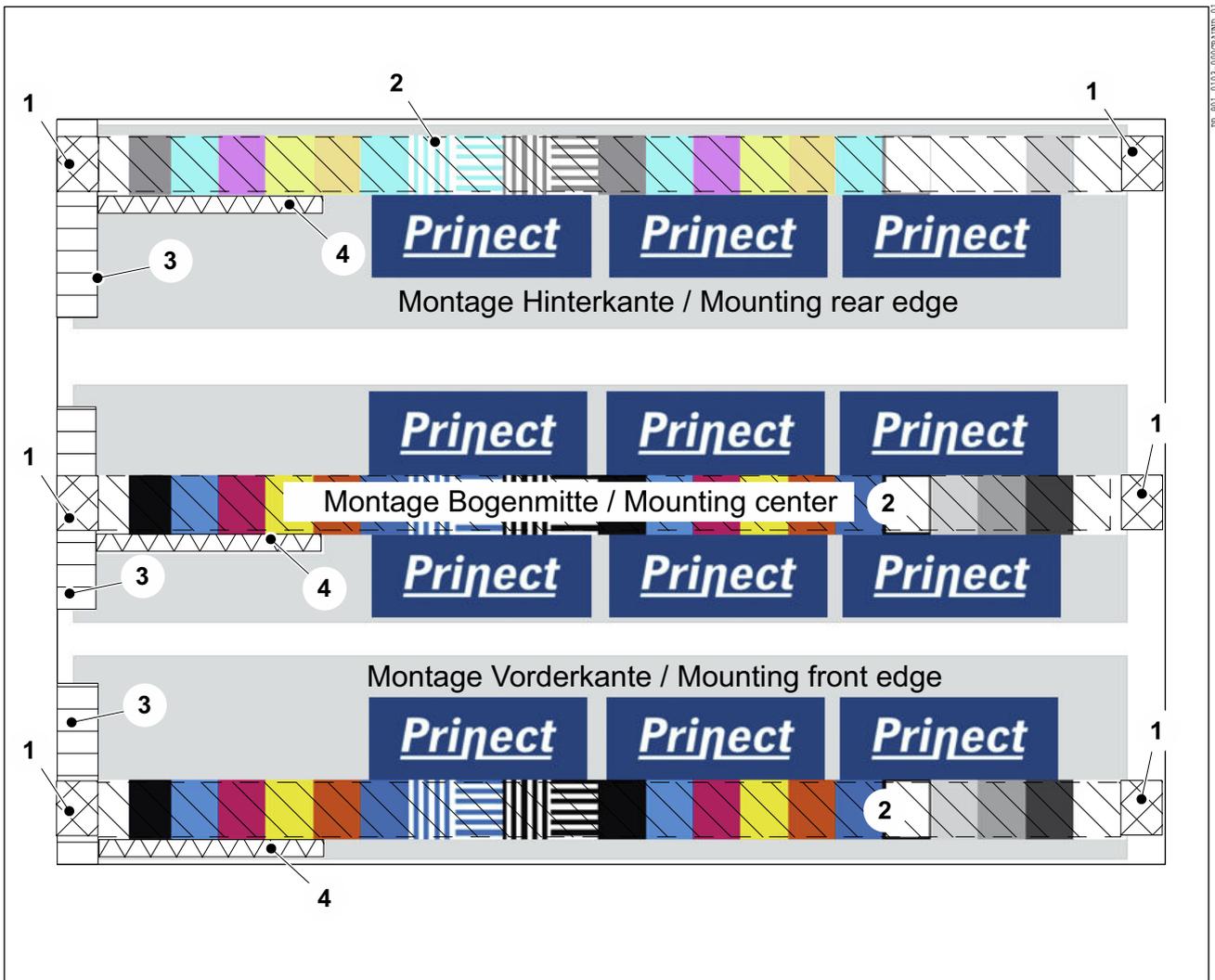
► **Note**

If the measurement fields are no longer printed in full due to a change of paper size in the pile, there is a risk of incorrect measuring results. This also applies in the case of ink piling, ink/coating banding effects as well as only half-coated quality control strips. We therefore generally recommend leaving 1 mm of space between the quality control strip and the sheet edge.

Measuring on transparent, colored or metallic printing materials

In the case of transparent, colored or metallic printing materials, impairments to the measuring accuracy and measuring function are possible.

In order to measure the quality control strip, you first need to print opaque white.



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Fig. 29 Areas with opaque white

- 1 There must be opaque white between the left and right-hand sheet edges and the first or last measurement field.

- 2** The entire area of the quality control strip must have an opaque white background.
- 3** At the left-hand sheet edge, an area in the search area of the measuring head at least 60 mm high and 1 mm wide must be printed with opaque white.
- 4** Below the measurement fields, there must be a 1 mm strip of opaque white within the first 50 mm from the left.

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6 Prinect Inpress Control

6.1 Printing with the minimum sheet size

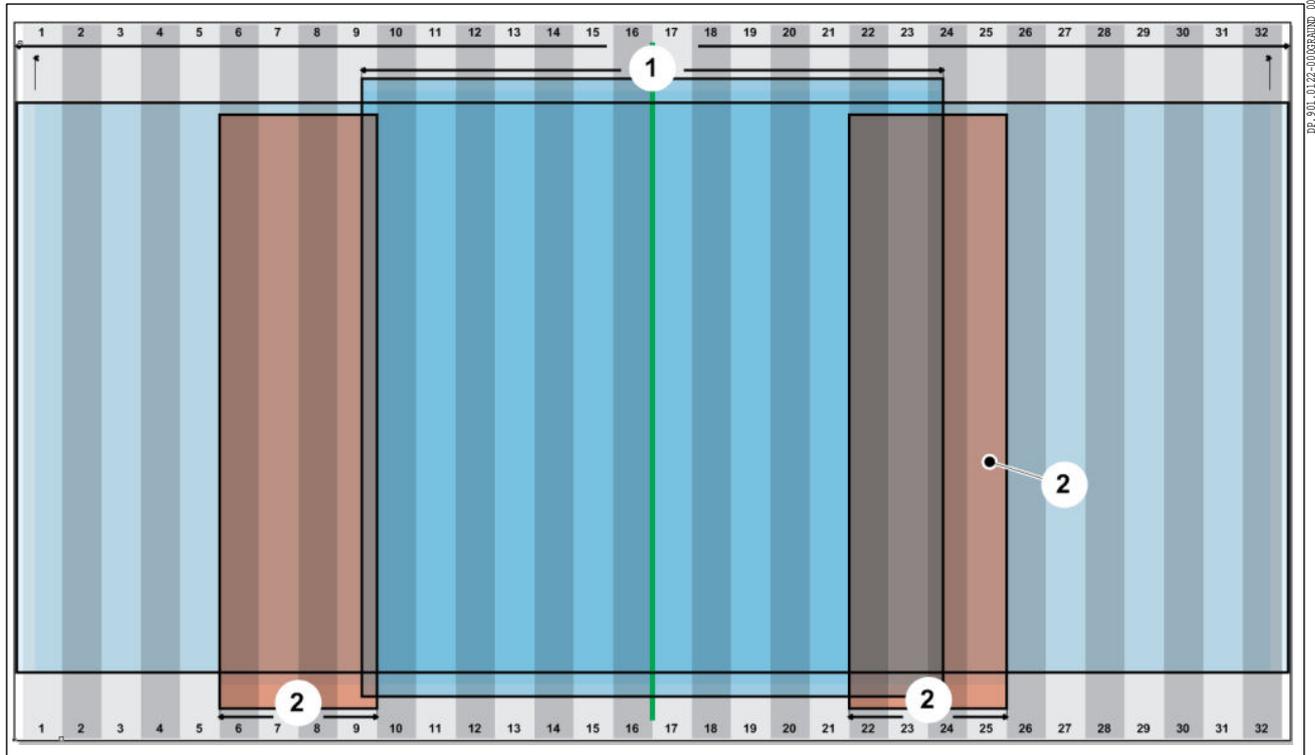


Fig. 30 Prinect Inpress Control sensor range, based on the example of a Speedmaster XL 106

