COYODO
COmpare YOur DOcuments

Tutorial COYODO Difference View

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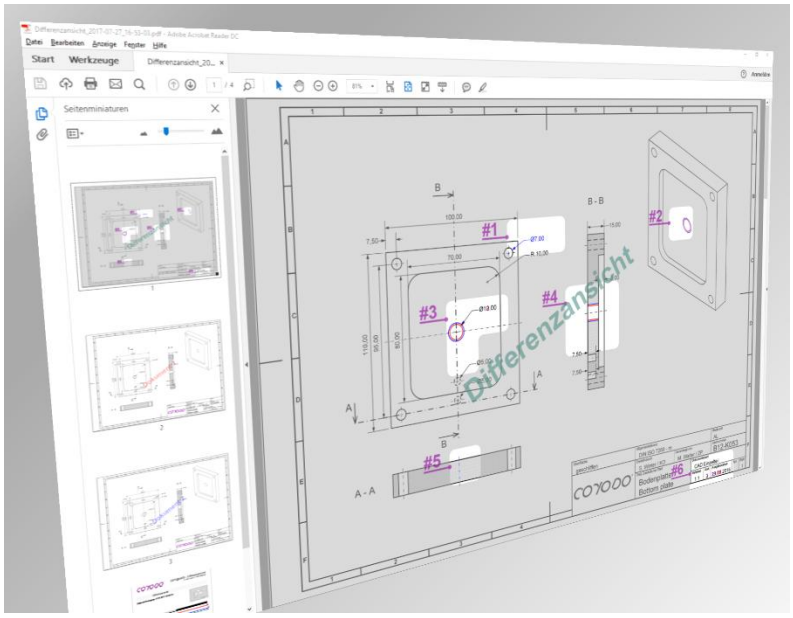
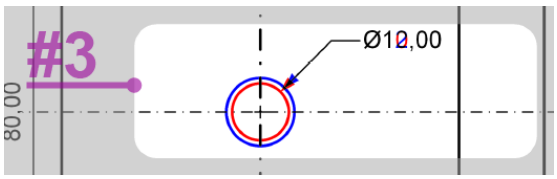
1 What is the COYODO Difference View?

The COYODO Difference View is a PDF document. It visually highlights the differences between versions of technical drawings or similar graphic documents.



Old information from the previous version (removed or changed) is displayed in red.

New information (added or changed) is displayed in blue.



The COYODO difference mask is used to find the changed areas very quickly. These areas are numbered. Reference can be made to the numbering, e.g. in the change description.

The Difference View also contains the original documents for comparison.

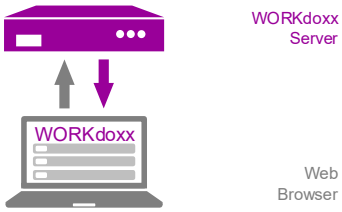
The “DIFFdoxx Difference View” is part of the COYODO WORKdoxx applications.

2 Creating a Difference View

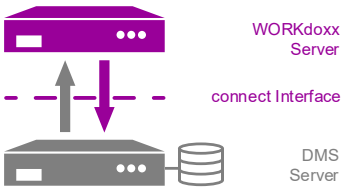
The documents to be compared must be in TIFF or PDF format.

The COYODO Difference View can be generated in two ways:

1. interactive with a web browser



2. automatically in the event of a status change in a document management system (DMS, PLM, SAP or similar systems)



The software for generating the Difference View is installed on a WORKdoxx server (Microsoft Windows).

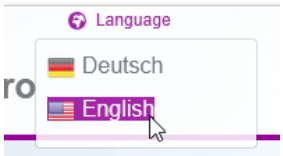
Either a server in the internal company network or the COYODO Cloud is used.

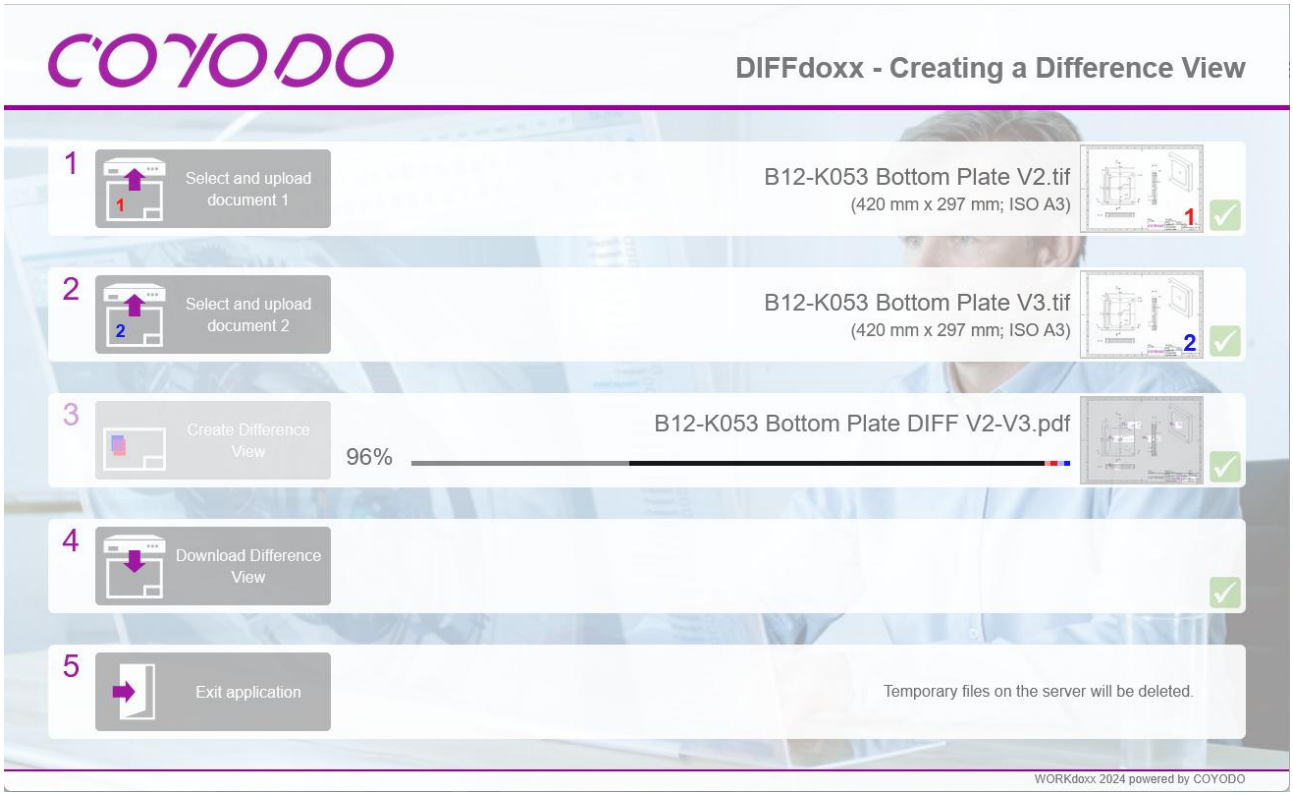
The Difference View can be generated in English or German. In these instructions, the Difference View is used in English due to the high degree of international use.

