



# Tekla Structures

## Tekla Structures 21.0 Administrator's Release Notes

Product version 21.0  
March 2015

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# 1 Tekla Structures Administrator's Release Notes

## Upgrade guide from Tekla Structures 20.1 to Tekla Structures 21.0

Administrator's Release Notes was formerly called Administrator's Guide. This guide is intended to provide advanced users with instructions on how to apply the additional customizations available in a new Tekla Structures version.

### 1.1 Administrator's Guide: General settings

General customization settings apply to all user groups. Use these settings together with your own user group settings.

[Administrator's Release Notes: Model templates in version update on page 3](#)

[Administrator's Release Notes: Interoperability on page 5](#)

[Administrator's Release Notes: Drawings on page 5](#)

[Administrator's Release Notes: Several folder search paths in some advanced options on page 34](#)

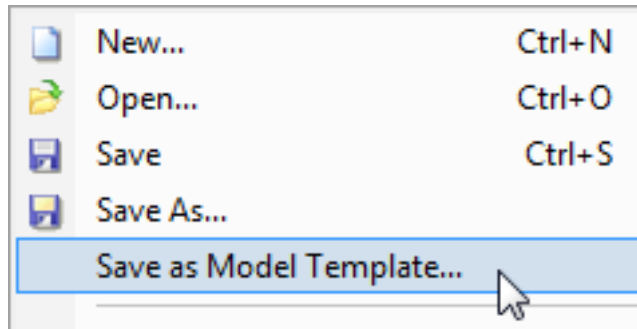
[Administrator's Release Notes: New and improved components on page 35](#)

#### Administrator's Release Notes: Model templates in version update

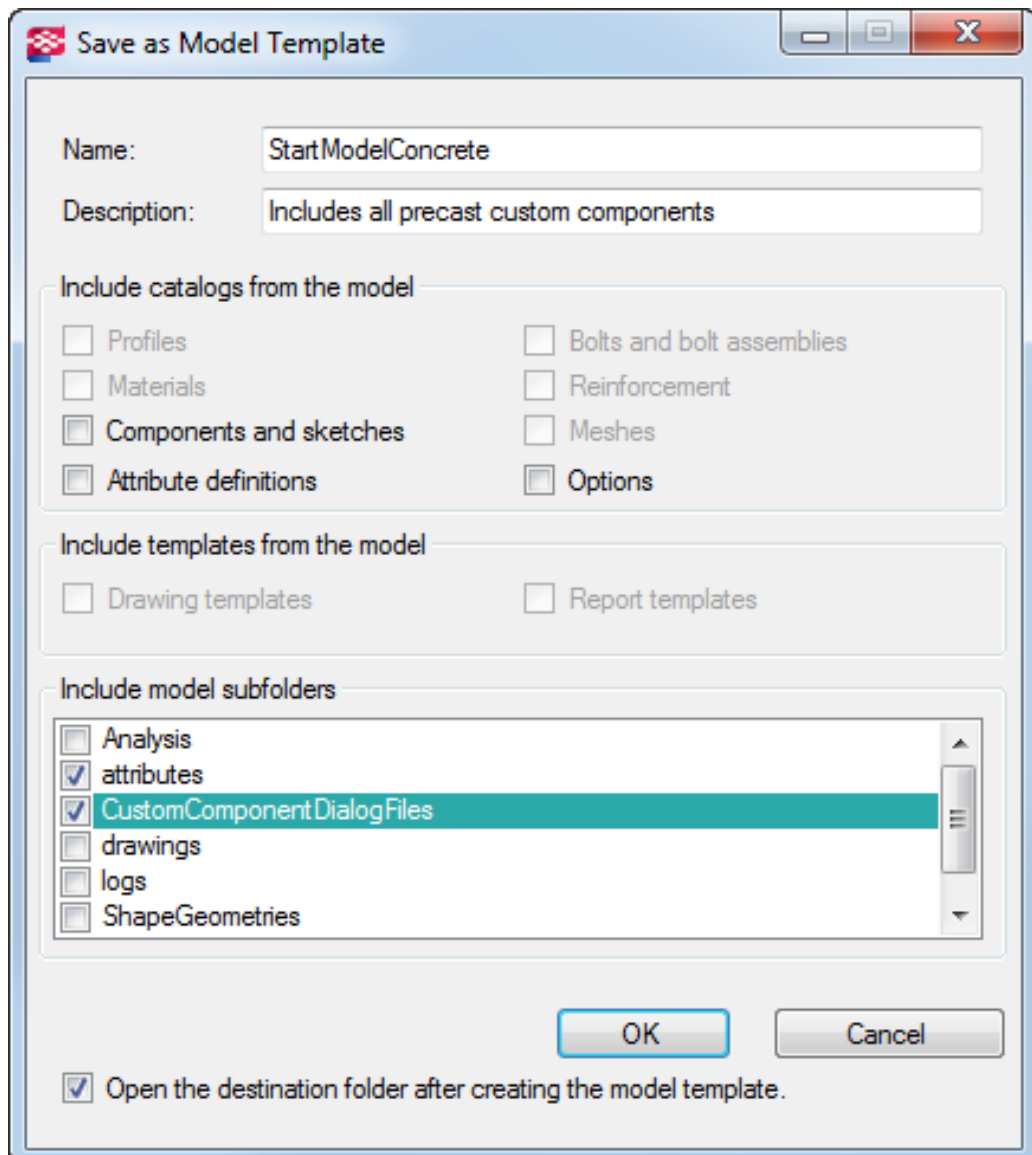
To save a model as a model template in version updates:

1. Open Tekla Structures 21.0.
2. Create a new model using an existing model template.
3. Give the model the same name as in the previous Tekla Structures version.
4. Open the 3D view.
5. Click **Tools --> Diagnose & Repair Model** .

6. Save the model as a model template.



7. Include the needed catalog files and subfolders from the model folder and click **OK**.



8. Remove manually all \*.db (environment database, options databases) files from the model folder.

The \*.bak, \*.log and xs\_user files are automatically removed from the model folder.

The model template is saved to the location defined for the XS\_MODEL\_TEMPLATE\_DIRECTORY advanced option.

## Administrator's Release Notes: Interoperability

Tekla Structures 21.0 offers a completely new approach for handling the reference model import:

- The new **Reference Models** list is located in the new side pane. The side pane replaces the **Reference Model Properties** dialog box.

All old \*.rop files are now obsolete.

- The **Insert reference model** command has been removed from the **File** menu.

## Administrator's Release Notes: Drawings

The following customization settings apply to drawings.

[Administrator's Release Notes: New drawing and view level property dialog boxes on page 5](#)

[Administrator's Release Notes: Changes in Print Drawings dialog box on page 23](#)

[Administrator's Release Notes: Drawing list information to drawing reports on page 24](#)

[Administrator's Release Notes: Custom presentation on page 25](#)

[Administrator's Release Notes: New advanced option XS\\_USE\\_ASSEMBLY\\_EXTREMA\\_IN\\_MARK\\_PLACING for better part mark placing on page 25](#)

[Administrator's Release Notes: New general arrangement drawing dialog boxes on page 29](#)

[Administrator's Release Notes: Maximum distance to mark placing on page 31](#)

### ***Administrator's Release Notes: New drawing and view level property dialog boxes***

The drawing and view properties dialog boxes for assembly, single-part and cast unit drawings have been renewed, as well as the view properties dialog box for general arrangement drawings:

- Former option buttons are now options in an options tree on the left in the properties dialog box.