The sensor ranges of Prinect Inpress Control (the areas marked red in Fig. 30/2) are partially outside the minimum print format of the printing press (Fig. 30/1). Depending on the quality control strip used, the print sheet must be slightly wider than the minimum sheet size, because the position marks also have to be printed for position detection and ink control purposes. For automatic register control, the measuring elements for register control also have to be printed. If the print sheet is too narrow, you have to control this manually.

6.2 Notes on assembly

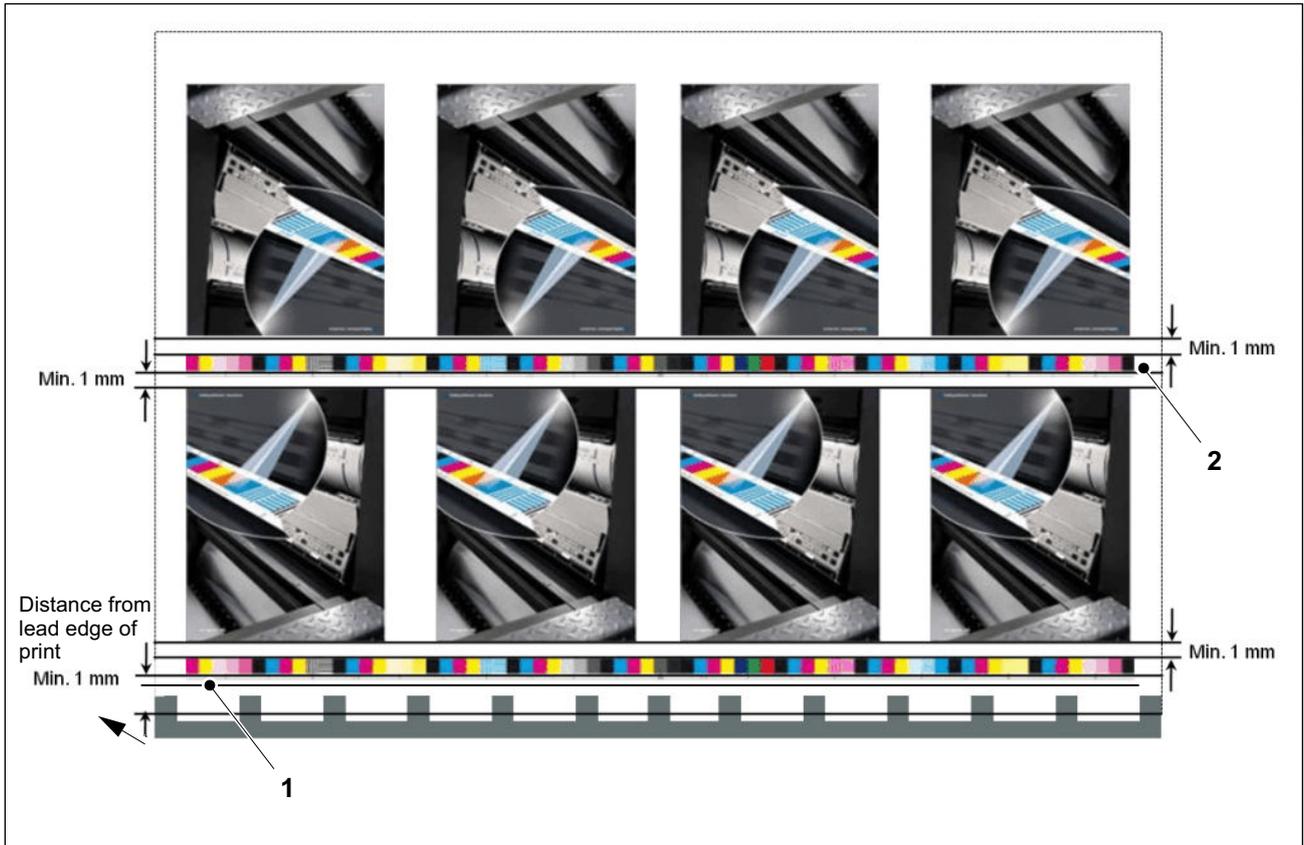


Fig. 31 Mounting Princt Inpress Control

- You can mount the quality control strip at any position you wish between the lead edge of print (Fig. 31/1) and the center of the sheet (Fig. 31/2).
- To guarantee the measurement quality, allow 1 mm of paper white between the lead edge of print and the color measurement fields, particularly when using Princt micro quality control strips.

► Note

For perfecting on thin (translucent) paper: Do not fit the quality control strips congruently on the front and reverse side. This can lead to measuring errors.

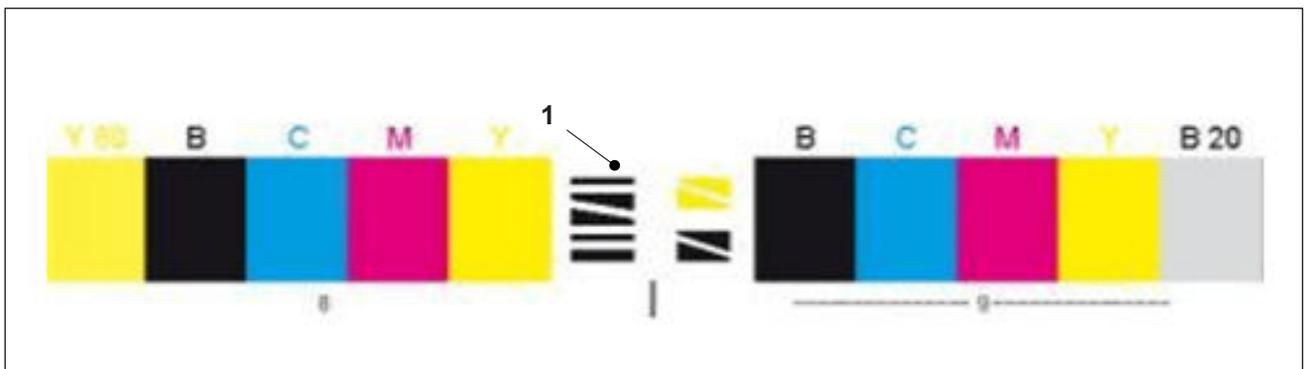


Fig. 32 Position mark, Princt Inpress Control

- For automatic detection of the quality control strip, position marks (Fig. 32/1) are located on the strip. It is vital that these position marks are in place! Otherwise, the quality control strip will not be found.

► **Note**

In the quality control strips there are always 2 position marks; for the XL 145/162 there are 3 position marks. The measuring system searches for the position marks on the basis of the selected quality control strip and the sheet size and switches on automatic measurement.