2.1 Interactive generation with a web browser

A web interface is provided for interactive generation, which is adapted to the company's corporate design. This guide uses the COYODO design.

Regardless of the language of the Difference View, the language of the web interface can be selected by the user.





2.1.1 Link to the web interface

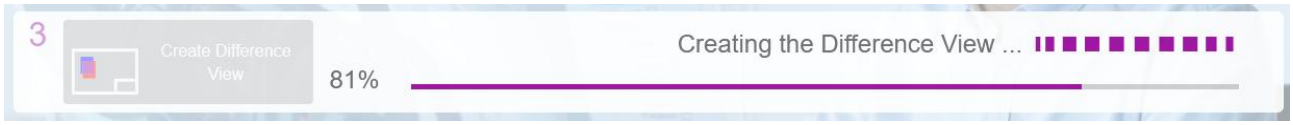
After installation of the COYODO software on the COYOD server, a company-specific link is provided to access the web interface.

2.1.2 Uploading the documents to be compared

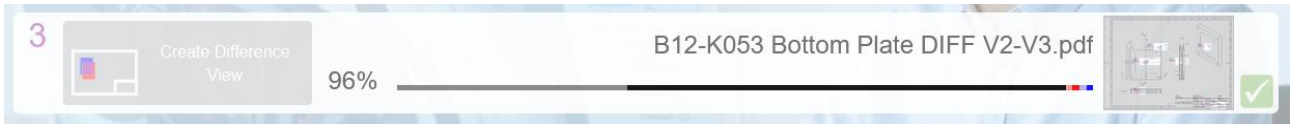
The documents to be compared must be available in the file system. The documents are uploaded to the COYODO server to generate the Difference View.

2.1.3 Creating the Difference View in the background

After uploading the documents, the Difference View is generated on the server.
The progress is displayed in the browser during creation.



After creation, the degree of correlation (here 96%) is displayed. It provides information on how closely the two compared documents match.



2.1.4 Downloading the Difference View or displaying it in the web browser

The generated Difference View is either displayed in a new tab in the browser or downloaded to the PC.

With a corresponding setting in the browser, the Difference View is downloaded and displayed in a PDF reader.

As the display in a browser tab, for example, often does not support working with different layers, Adobe Acrobat Reader is used in these instructions.

Adobe Acrobat Reader DC ® is a registered trademark of Adobe Inc.

2.2 Automatic generation by a PLM system

In this case, communication with the COYODO server is coordinated with the internal IT department. The documents to be compared that are stored in the PLM system are made available in a job directory. The automatically generated Difference View is then also saved in the job directory and can be retrieved and also stored in the PLM system.

3 The Difference View in Adobe Acrobat Reader

This tutorial uses the new Adobe Acrobat Reader interface (from 2024).

3.1 Highlighting the differences

3.1.1 Highlighting by color differentiation

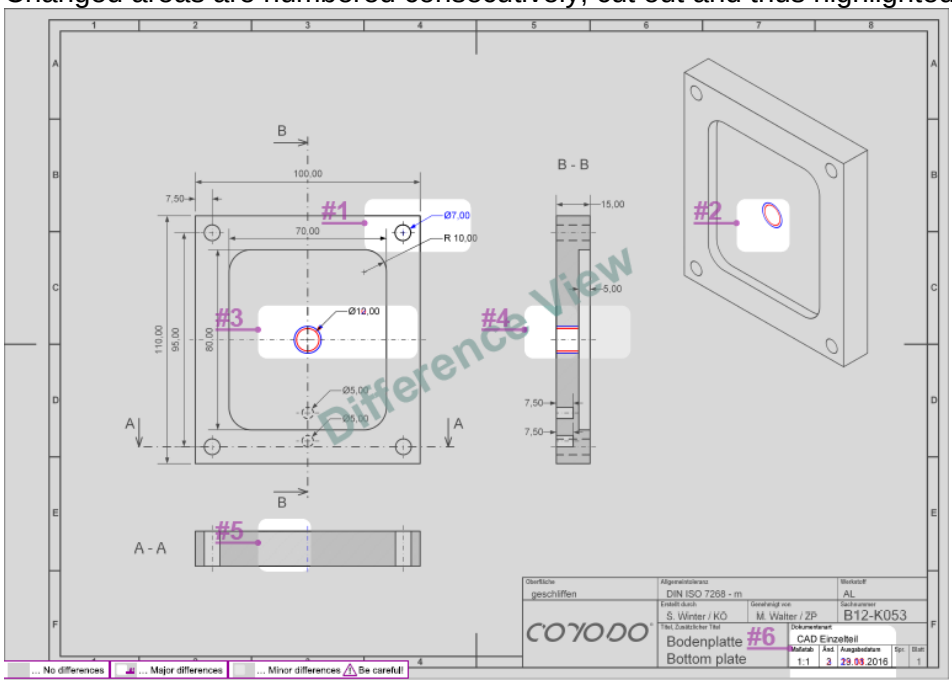
To clearly differentiate between changed and unchanged elements, the unchanged elements are displayed in black or gray.