- Properties are loaded automatically when a properties file is selected from the list at the top of the dialog box.
- **Recreate the drawing** setting in the **View creation** panel forces recreation of the drawing if new or modified view-level settings are saved with the same name.

#### **Automatic conversion of old drawing-level properties**

When you load an old drawing-level properties file, it will be converted to the new format. All settings that are no longer on the drawing level, will be extracted to the view level and saved in new files with the name `new_ <properties file name>` (for example, `new_standard`) in the `\attributes` folder under the model folder.

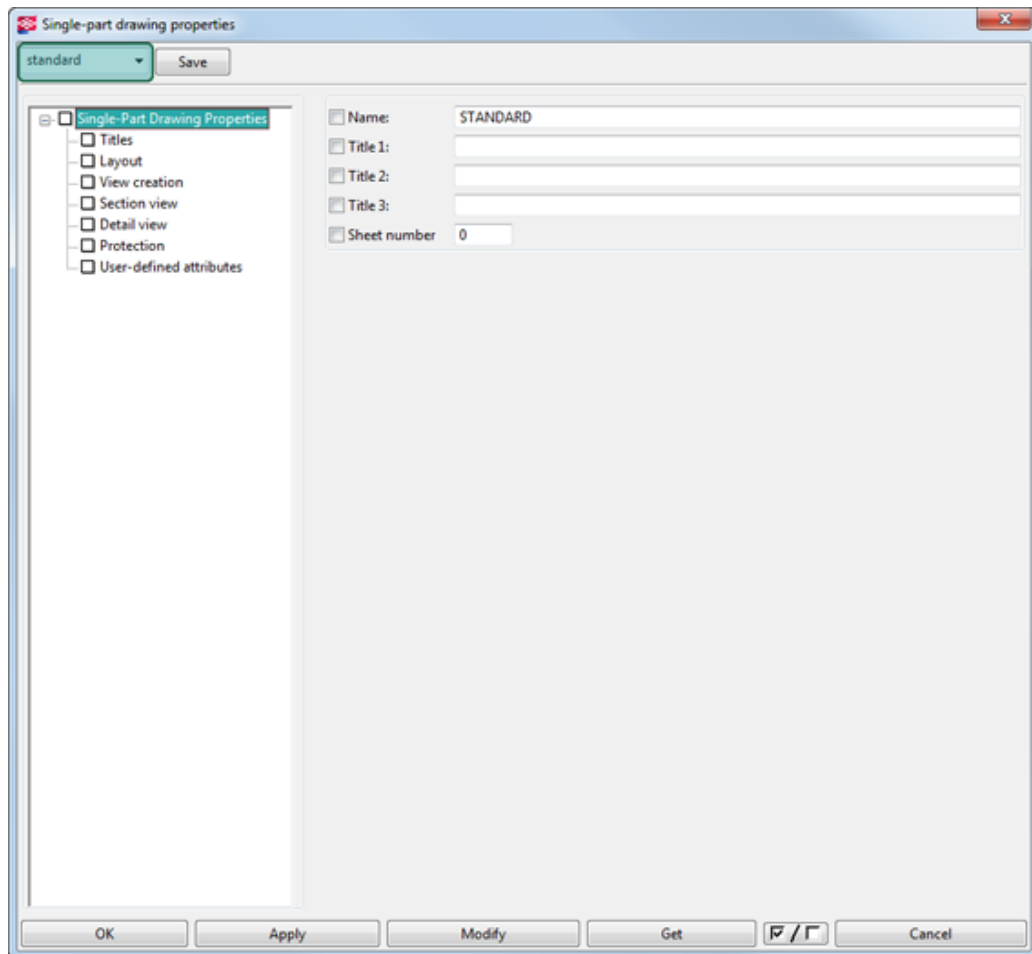
You can avoid automatic conversion with each new model. To do this, save all properties files that have the name `new_ <properties file name>` with a new name and place them to a suitable place for later use (project, firm or environment folder).

#### **Manual conversion**

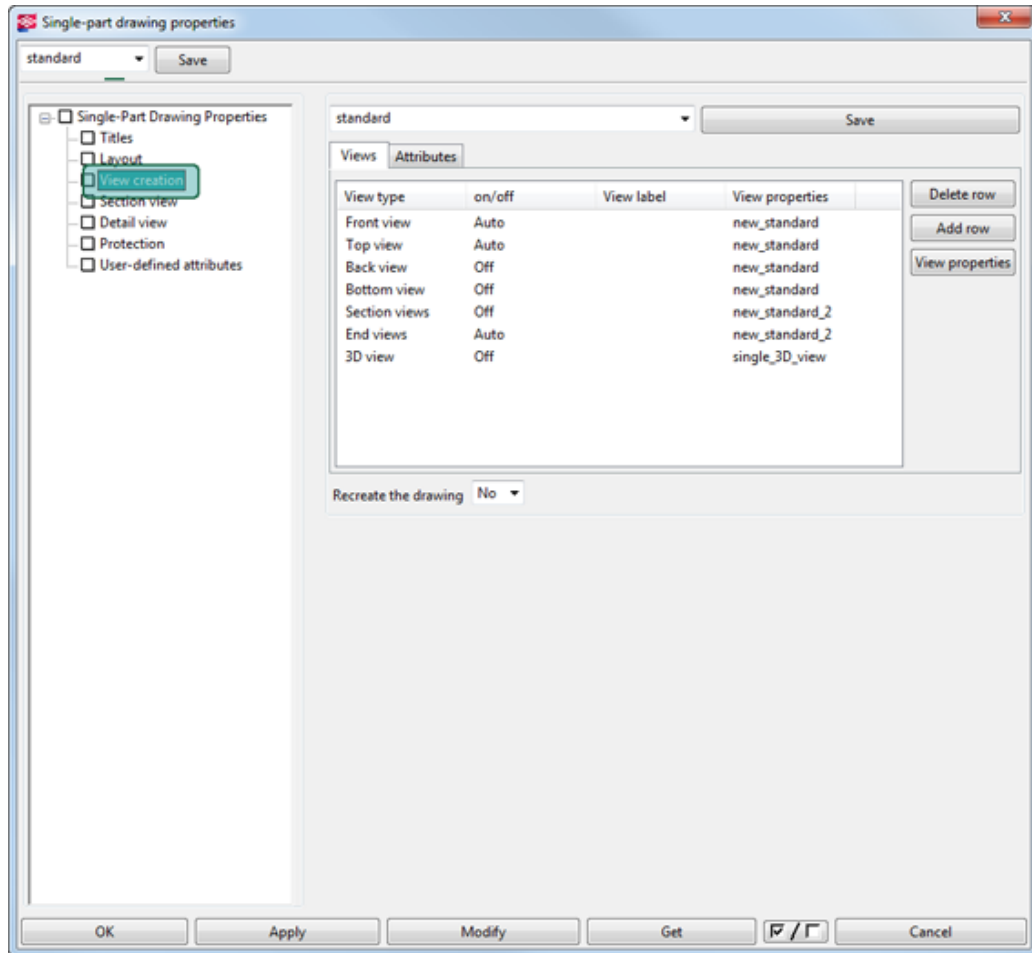
Take the following steps to successfully convert old properties files to the new format:

1. To convert the properties files, open the drawing properties dialog box and load the properties that you want to convert by selecting them from the list at the top of the properties dialog box.