Pay attention to the set sheet size: If, due to the set sheet size, it can be assumed that all position marks are present in the quality control strip, but the printed image is so small that only one mark is printed, Prinect Inpress Control does not detect the quality control strip and reports an error!

Remedy: In this case, change the sheet size to the real printed image size and start Prinect Inpress Control again.

► **Note**

The position marks must be printed in black or a dark, high-contrast color so that Prinect Inpress Control can detect them clearly.

- For automatic detection and register control, there has to be sufficient space at the top and bottom. Therefore, there must be at least 1 mm of paper white above and below the measurement fields. This also applies for quality control strips with 5 mm x 6 mm measurement fields!

Note: 1 mm of paper white above and below the measurement fields is recommended for conventional paper types and printing conditions. However, in situations with highly variable or thin paper types, particularly in connection with high ink coverage, more than 1 mm may be necessary!

- Measurement of colored, metallized, film-laminated, aluminized or similarly coated paper types is generally not possible. As of software version S14B of Prinect Inpress Control 2 it is possible to measure chromatic colors in the quality control strip if these were printed on an opaque white surface.

Minimum distances to the rear edge of sheet

If the quality control strip has to be arranged beyond the center of the sheet toward the rear edge of sheet,

you need to take into account the following minimum distances to the rear edge of sheet:

- Speedmaster CD 74 and XL 75: 120 mm
- Speedmaster SM 102/SX 102: 110 mm
- Speedmaster XL 105/106 and CS 92, CD 102/CX 102: 150 mm
- Speedmaster XL 145 and XL 162: 350 mm

Gripper bite

The paper white measurement and the adjustment of the spectrophotometer are performed in the gripper margin. The size of the gripper margin is as follows:

- Speedmaster CD 74 and CX/XL 75: 8 - 10 mm
- All other presses: 10 - 12 mm

6.3 Notes for measuring chromatic colors on an opaque white surface

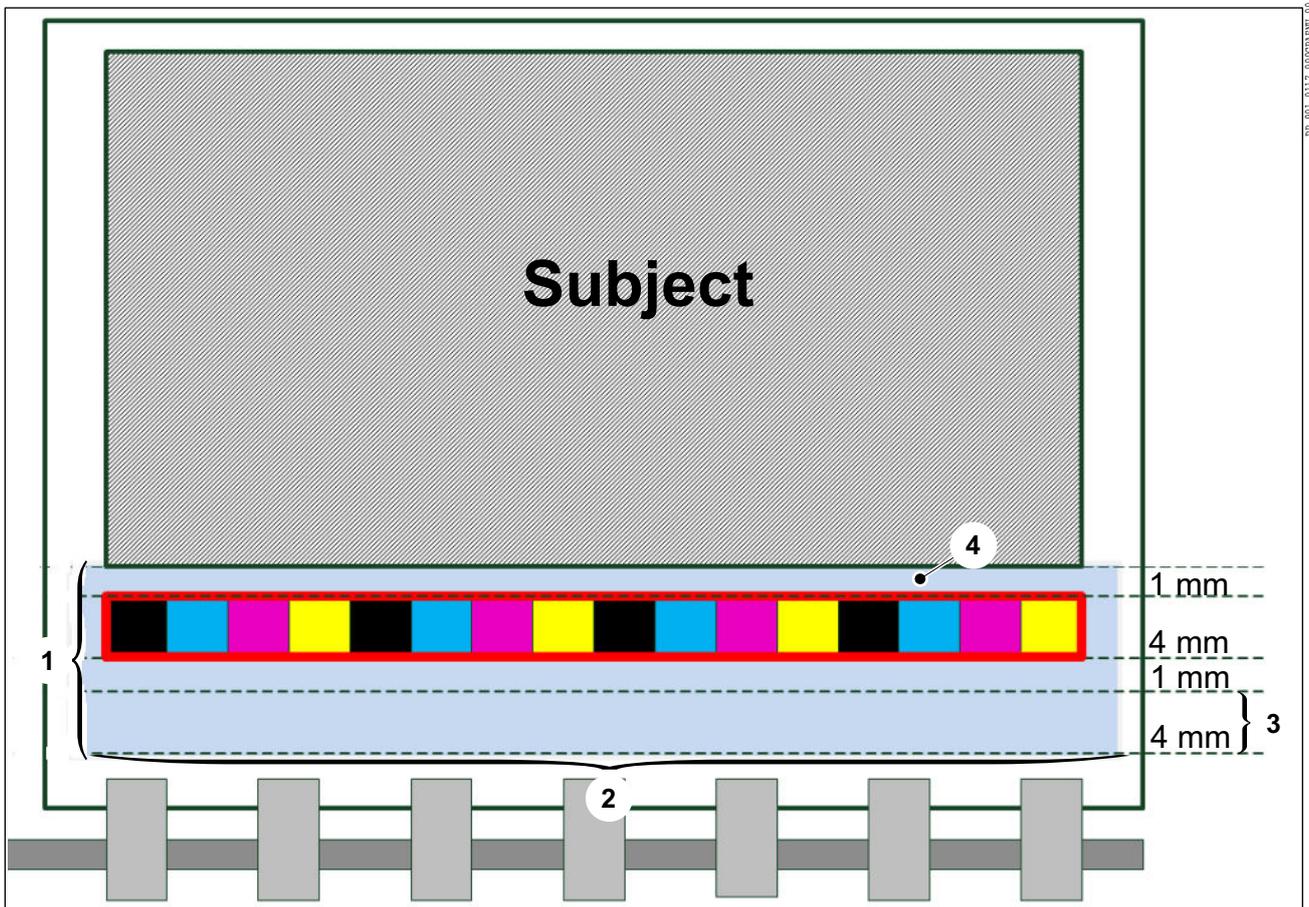


Fig. 33 Mounting and dimensions for the opaque white surface and the quality control strip

- 1 Height of the opaque white strip: at least 10 mm for Prinect micro quality control strips and at least 12 mm for all other quality control strips.
- 2 Width of the opaque white strip: print the opaque white as far as possible to the sheet edge on the right and left, no less than 3 mm from the sheet edge. If this value is exceeded, Prinect Inpress

Control does not find the quality control strip and an error message is issued.

- 3 An additional 4 mm opaque white is always needed in front of the quality control strip in order to calibrate the spectrophotometer.

As of software version S14B of Prinect Inpress Control 2 it is possible to measure chromatic colors that are printed on opaque white in the quality control strip, e.g. when printing on metallic or transparent printing materials. When doing so, please observe the following points:

- The opaque white itself cannot be measured and controlled. As a result, the opaque white needs to be applied constantly and evenly in order to reliably measure the chromatic colors. Therefore, Heidelberg cannot guarantee successful control of the chromatic colors.
- In order to avoid waste sheets and achieve a more reliable setup: first set the opaque white in such a way that it is printed constantly and evenly across the entire sheet width. Only then should you switch on the ink control with Prinect Inpress Control 2.

► **Note**

In addition to the visual check, use the supplied hand-held measuring device. Please take into account that even the smallest density fluctuations can cause a significantly different ink film thickness when using opaque white!

- The entire quality control strip must have an opaque white background (see Fig. 33).
- At least 1 mm of opaque white must be printed above the quality control strip (Fig. 33/4).
- At least 5 mm of opaque white must be printed below the quality control strip. This means 4 mm more material is required (Fig. 33/3) compared to conventional measurement on a white background! This space is always required, regardless of where the quality control strip is positioned on the sheet. This is therefore also the case when the strip is mounted in the middle.