Old information from the previous version (removed or changed) is displayed in red.

New information (added or changed) is displayed in blue.

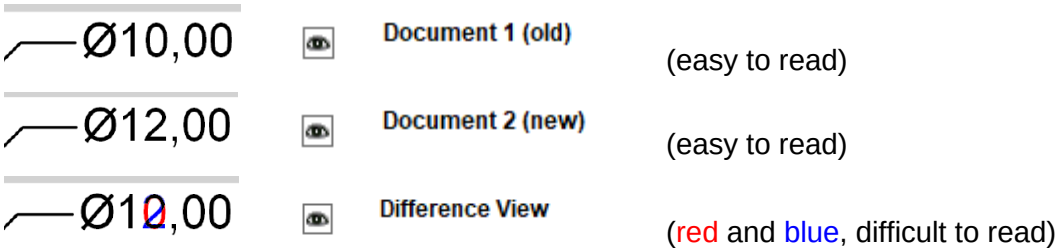
3.1.2 Highlighting with the COYODO difference mask

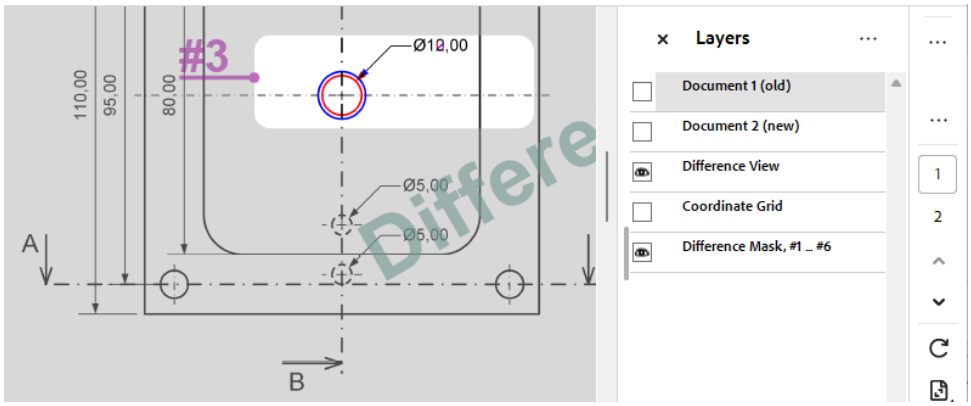
If their display is possible, an additional gray, partially transparent difference mask is displayed. Changed areas are numbered consecutively, cut out and thus highlighted.



3.2 PDF layers

The PDF layers can be used to display either the compared original documents or the Difference View. In the case of poorly readable overlaps (red and blue), you can switch between the documents - even when zoomed in. This often makes the original information easier to read.