You can do this from the model. To convert the dimension properties, you need to open the drawing, because dimension properties can only be accessed in the **Dimension Properties** dialog box.

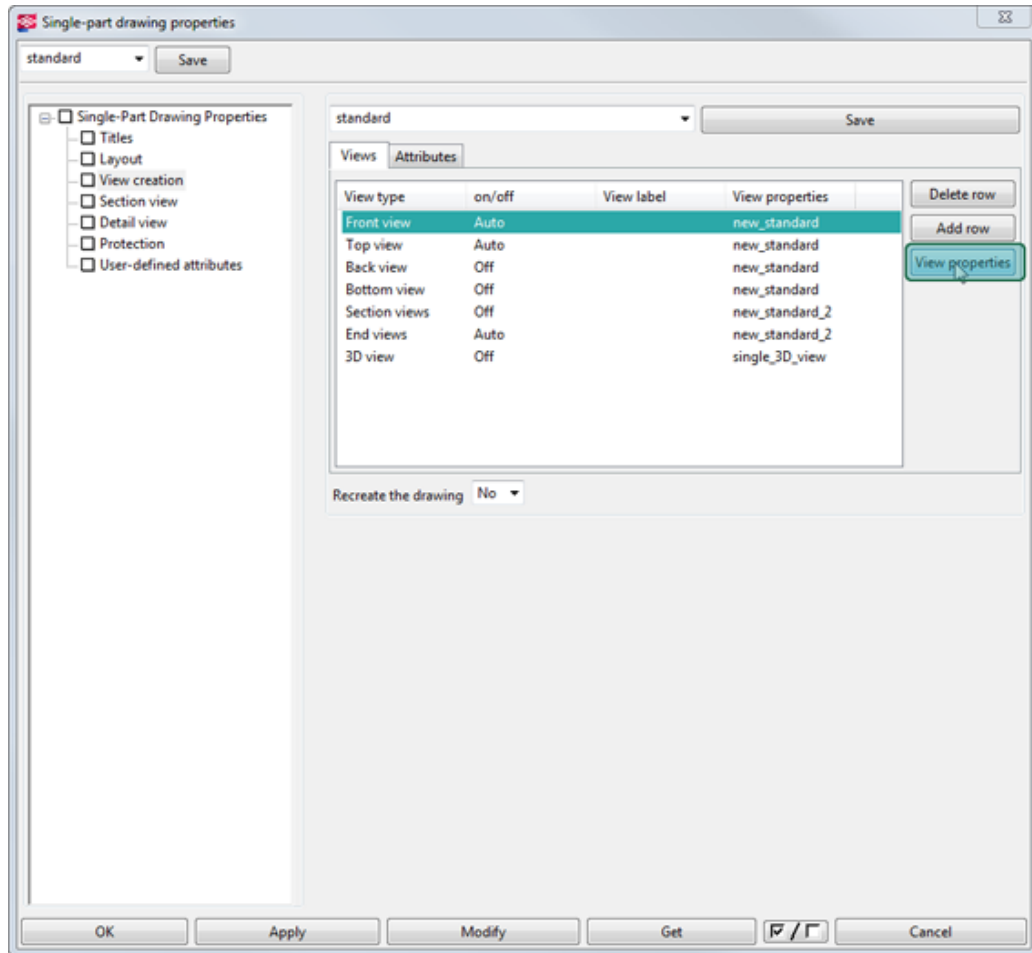


2. Open the **View creation** panel by selecting it from the options tree.

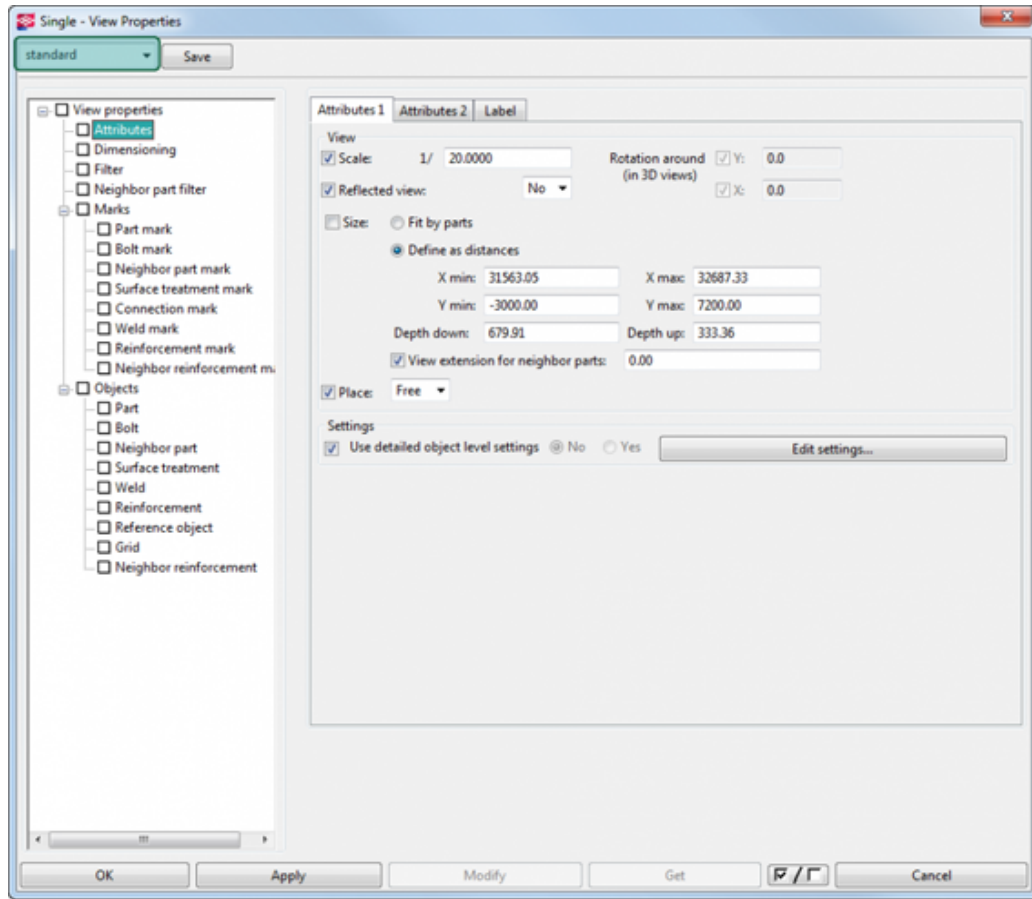


3. Select a view row and click **View properties**.





4. Load the view properties that have converted properties files (that start with `new_`) by selecting them from the list at the top of the properties dialog box.