7 Prinect Image Control manufactured up to 2010

7.1 Notes on assembly

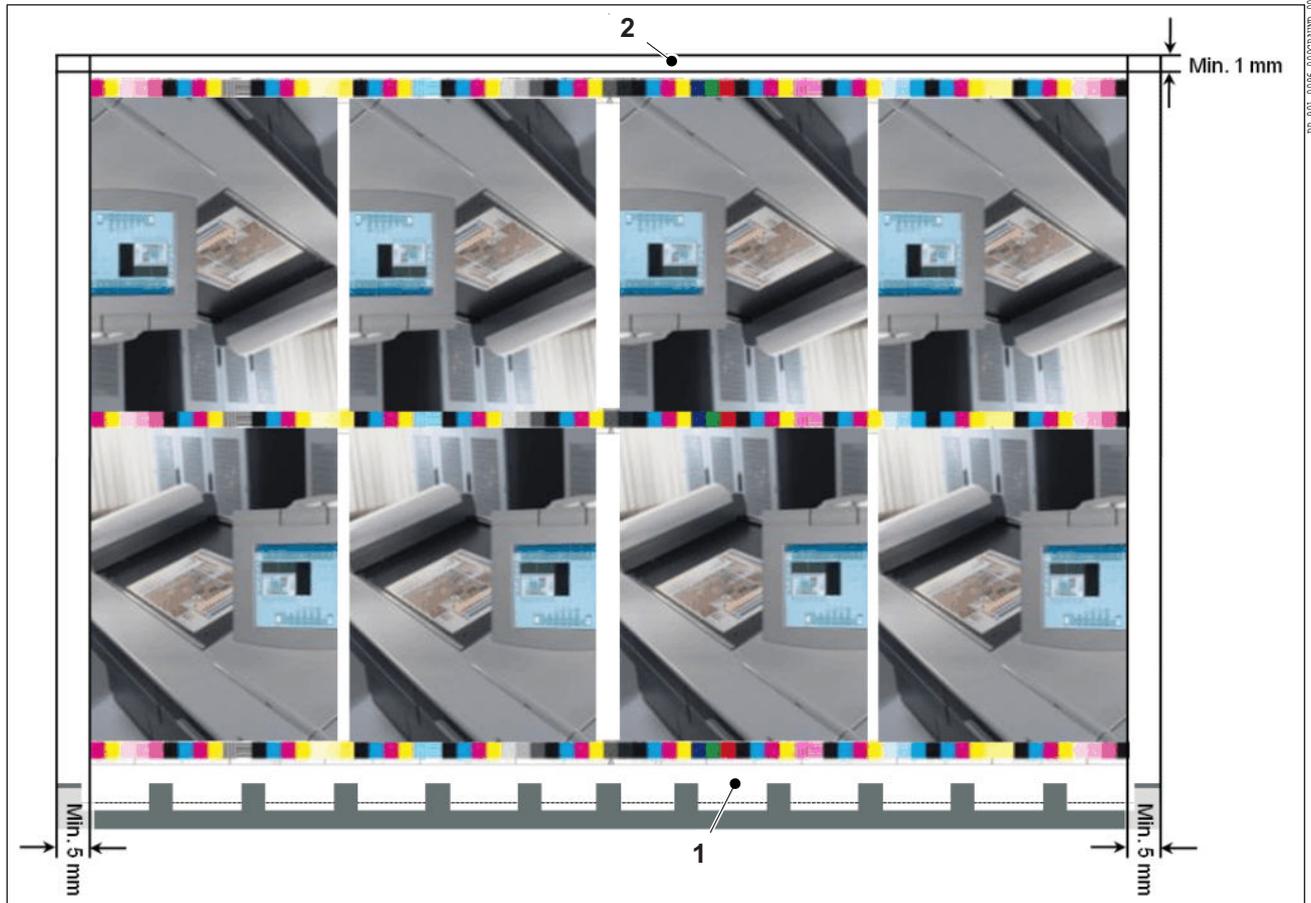


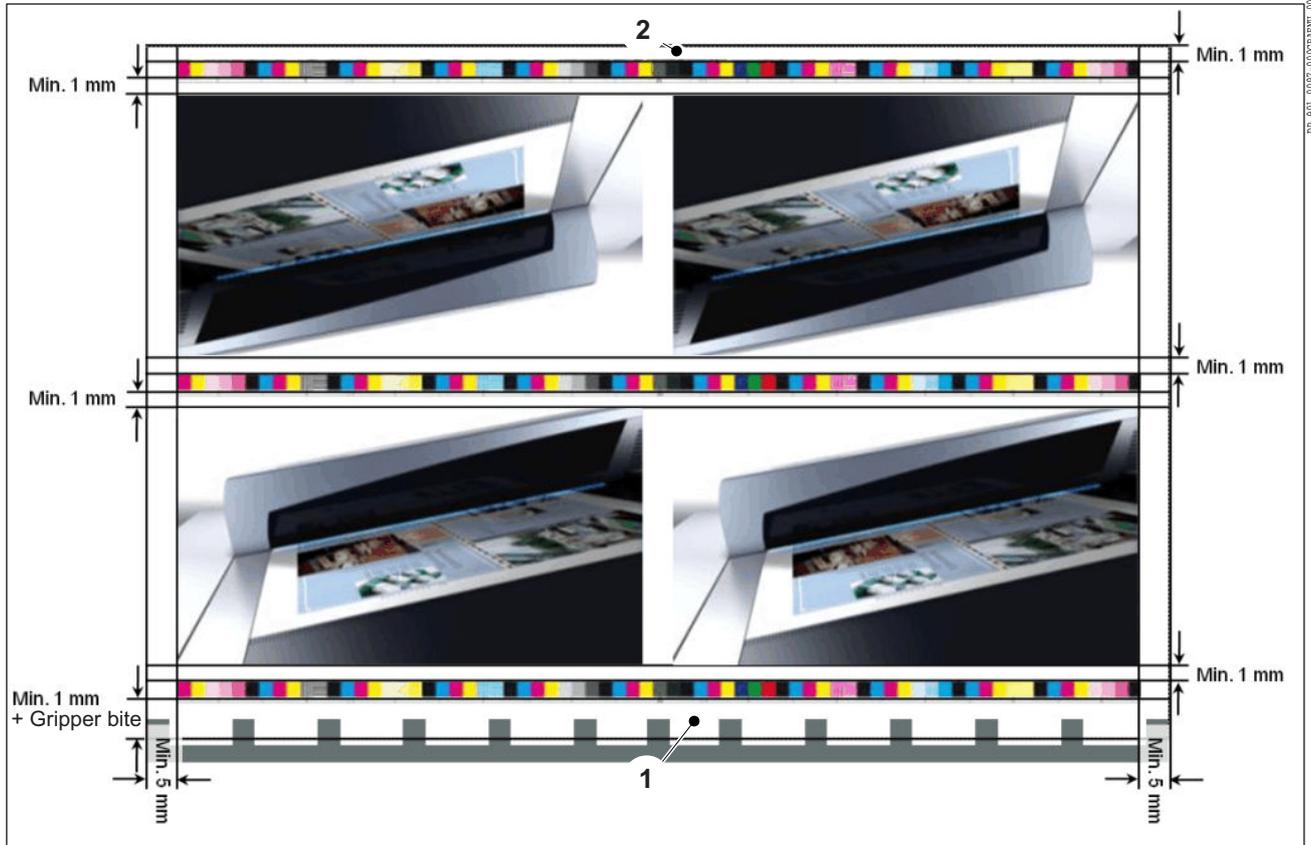
Fig. 34 Mounting with Prinect Image Control

- You can mount the quality control strip at any position you wish between the gripper margin (Fig. 34/1) and the rear edge of sheet (Fig. 34/2).
- The operator must assign the quality control strip following the first measuring run.
Automatic detection is possible if the quality control strip is assigned as a color mark in the Prinect workflow and is made available as a CIP4-PPF file. Software version 5 and the Color Interface module of Prinect Image Control have to be installed for this purpose.
- You can position the quality control strip directly next to the printed image or inside the trim zone. To avoid incorrect measurements you should provide 1 mm of paper white at the top and bottom between the measurement fields and the printed image.