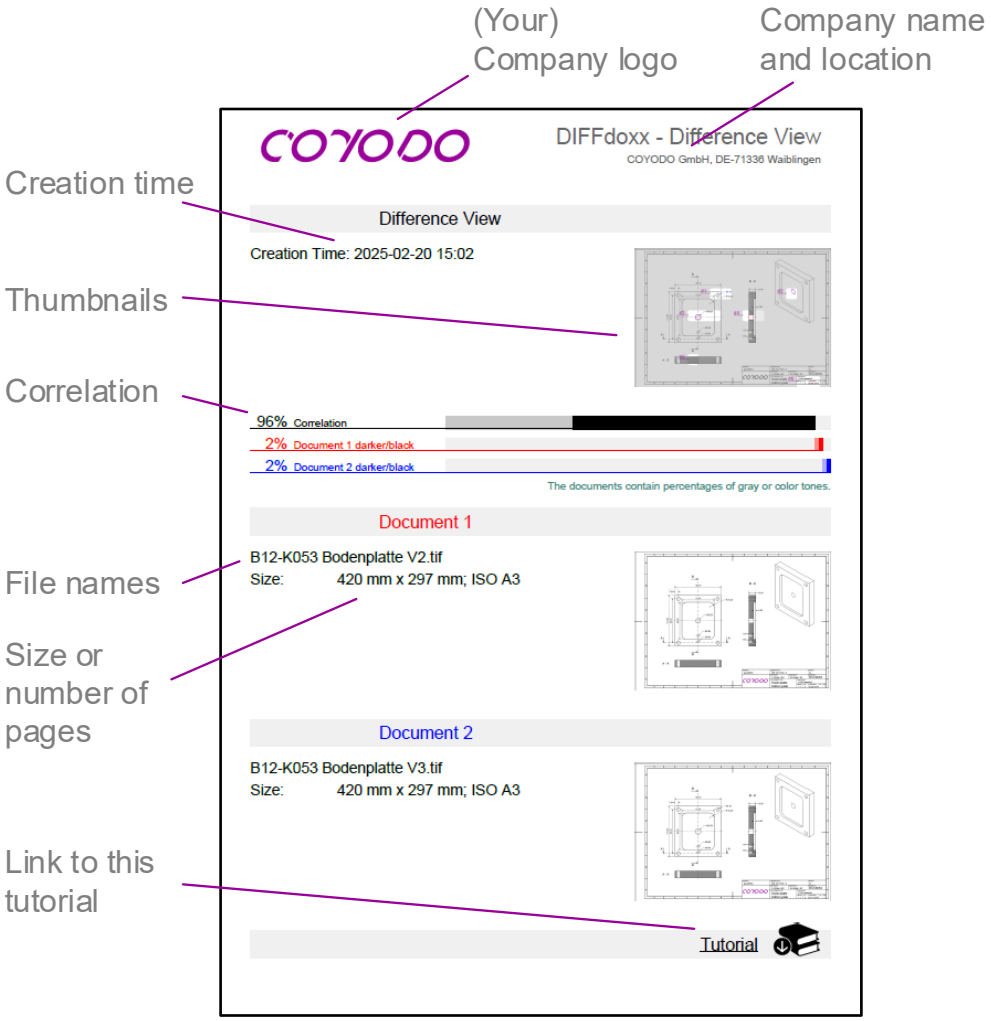


For effective zooming, see section 5.2 „Adobe Acrobat Reader – Recommended settings“

To switch between the documents, see section 5.3 „Adobe Acrobat Reader – Switching between documents“

3.3 Report page

The Report page is the last page of the Difference View. It contains additional information.



The degree of correlation shows the ratio of unmodified pixels (black or gray) to all pixels, including the modified red and blue pixels.

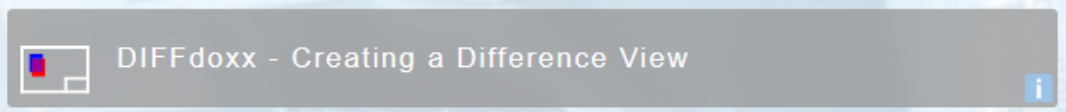
4 Further use cases and options

4.1 Multipage Difference View

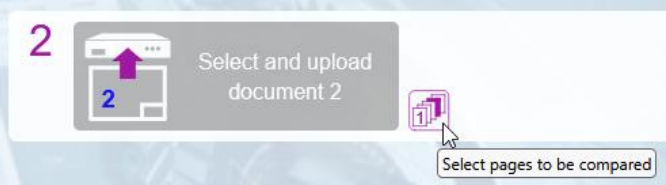
For multipage documents, either only individual pages can be selected or all pages can be compared with each other.

4.1.1 Comparing individual pages

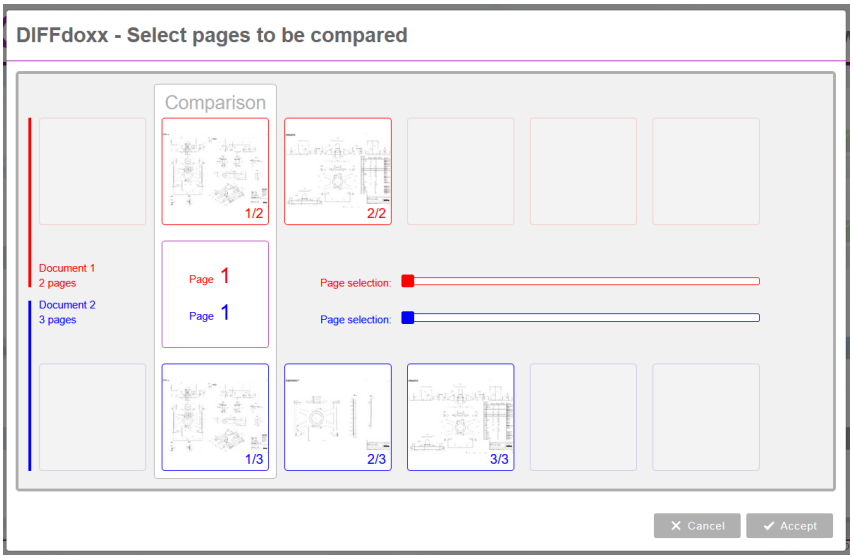
To compare specific individual pages, use the menu item “DIFFdoxx - Creating a Difference View”.



As soon as a document has several pages, an additional button is displayed after uploading the documents, which takes you to the page selection screen.

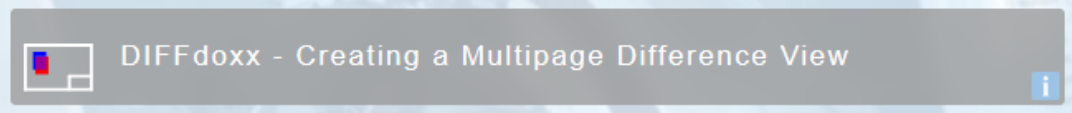


To select the matching individual pages, you can either click in the thumbnail view of the pages or use the slider.



4.1.2 Comparing all pages

To compare all pages, use the menu item “DIFFdoxx - Creating a Multipage Difference View”.



Generating the Difference View naturally takes longer. The corresponding warning must be confirmed.

The program attempts to find and compare matching pages.
See section 4.2 „Automatic page mapping“

4.2 Automatic page mapping

4.2.1 Page mapping table

When comparing all pages of multi-page documents, the program attempts to find and compare matching pages. If the pages to be compared have been changed automatically as a result, a page mapping table can be displayed (from page 2 of the PDF document).