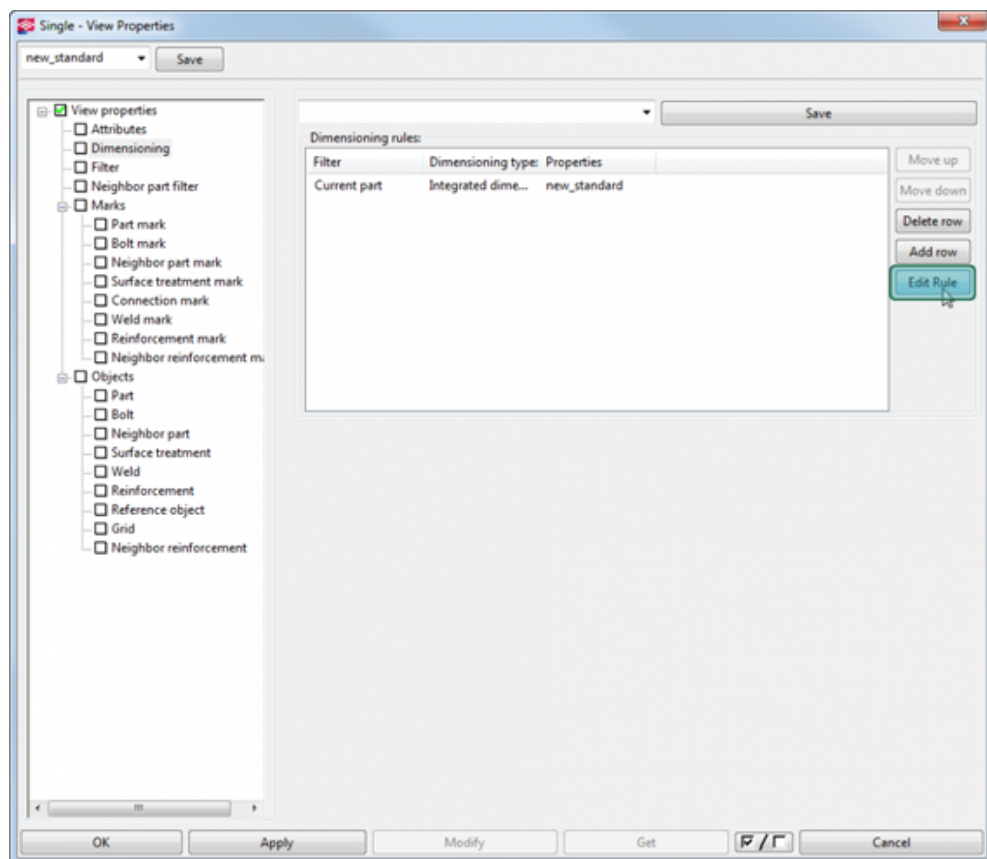
5. Open all panels (**Dimensioning, Marks, Part** etc.) from the options tree that have converted properties files that start with `new_` and load the properties.
  - a. Open model folder's `\attributes` subfolder.

Name	Date modified	Type	Size
new_standard.cudcd	2013-11-13 13:15	CUDCD File	12 KB
new_standard.dim	2013-11-13 13:15	DIM File	55 KB
new_standard.vi	2013-11-13 13:15	VI File	77 KB
new_standard_2.dim	2013-11-13 13:15	DIM File	55 KB
new_standard_2.vi	2013-11-13 13:15	VI File	77 KB
new_standard_3.dim	2013-11-13 13:15	DIM File	55 KB
standard.cud	2013-11-13 13:15	CUD File	120 KB

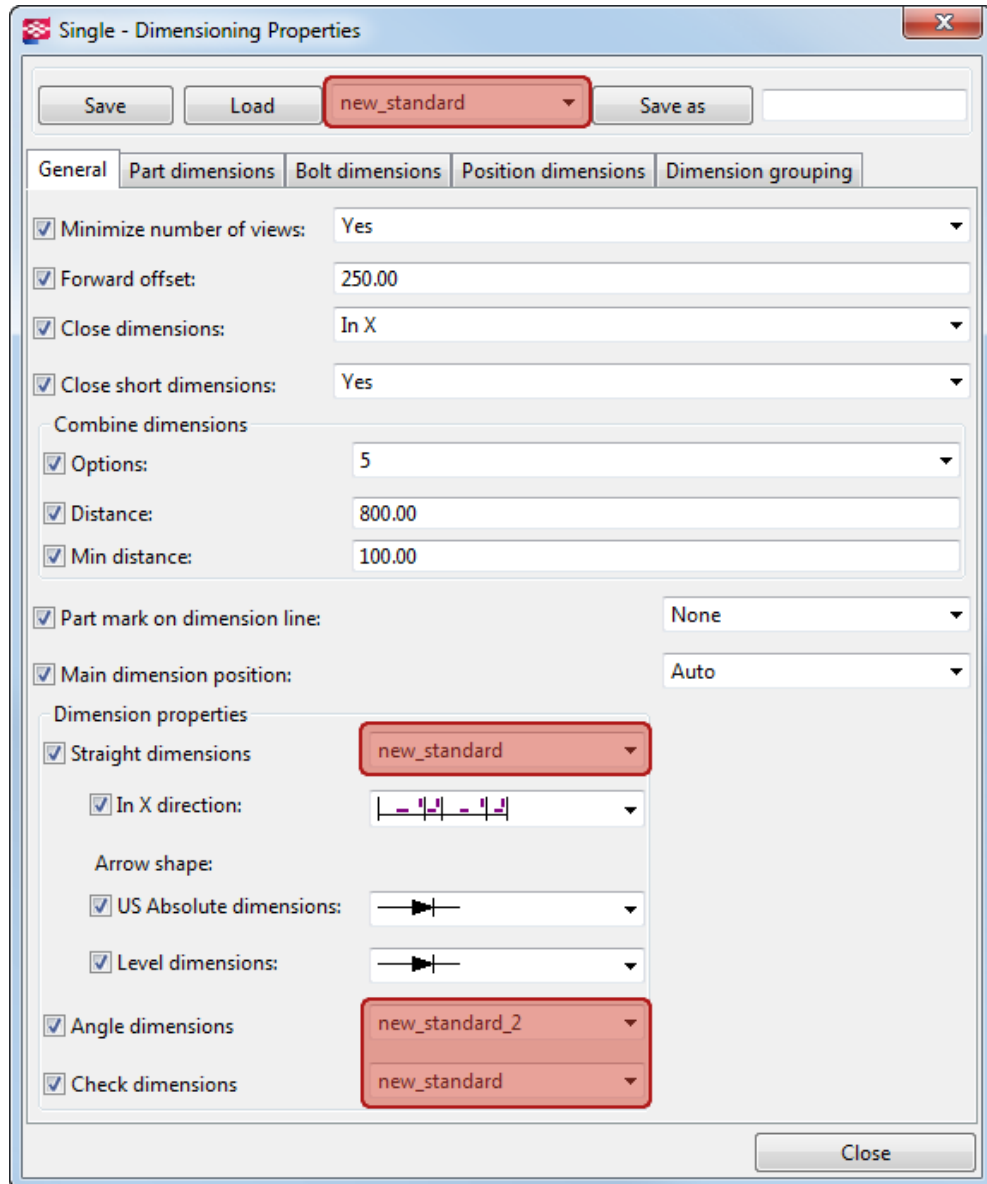
- b. Compare the file extensions of every `new_*.*` file with the extension list in Tekla User Assistance: Model folder files and file name extensions.