DP_901_0020-000FRONT_02

8 Prinect Image Control NG and Prinect Image Control 3

8.1 Notes on assembly



DP_901_0097-000FRONT_00

Fig. 35 Mounting with Prinect Image Control

- You can mount the quality control strip at any position you wish between the gripper margin (Fig. 35/1) and the rear edge of sheet (Fig. 35/2).
- In order to facilitate the automatic paper white measurement and detection of the quality control strip, there must be at least 5 mm of paper white between the lateral sheet edges and the start of the quality control strip.
- Automatic color strip tracking (auto tracking) requires at least 1 mm of paper white from the color measurement fields to the printed image as well as to the rear edge of sheet and the gripper edge.

Measuring on transparent, colored or metallic printing materials

In the case of transparent, colored or metallic printing materials, impairments to the measuring accuracy and measuring function are possible.

In order to measure the quality control strip, you first need to print opaque white.

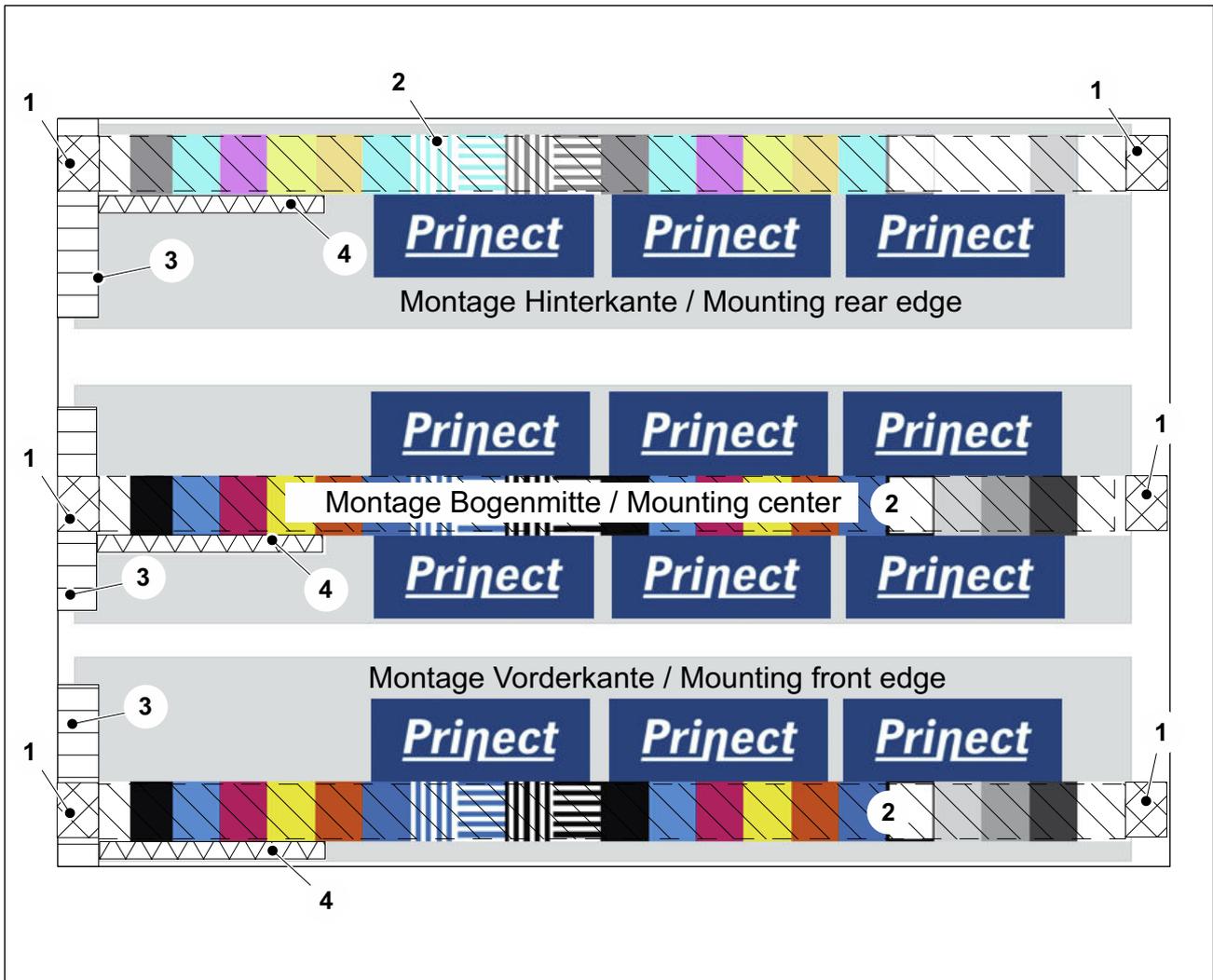


Fig. 36 Areas with opaque white

- 1 There must be opaque white between the left and right-hand sheet edges and the first or last measurement field.
- 2 The entire area of the quality control strip must have an opaque white background.
- 3 At the left-hand sheet edge, an area in the search area of the measuring head of at least 60 mm high and 1 mm wide must be printed with opaque white.
- 4 Below the measurement fields, there must be a 1 mm strip of opaque white within the first 50 mm from the left.

8.2 Notes for controlling opaque white

As of software version I14A of Prinet Image Control NG and with all versions of Prinet Image Control 3 you can measure and also control opaque white that is printed in an offset printing unit using a quality control

strip. When doing so, please observe the following points:

- Opaque white that is printed in the coating unit cannot be controlled. If the chromatic colors are to be subsequently measured and controlled despite this, the printer must ensure that the opaque white is applied evenly and constantly in the coating unit. Therefore, Heidelberg cannot guarantee successful control of the chromatic colors in this case.
- In order to save waste sheets and ensure a more reliable setup, first only control the opaque white until this prints evenly. Only then should you switch on control of the chromatic colors.
- Opaque white is treated the same as any other ink during control. For this reason you must always earmark a color field for opaque white in the quality control strip.

Example: a job consists of BCMY + special color + opaque white. A 6-color quality control strip is required for this job.