Difference View - Page Mapping Table

PDF Page	Difference View	Correlation	Page old	Multiple Use		Page new	Multiple Use	Page No. Difference
1	1/3	94%	1		↔	1		0
2	Page Mapping Table							
3	2/3		-		↔	2		
4	3/3	84%	2		↔	3		1
5	Difference Report							

You can see which pages were compared with each other and the degree of correlation (“Correlation” column). The degree of correlation indicates the percentage of pixels in both documents that match exactly.

4.2.2 Navigating in the document

By clicking on a row, you can immediately jump to the corresponding comparison.

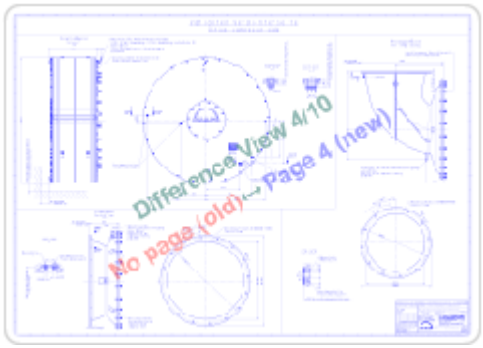
4	3/3	84%	2		↔	3		1

At the bottom left of the compared pages is a return button to the mapping table.

This allows you to quickly jump back and forth between documents with many pages.

4.2.3 Added and deleted pages

If pages have been added or removed in the course of a change, the corresponding opposite page is missing for the comparison. In this case, the pages are displayed in red (removed) or blue (added).



PDF Page	Difference View	Corre-lation	Page old	Multiple Use		Page new	Multiple Use	Page No. Difference
5	4/10		-		↔	4		

4.2.4 Duplicated pages

Pages are duplicated and modified to maintain an original state or create alternatives. The result is an ambiguous page assignment, which is represented in the Difference View by a multiple page mapping. In this case, a page of one document is compared with several pages of the other document.

PDF Page	Difference View	Corre-lation	Page old	Multiple Use		Page new	Multiple Use	Page No. Difference
101	89/123	81%	305		↔	310		5
102	90/123	82%	306		↔	311	1/2	5
103	91/123	88%	351		↔	311	2/2	-40
104	92/123	98%	307		↔	312		5
105	93/123	72%	308		↔	313		5

The column „Multiple Use“ (1/2 and 2/2) indicates that the page 311 of the new document was compared with two pages of the old document (pages 306 and 351).

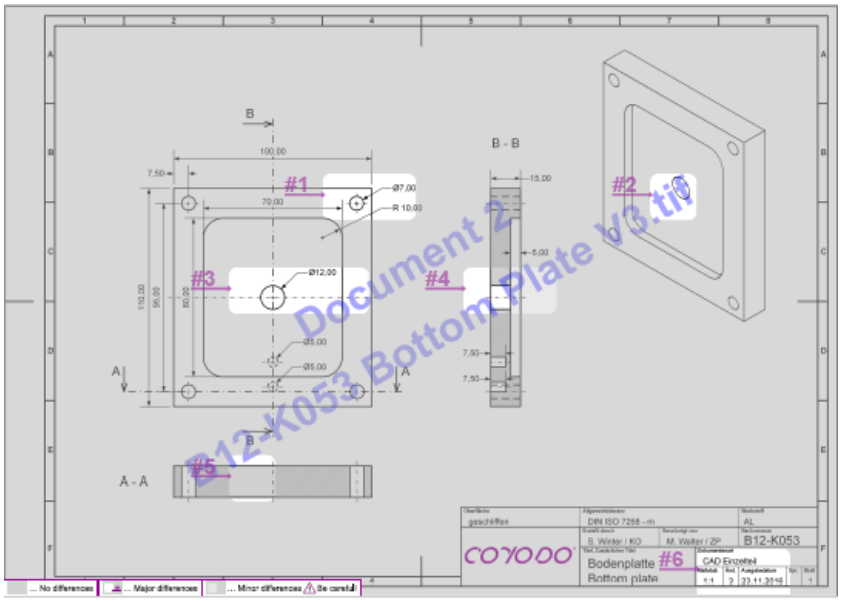
The column „Page No. Difference“ marks jumps in the page number. The continuous difference between the page numbers of both documents 5 (311 - 306) is recognizably interrupted here -40.

Attention:

Particularly in the case of parts list pages, multiple page mapping can also take place if the pages in question are recognized as “visually very similar”.

4.3 Customizing the watermark stamp

The diagonally applied watermark stamp can be adjusted in its color intensity (brighter).
The original name (here “B12-K053 Bottom Plate V3.tif”) can optionally be suppressed.



4.4 Difference View EPLAN

EPLAN PDF documents often contain several hundred pages. For these documents also see section 4.1.2 „Comparing all pages“.

With a fixed, company-specific EPLAN title block, it is possible to deliberately ignore title block changes. For configuration, see section 4.6 „Ignoring title block information“

This makes it possible to remove otherwise unmodified pages with a 100% correlation from the Difference View. This often significantly reduces the number of pages in the Difference View. For configuration, see section 4.7 „Suppressing pages with a 100% correlation“

The following example of an EPLAN page mapping table shows the page comparisons actually contained - here only page 94 with the comparison of pages 303 and 304.