*.cudd	Cast unit drawing dimension properties	Dimension and dimensioning properties
*.cudd.more	Cast unit drawing user-defined dimension attributes	
*.cudda	Cast unit drawing dimensioning properties	
*.cudda.more	Cast unit drawing user-defined dimensioning properties	

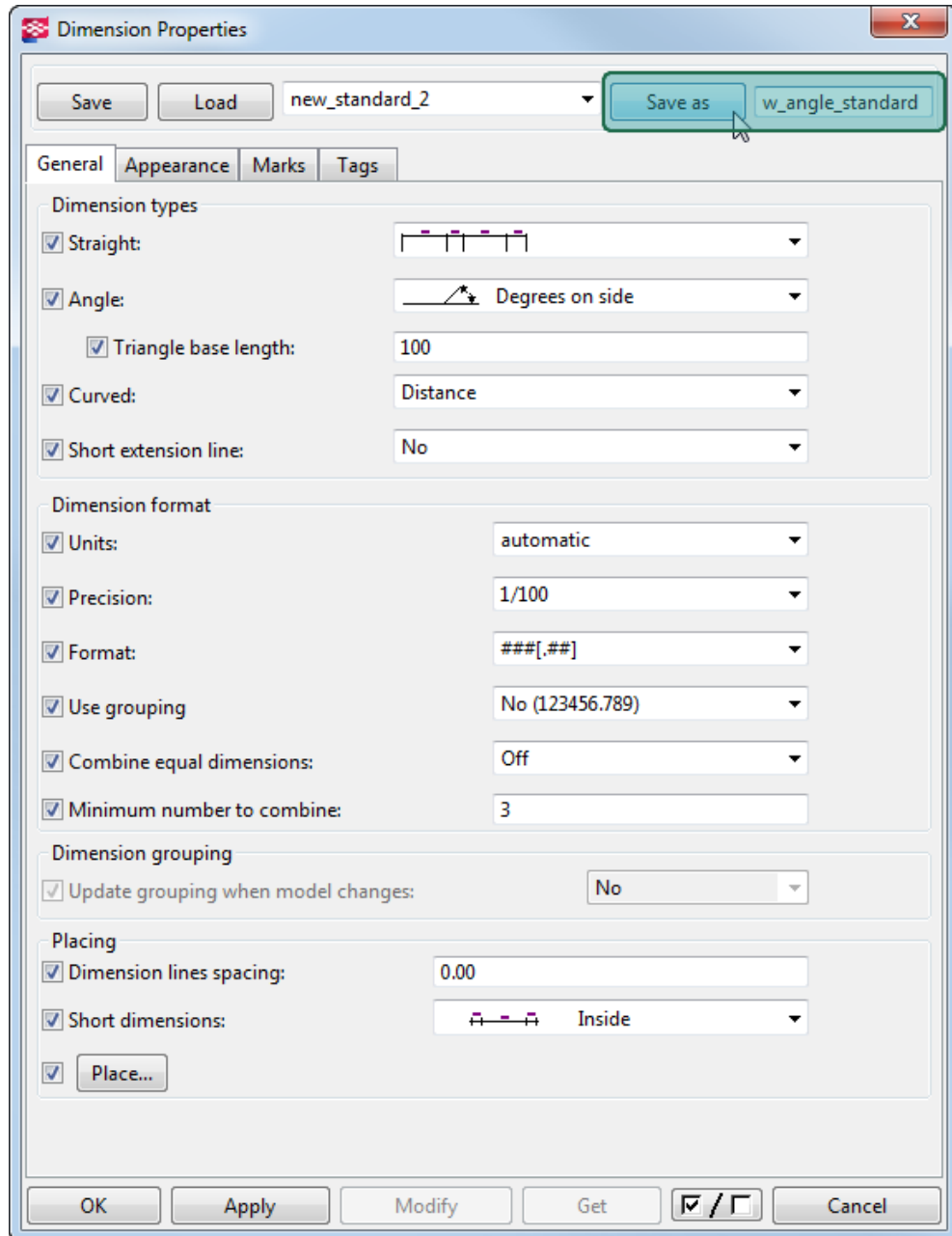
6. Save the properties files in the different option panels in the **View Properties** dialog box with a new name (at least without the prefix `new_`).
  - a. You can convert dimension and dimensioning properties by going to **Dimensioning** panel, selecting a dimensioning rule and clicking on **Edit Rule**.



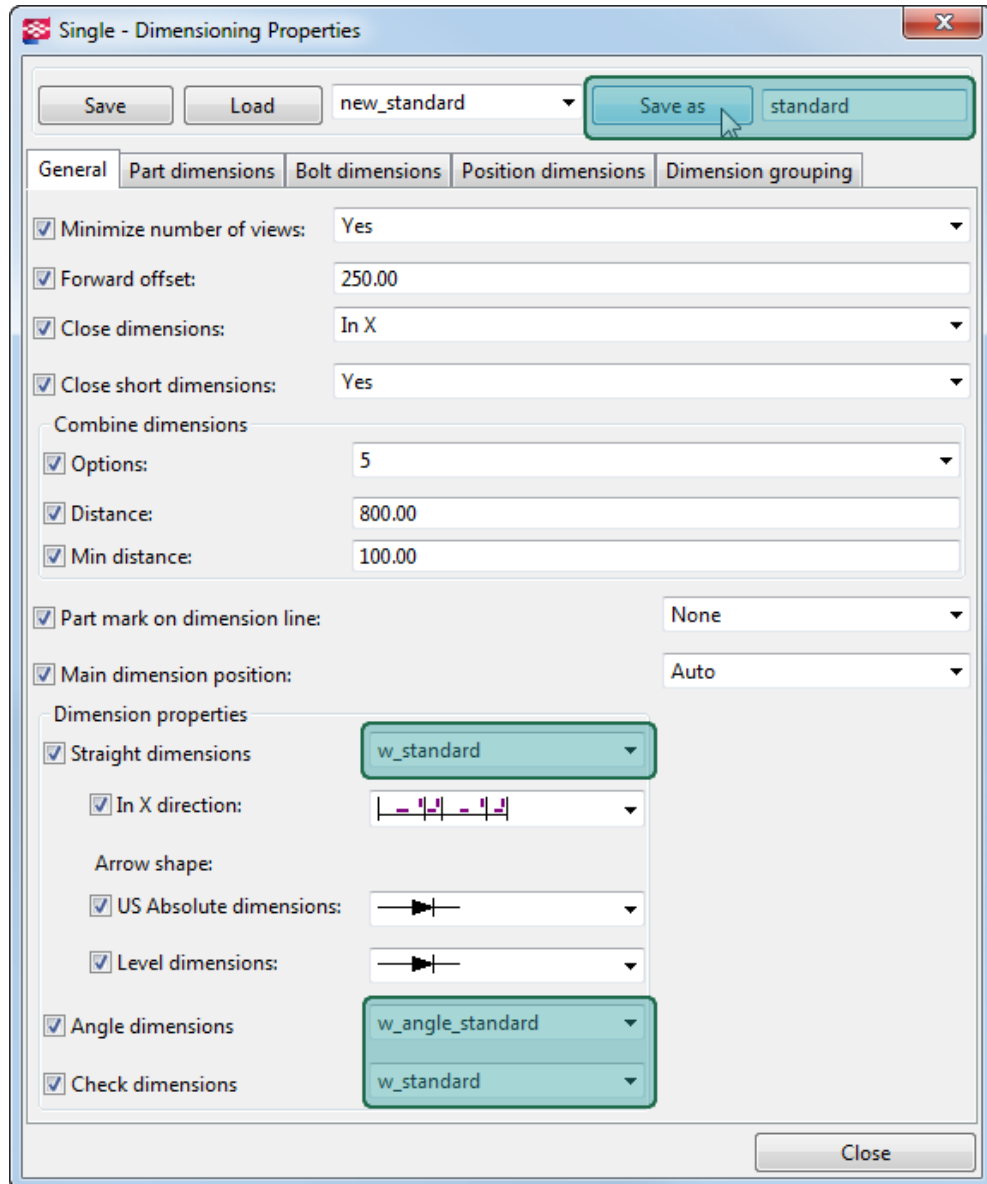
- b. You need to have saved the **Straight dimension**, **Angle dimension** and **Check dimension** properties in an open drawing by opening corresponding dimension-level properties files and saving them with a new name.