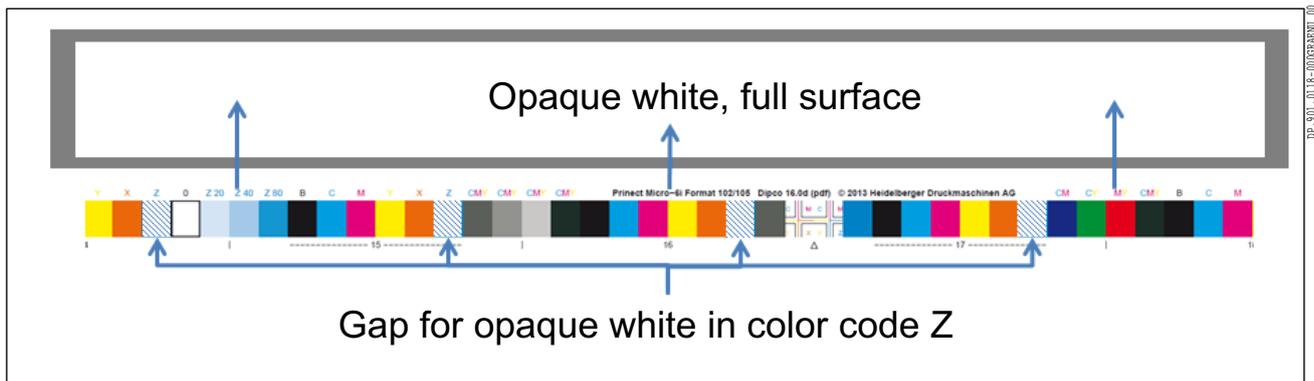


Fig. 37 One opaque white in the job

Printing one opaque white in the job

If you only print one opaque white, this can be printed as a whole area below the quality control strip (Fig. 37). The chromatic colors are printed above it. In prepress, a color code (e.g. X, Z...) is assigned for opaque white. Opaque white is always below the empty measurement field and can be measured.

On the printing press, a reference value must be assigned to the color code in which the opaque white is located, as is also the case for all other colors.

If opaque white is to be controlled for the first time and there is not yet a reference value, measure this reference value on the basis of the currently printed sheet and save it.

Determining the optimal saturation of the opaque white and thereby also the reference value is the responsibility of the printer. Please note that metallic surfaces, for example, require different reference values than transparent or colored printing materials. Therefore, save the reference values determined for

each printing material type in the color archive. This will ensure that you always have the appropriate reference values to hand.

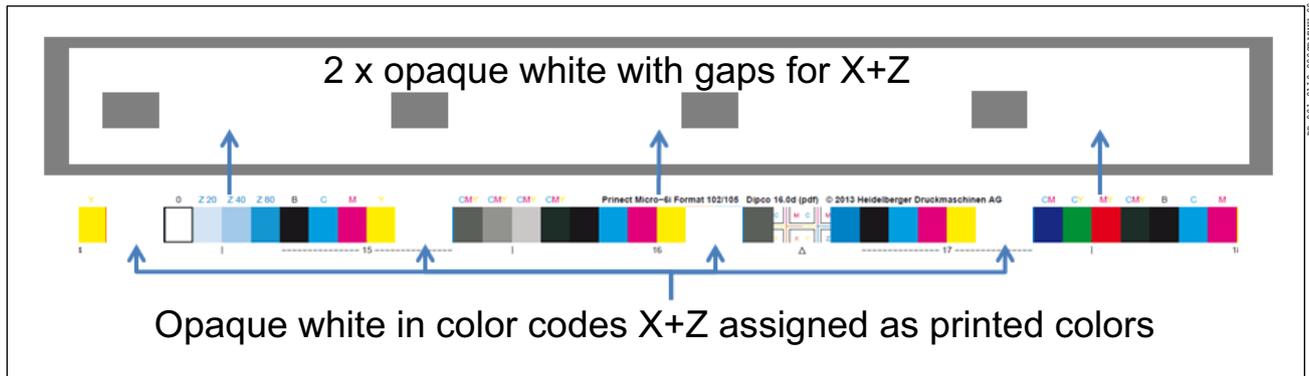


Fig. 38 Two opaque whites in the job

Printing two or more opaque whites in the job

If you are printing two or more opaque whites, prepress must ensure that there is always only one opaque white below the color fields in the quality control strip that are intended for the opaque white measurement. Accordingly, prepress must leave a corresponding gap for these color fields (Fig. 38) and assign the color codes accordingly, e.g.:

- X = opaque white 1
- Z = opaque white 2

9 Generating PDF files

9.1 When do you not have to generate any PDF files yourself?

As of Dipco 2011 you only have to generate PDF files yourself if you work with a third-party workflow with a resolution other than 2400 or 2540 dpi.

- If you work with a Prinect workflow, use the Dipco elements in the "Prinect" directory. You do not need to follow the further instructions in this section.
- If you work with a third-party workflow with a resolution of 2400 dpi, use the Dipco elements in the "foreign2400dpi" directory. You do not need to follow the further instructions in this section.
- If you work with a third-party workflow with a resolution of 2540 dpi, use the Dipco elements in the "foreign2540dpi" directory. You do not need to follow the further instructions in this section.

9.2 When do you have to generate PDF files yourself?

Several functions, such as automatic crop recognition, require the use of "hidden PostScript parts", which are embedded in the Dipco files as "PostScript XObjects". Not all third-party RIPs and third-party workflow systems can cope with "PostScript XObjects".

Indications of incorrect processing in the workflow:
The Dipco elements are not displayed or are displayed incorrectly, or the entire job is aborted.

Three options for solving the problem are listed below.

1. Check whether you can set the processing of "PostScript XObjects" in your workflow. Switch the processing of "PostScript XObjects" to Disable or Enable as appropriate. If the Dipco elements are then displayed correctly, you can use the PDF files.
2. Generate PDF files with the same output resolution as your imagesetter. To do this use the EPS files in the Dipco package. The required settings are described in the following section "Settings in the *General* section".
3. Generate PDF files without "PostScript XObjects". To do this use the EPS files in the Dipco package. The required settings are described in the following sections.

► **Note**

You will need Acrobat Distiller with the settings described below. Distiller version 7 is used in the example. If you use a different version, you have to adjust the settings as appropriate. Here the settings for the German and English versions are shown side-by-side.

9.3 Setting the output resolution

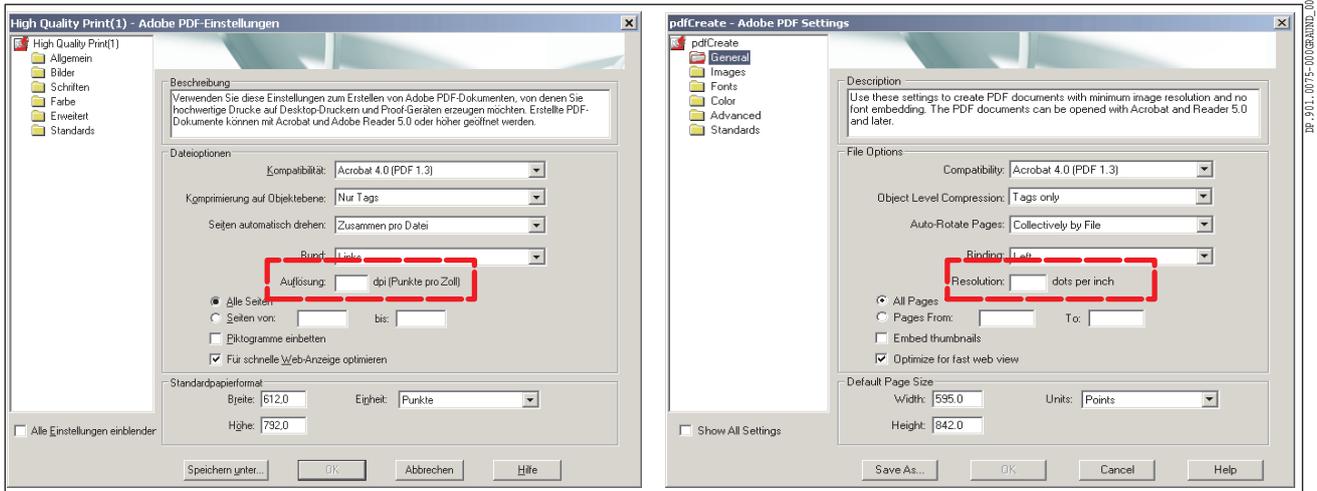


Fig. 39 The **General** section

Output problems with slurring and doubling fields can often be eliminated if you generate PDF files in the output resolution.