PDF Page	Difference View	Corre-lation	Page old	Multiple Use		Page new	Multiple Use	Page No. Difference
		100%	296		↔	297		1
		100%	297		↔	298		1
		100%	298		↔	299		1
		100%	299		↔	300		1
		100%	300		↔	301		1
		100%	301		↔	302		1
		100%	302		↔	303		1
94	83/101	94%	303		↔	304		1
		100%	304		↔	305		1
		100%	305		↔	306		1
		100%	306		↔	307		1
		100%	307		↔	308		1

4.5 Difference View LABEL

For the comparison of labels, the following options are available:

1. Alignment top left

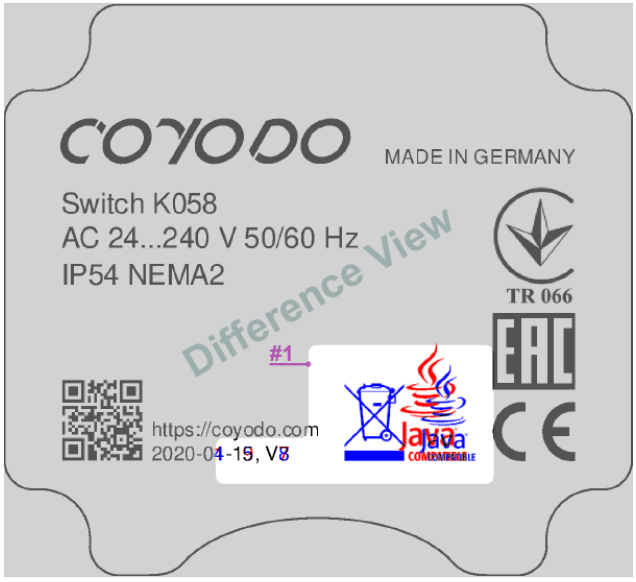
   Technical drawings are aligned at the bottom right in order to position the drawing title blocks on top of each other when changing format, e.g. from ISO A3 to ISO A2. For the version comparison of labels, it is possible to set the alignment of the documents to “top left”.

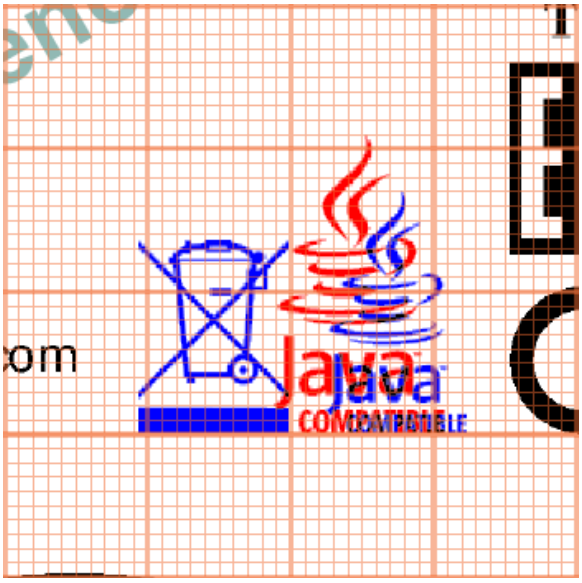
2. Trimming the templates

   Label editors allow the label to be output as a PDF document in A4 format. To compare only the labels themselves, it is possible to remove all margins before comparison.

3. Providing a millimeter grid

   The millimeter grid enables the size of the shifts to be measured and corrected if necessary.





4.6 Ignoring title block information

Optionally, certain title block information can be hidden with an additional, partially transparent mask. The content of the fields is visible, but no numbered area of the difference mask is displayed. However, other fields to be defined are not hidden and their changes are highlighted.

Advantages and possibilities:

1. The user's focus is not distracted by fields that are constantly changing, e.g. the release date or version.
2. If nothing else has changed on the page in question, this page is rated with a correlation of 100%. If the degree of correlation is transferred to the document management system, the document does not need to be displayed if all pages match 100%.
3. Pages with a 100% correlation can be suppressed.
   For the advantage see section 4.7 „Suppressing pages with a 100% correlation“

4.7 Suppressing pages with a 100% correlation

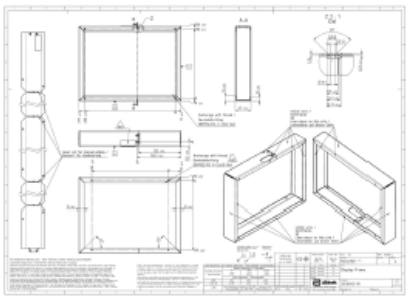
Pages with a 100% correlation can be suppressed when generating the Difference View. The Difference View only contains the page comparisons with an actual change.

Especially for EPLAN documents with a large number of pages, this can lead to a considerable reduction in the number of pages.

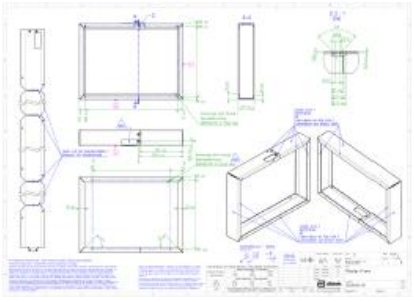
4.8 Converting to black and white

Drawings are often displayed in color in the CAD system. The output can also be in color or in black and white. As the COYODO Difference View usually also reacts to color differences, there is an option to convert the documents to black and white before comparison.