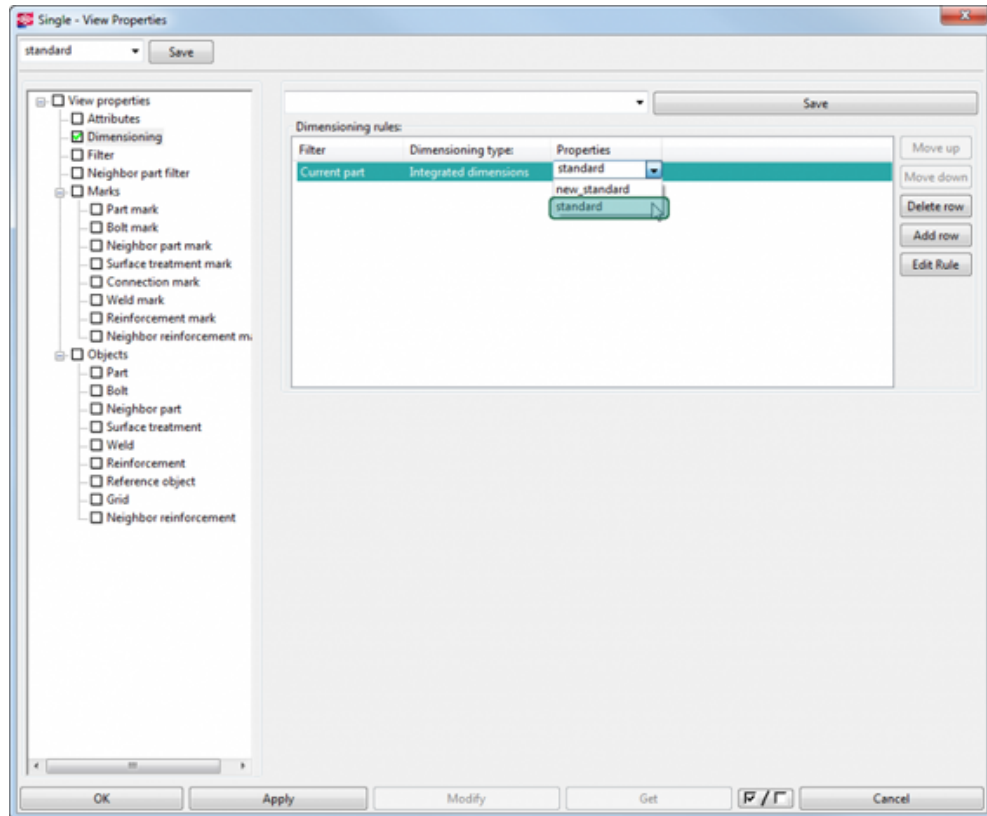
- c. You can open the **Dimension Properties** dialog box by selecting **Dimensioning --> Dimension properties** in an open drawing.



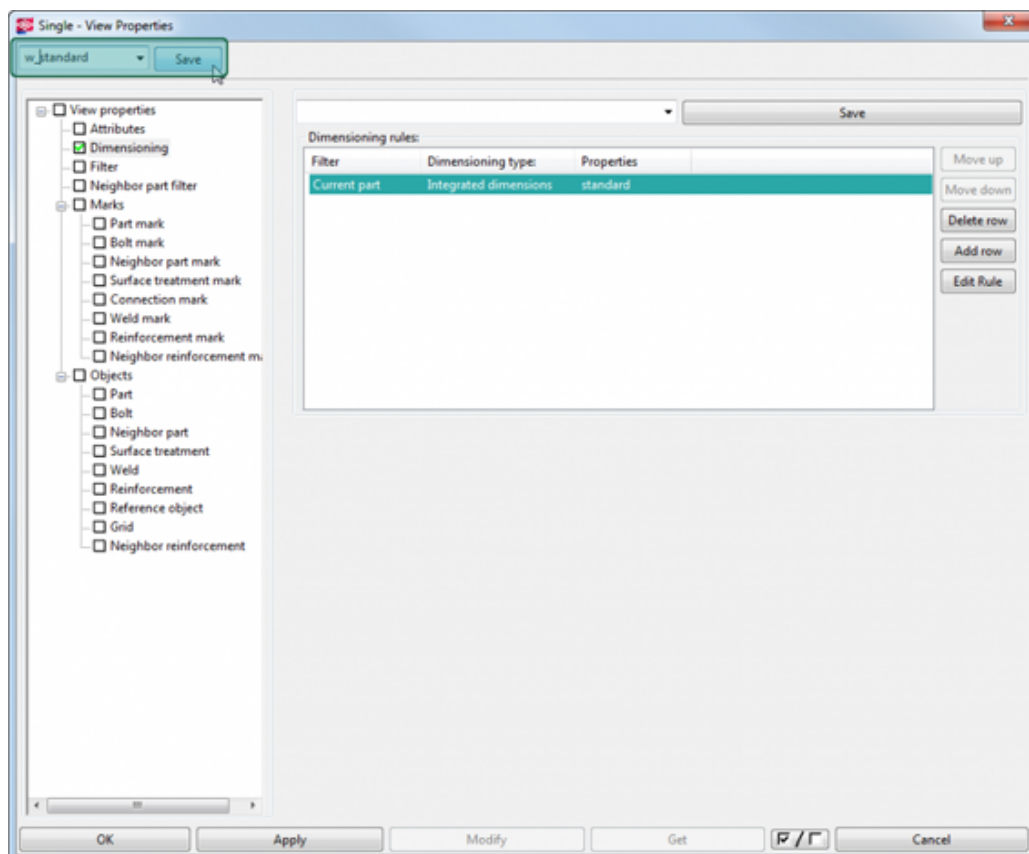
- d. After saving the dimension properties files with new names, they need to be selected in the **Dimensioning properties** dialog box that was displayed when you clicked **Edit Rule**. You will need to close and re-open the **Dimensioning Properties** dialog box to see the new **Dimension Properties** in the **Straight dimension**, **Angle dimension** and **Check dimension** lists.



- e. Select the saved properties file in **Dimensioning rules**.