1. Select the **General** section under settings.
2. Set the **Resolution** to the exact output resolution of your imagesetter.
3. Set the other parameters as shown in Fig. 39. The other parameters are preset to the standard configuration except for **Compatibility**.

9.4 Generating PDF files without "PostScript XObjects"

1. Set the parameters in the **General** section as shown in Fig. 39. Set the **Resolution** to the exact output resolution of your imagesetter.

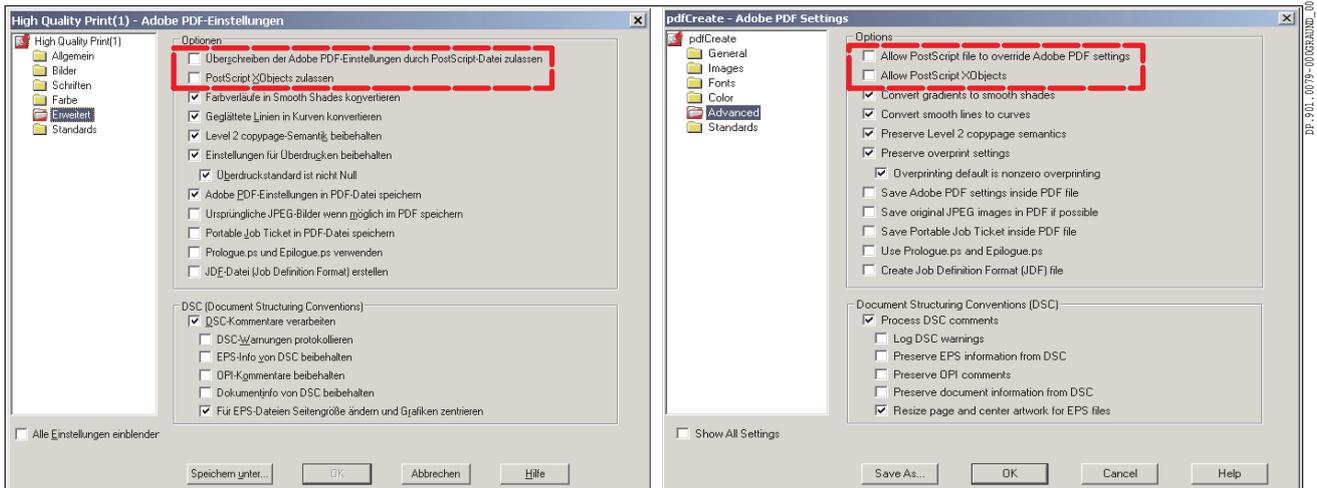


Fig. 40 **Extended** section

2. Set the parameters in the **Extended** section as shown in Fig. 40.
 - Very important: Deselect the functions **Allow PostScript file to override Adobe PDF settings** and **Allow PostScript XObjects**. This removes the

hidden PostScript commands when generating the PDF file.

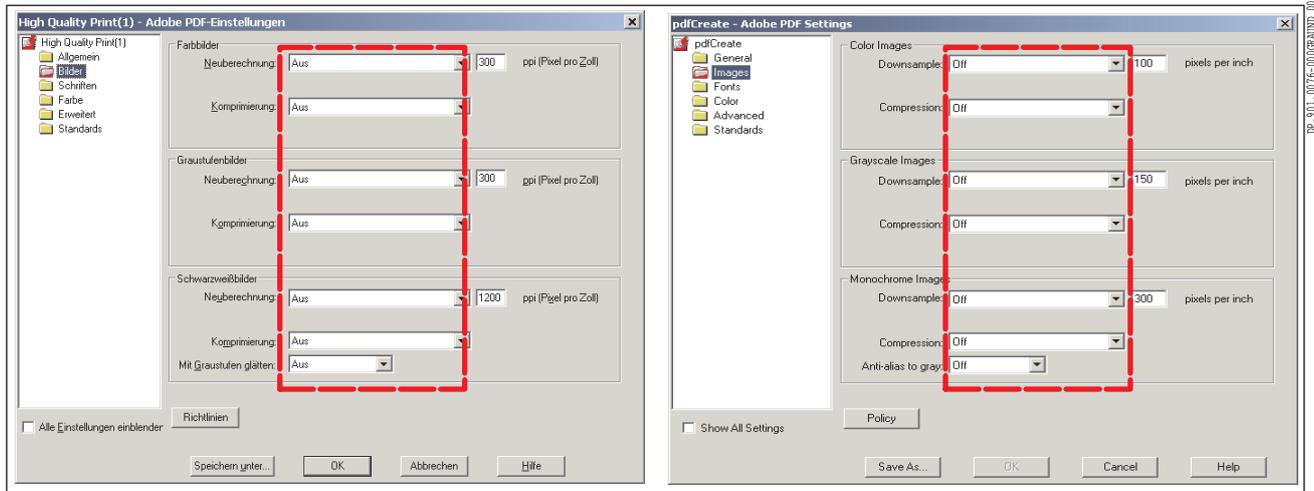


Fig. 41 The Images section

- Settings in the Images section:
Switch all the settings for **Downsample** and **Compression** to **Off**.

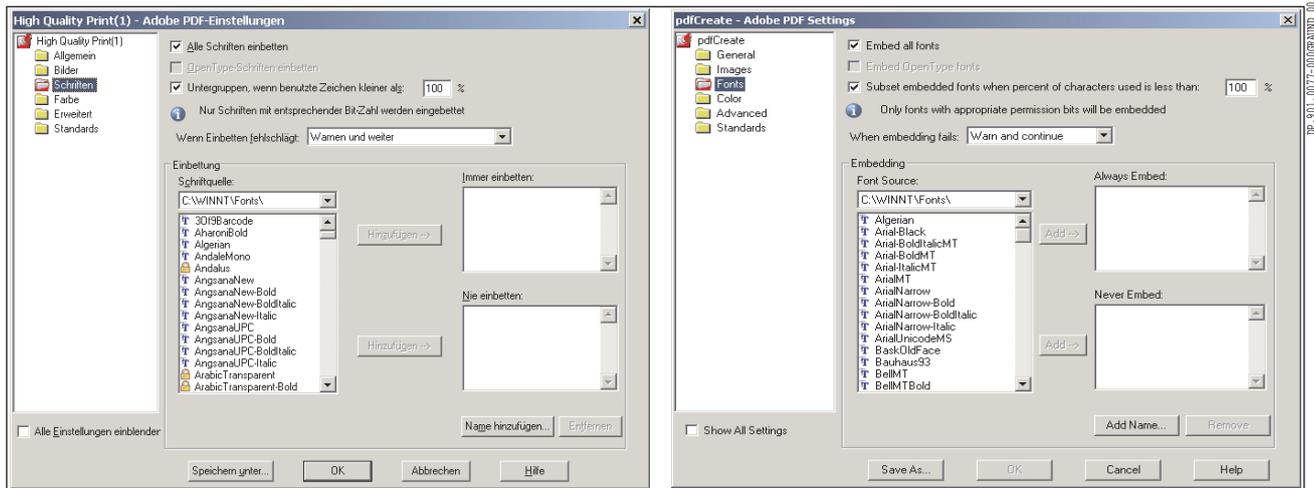


Fig. 42 The Fonts section

- Settings in the Fonts section:
Set the parameters as shown in Fig. 42. The parameters are already preset to this in the default configuration.