Version 1
(black and white)

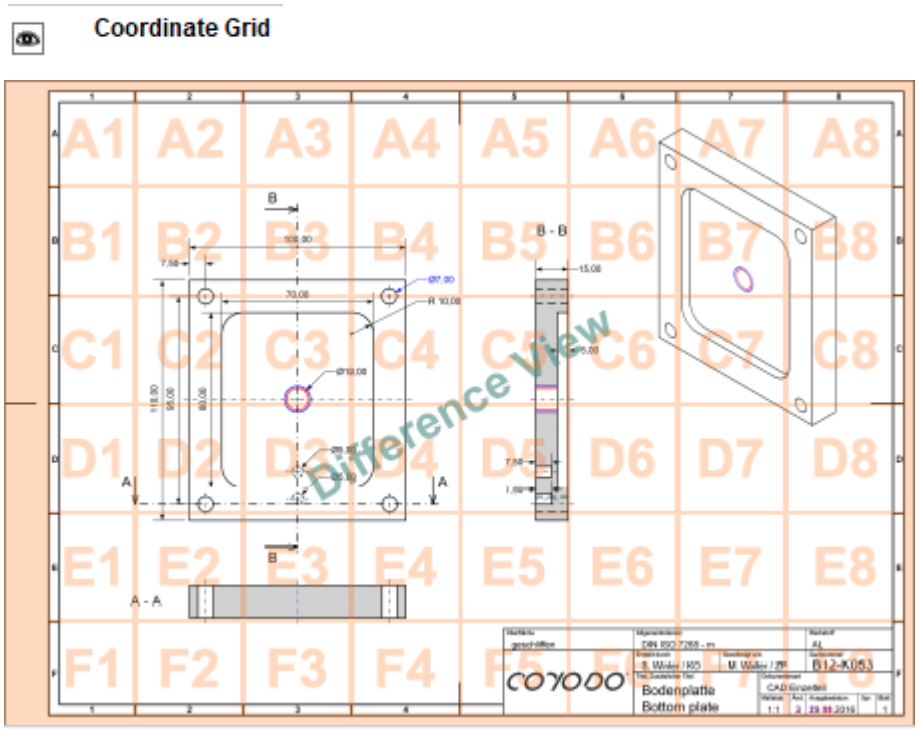


Version 2
(colorful)



4.9 Displaying a coordinate grid

When using standardized drawing frames and title blocks, a coordinate grid can be displayed. This makes it easier to describe and identify the changes with reference to the coordinates.

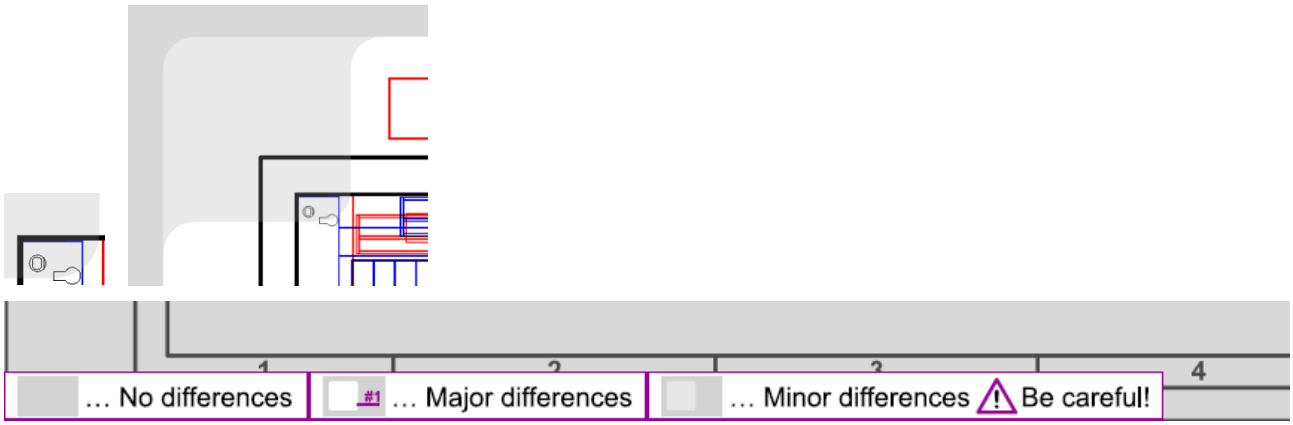


The coordinate grids must be defined company-specifically for all drawing formats (A4 to A0).

4.10 Marking minimal differences

Minimal pixel changes can often be suppressed without any disadvantages, as practice shows. On the other hand, if a very small “5” has been changed to “6”, this is a change that should be recognized.

Such minimal changes can be made visible by an extended, light gray mask and an explanatory legend.



5 Tips & Tricks

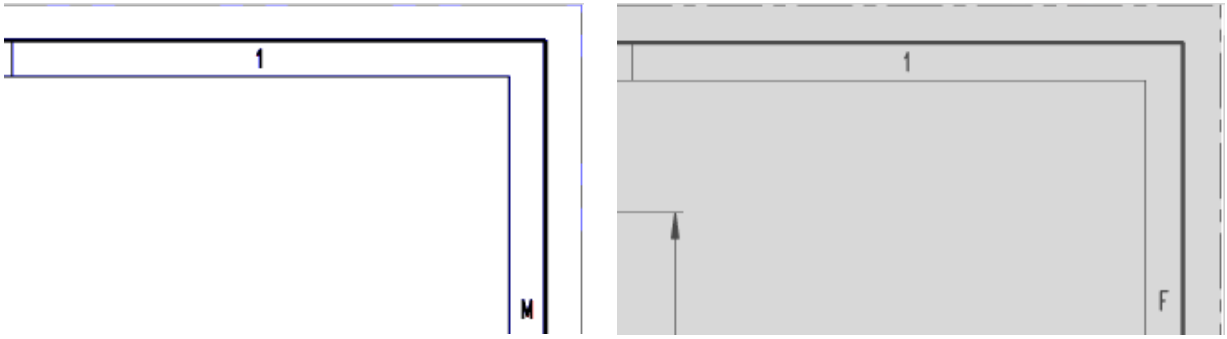
5.1 Creating optimal Difference Views – Best practices

In order to obtain an optimal Difference View with a gray Difference Mask, the documents to be compared should be created as identically as possible.