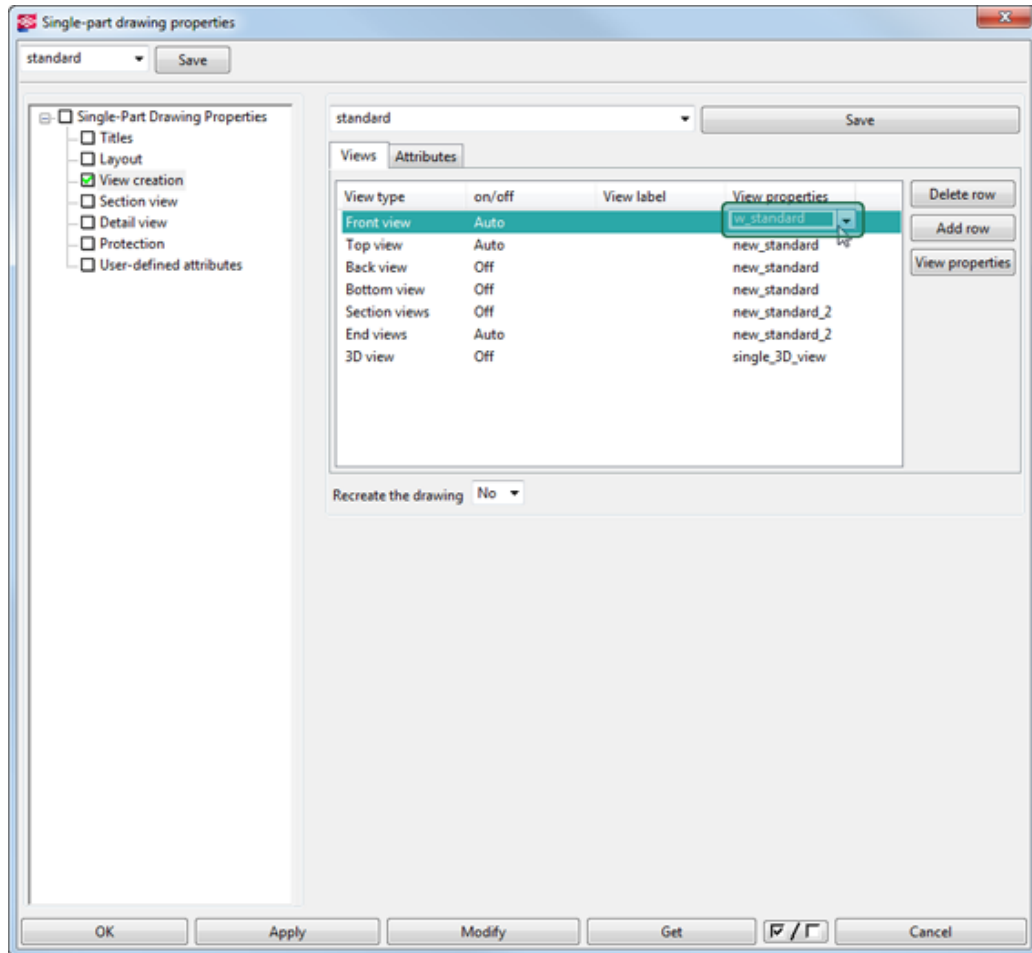


7. Save the view properties file with a new name. Use the drawing type identifier in the beginning of the file name, because all drawing types share the view properties files - use for example `cu_standard`, `a_standard`, `w_standard`, `cu_section_view` etc.



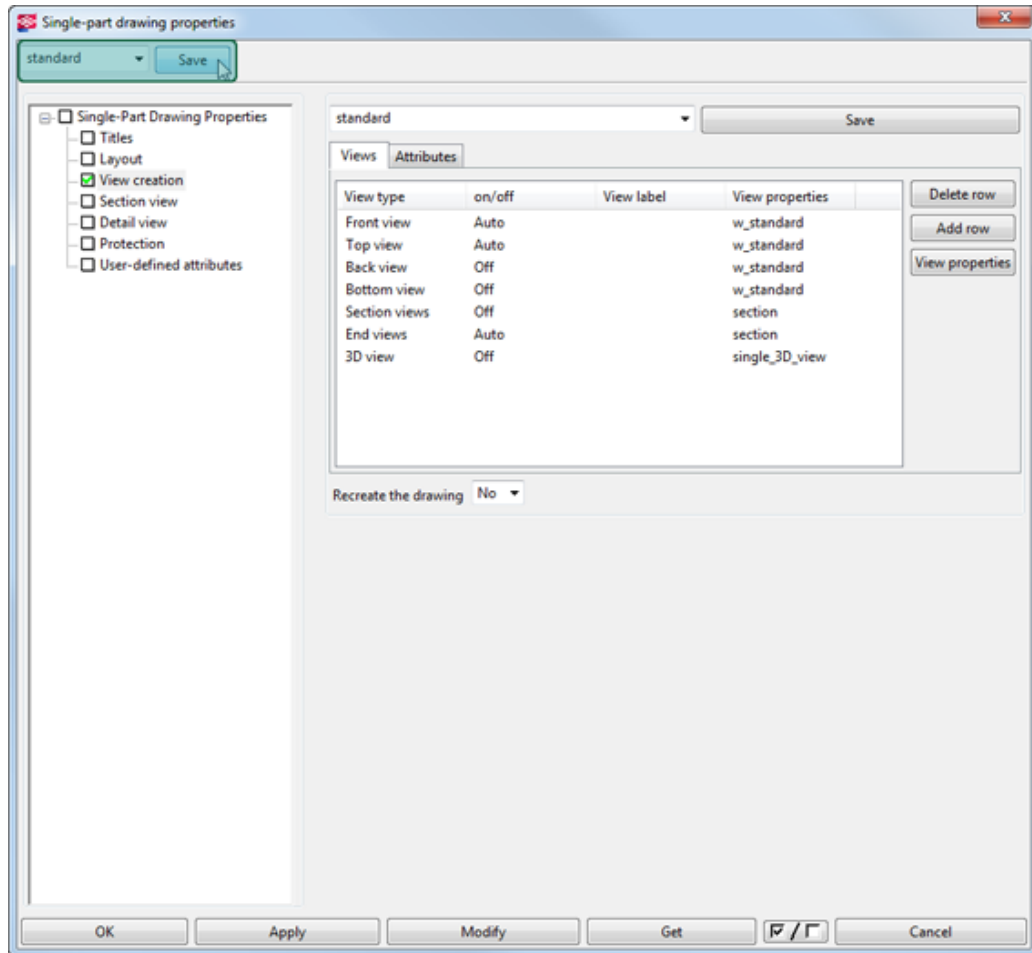
8. Close the **View Properties** dialog box by clicking **OK**.
9. Select the newly saved view properties file for the view instead of the old file in the **View properties** column.





















10. Repeat steps 3 - 9 for each view properties file.

11. Save the drawing properties with the **Save** button (with a new name, if needed).



12. At the end, there should be a corresponding file for each new\_<properties file name> file in the \attributes folder under the model folder.

Name	Date modified	Type	Size
 standard.cud	2013-11-13 13:15	CUD File	120 KB
 new_standard.cudcd	2013-11-13 13:15	CUDCD File	12 KB
 standard.cudcd	2013-11-13 13:24	CUDCD File	12 KB
 standard.cudv	2013-11-13 13:42	CUDV File	10 KB
 cu_angle_dimensions.dim	2013-11-13 13:41	DIM File	55 KB
 cu_check_dimensions.dim	2013-11-13 13:41	DIM File	55 KB
 cu_dimensions.dim	2013-11-13 13:40	DIM File	55 KB
 new_standard.dim	2013-11-13 13:15	DIM File	55 KB
 new_standard_2.dim	2013-11-13 13:15	DIM File	55 KB
 new_standard_3.dim	2013-11-13 13:15	DIM File	55 KB
 standard.cudcd.more	2013-11-13 13:24	MORE File	4 KB
 standard.cudv.more	2013-11-13 13:42	MORE File	4 KB
 cu_section.vi	2013-11-13 13:15	VI File	77 KB
 cu_standard.vi	2013-11-13 13:34	VI File	76 KB
 new_standard.vi	2013-11-13 13:15	VI File	77 KB
 new_standard_2 - Copy.vi	2013-11-13 13:15	VI File	77 KB

Finally, place all these new files to the correct place under the environment, role, firm or project folder for later use.