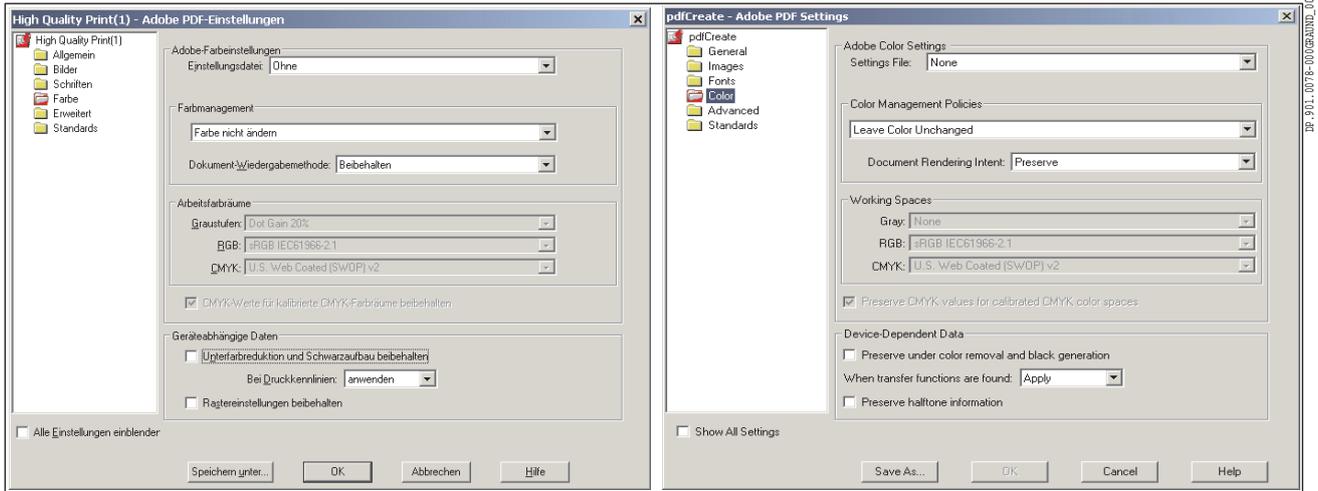


Fig. 43 The Color section

- Settings in the *Color* section:
Set the parameters as shown in Fig. 43. The parameters are preset to the default configuration except for **Preserve under color removal and black generation**.

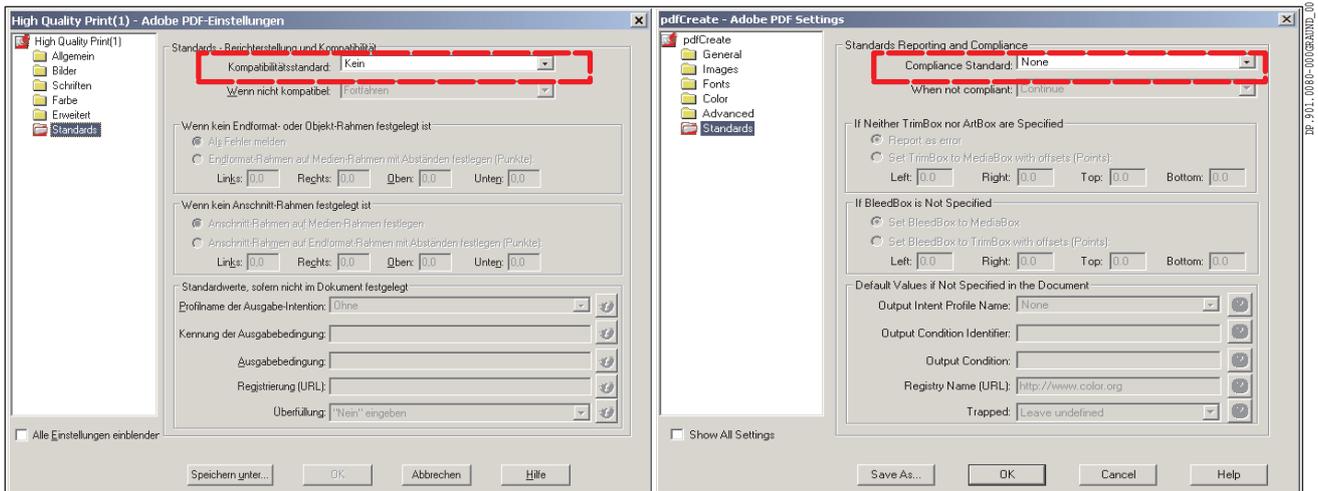


Fig. 44 The Standards section

- Settings in the *Standards* area:
In the **Compliance Standard** list select **None**. All remaining parameters are then grayed out as in Fig. 44.
- Save the settings. You can now generate PDF files for your workflow from the EPS files. However these PDF files have no crop recognition or other functions that are enabled by "PostScript XObjects".

Index

A

- APSC measuring marks A.2.42
- Information on measurement and placement B.1.5
- Mark profiles B.1.6
- Measurement data B.1.8
- Measuring device B.1.6
- Placement B.1.5
- APSC measuring marks for automatic paper stretch compensation A.2.42

C

- Color abbreviation A.1.6

D

- Data format A.1.6
- Delivery variants A.1.4
- Directory structure A.1.4

F

- FOGRA quality control strips A.2.4

G

- Generating PDF files B.1.27
- Setting the output resolution B.1.28

M

- Measuring marks for automatic paper stretch compensation
- Information on measurement and placement B.1.5
- Measuring marks for paper stretch compensation A.2.38

N

- New features in version 20 A.1.10

- Notes on assembling and positioning B.1.1
- General notes for prepress B.1.1
- General notes for the printer B.1.3
- Horizontal alignment B.1.1

P

- Prinect Axis Control CP2000 Center B.1.12
- Prinect Axis Control on Prinect Press Center and Press Center XL 2 B.1.13
- Prinect Easy Control B.1.11
- Prinect Image Control 3 B.1.23
- Prinect Image Control manufactured up to 2010B.1.22
- Prinect Image Control NG B.1.23
- Prinect Inpress Control B.1.17
- Prinect workflow A.1.4

Q

- Quality control strip
- unique identifier UID A.1.6
- Quality control strips
- CS quality control strips A.2.10
- Directory structure A.2.3
- G7 quality control strips A.2.12
- GS quality control strips A.2.5
- Micro quality control strips A.2.14
- Micro quality control strips with control marks for die cutting A.2.17
- Naming conventions A.2.4
- S quality control strips A.2.7
- Structure of the measurement fields A.2.21

T

- Third-party workflow with 2400 dpi A.1.5
- Third-party workflow with 2540 dpi A.1.5

U

- UID of quality control strip A.1.6