5.1.1 Identical procedure for deriving Tiff and PDF files

Tiff or PDF files should always be derived using the same tools and settings. This is usually not a problem with automatic generation in the PLM environment. If the files are derived manually from the CAD drawings, different tools and settings are often used. This leads to technical deviations and makes it difficult to recognize the actual differences in the drawing.

Changed line widths etc. are then not present in the CAD drawing, but are only generated differently during the derivation to Tiff or PDF. The Difference View then often has a blue or red cast. A Difference Mask cannot be created.



The tool chain for deriving 2D files should be standardized within the company. The derivation in the background (from the PLM system) should use the same converters as the interactive derivation from the CAD system.

5.1.2 Identical line weights and fonts in the CAD system

Changes to line widths and fonts in the CAD system result in deviations that distract from the drawing content that has actually been changed.

The corresponding CAD system settings should be specified uniformly within the company and should not be changed.

5.1.3 Identical title block in the CAD system

The same applies to the layout, size and positioning of the title block and the drawing frame.

5.1.4 Design of the drawing

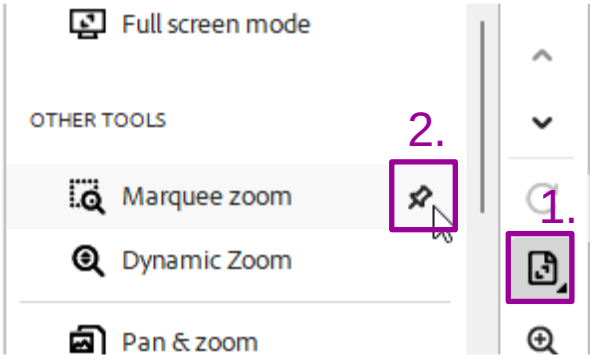
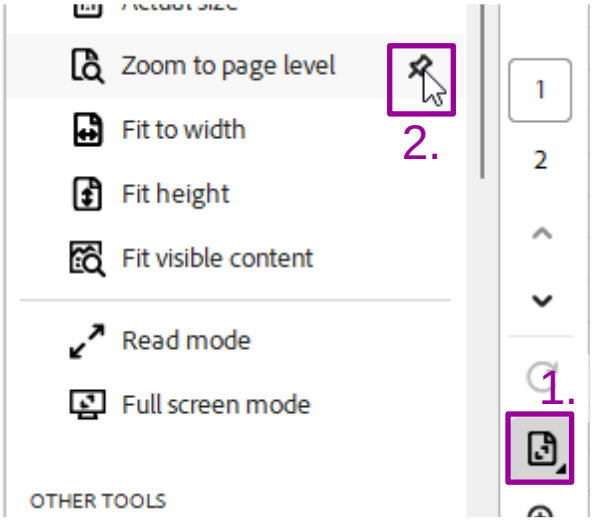
An “airy” design of the drawing reduces the need to move views for minor changes. In case of doubt, the next larger drawing format should be selected.

5.1.5 Locked views in the CAD system

To prevent views from being moved inadvertently in the CAD drawing, they should normally be locked and only unlocked when they are moved deliberately. The CAD system must enable this locking.

5.2 Adobe Acrobat Reader – Recommended settings

5.2.1 Adobe Acrobat Reader (since 2024)

Icon	Function	Show tools permanently (pin)
	Show subarea enlarged (Marquee zoom)	
	Show whole page (Zoom to page level)	

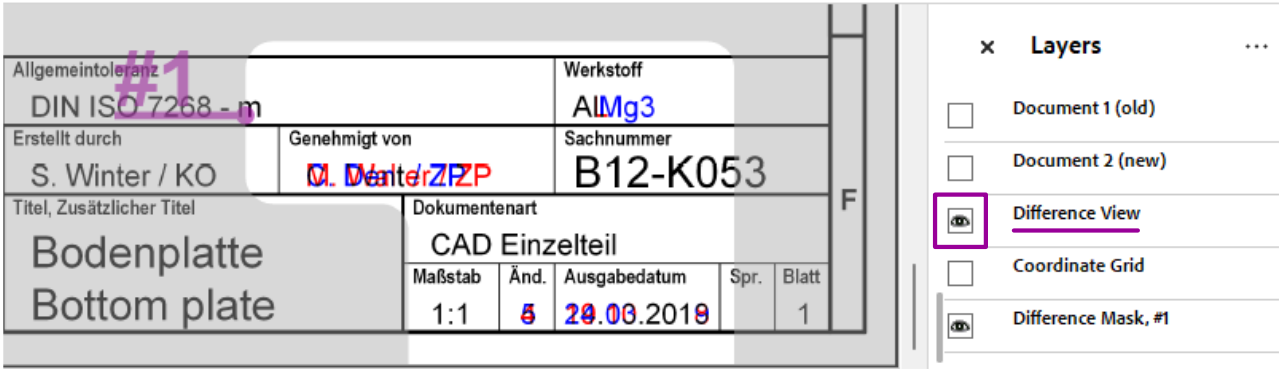
5.2.2 Adobe Acrobat Reader (until 2024)

Icon	Function	Show tools permanently via
		View / Show/Hide / Toolbar Items / Show Select & Zoom Tools / …
	Show subarea enlarged	… / Marquee Zoom
	Show whole page	… / Zoom to Page Level

5.3 Adobe Acrobat Reader – Switching between documents

After opening, the “Difference View” layer is displayed (👁).

In the new interface, the layers can be seen on the right – in the old interface on the left.



The PDF layers are on top of each other. To display “Document 2 (new)”, its layer must be visible (👁) and the “Difference View” layer above it must be hidden (☐):

To display “Document 1 (old)”, both levels above it (“Document 2 (new)” and “Difference View”) must be hidden (☐):