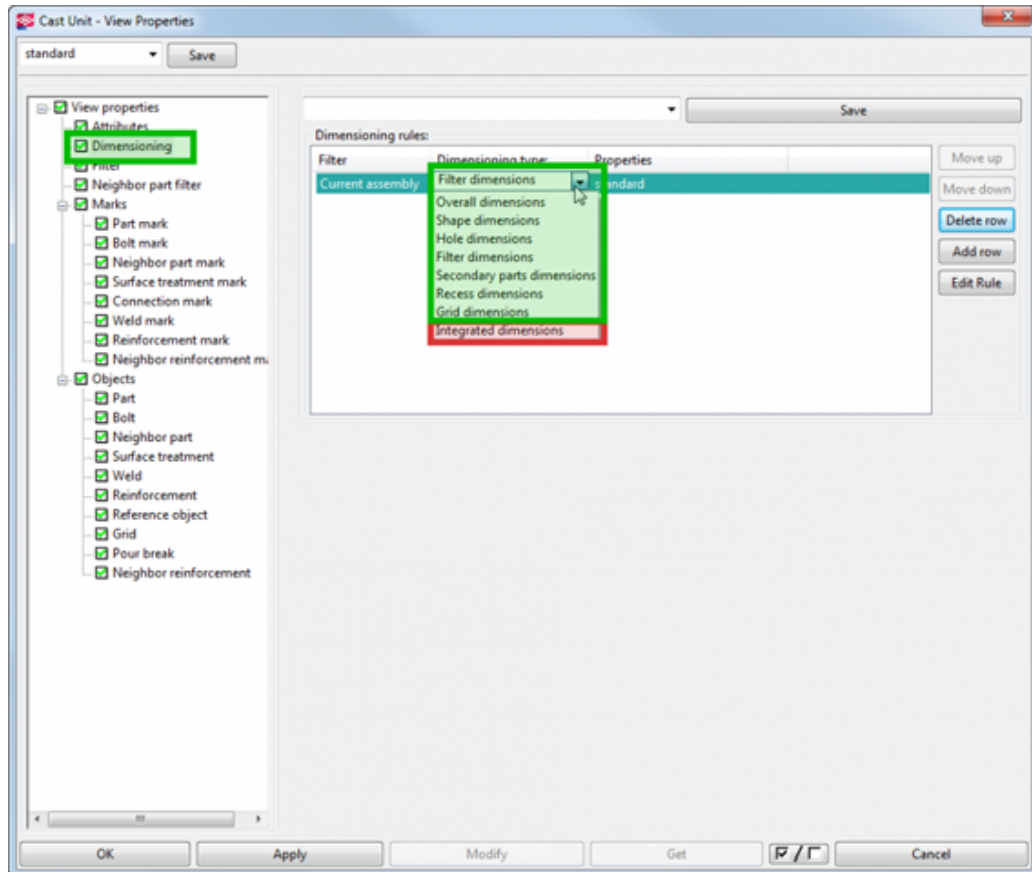
### Setting up dimensioning types and rules

There are several dimensioning rules (also known as plug-ins) that are originally developed to be used with cast unit drawings. They make it easier to set up dimensioning. Nothing prevents you from using them in other drawing types as well.

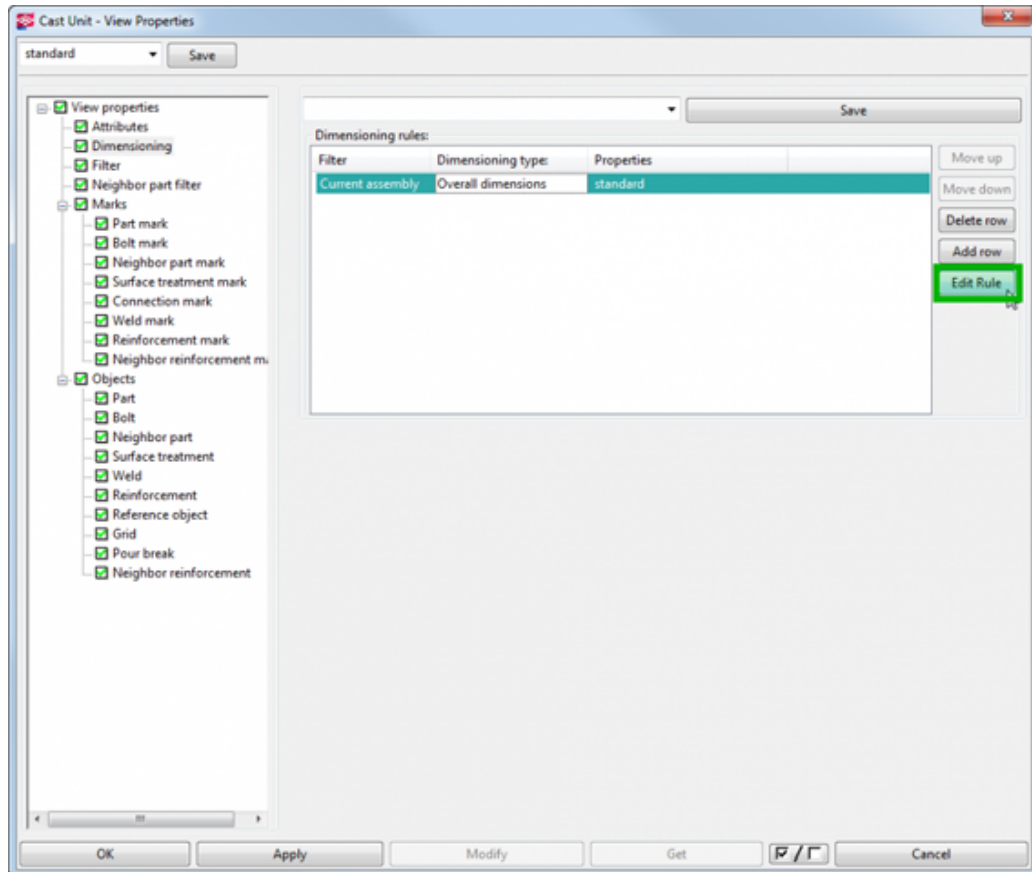
You can add several rules for same view. The rules will be created in the order they appear in the **Dimensioning rules** list, and the order can be changed as well. **Integrated dimensions** (old dimensioning) can be used with the plug-ins, if needed.

To take these rules in to use, you need to do the following:

1. First you need to add a dimension rule. Open **View properties** and go to the **Dimensioning** panel and add a row. Then select a dimensioning type from the **Dimensioning type** list, as shown below. Integrated dimensions is the old dimensioning that does not use dimensioning rule properties, so do not select that.

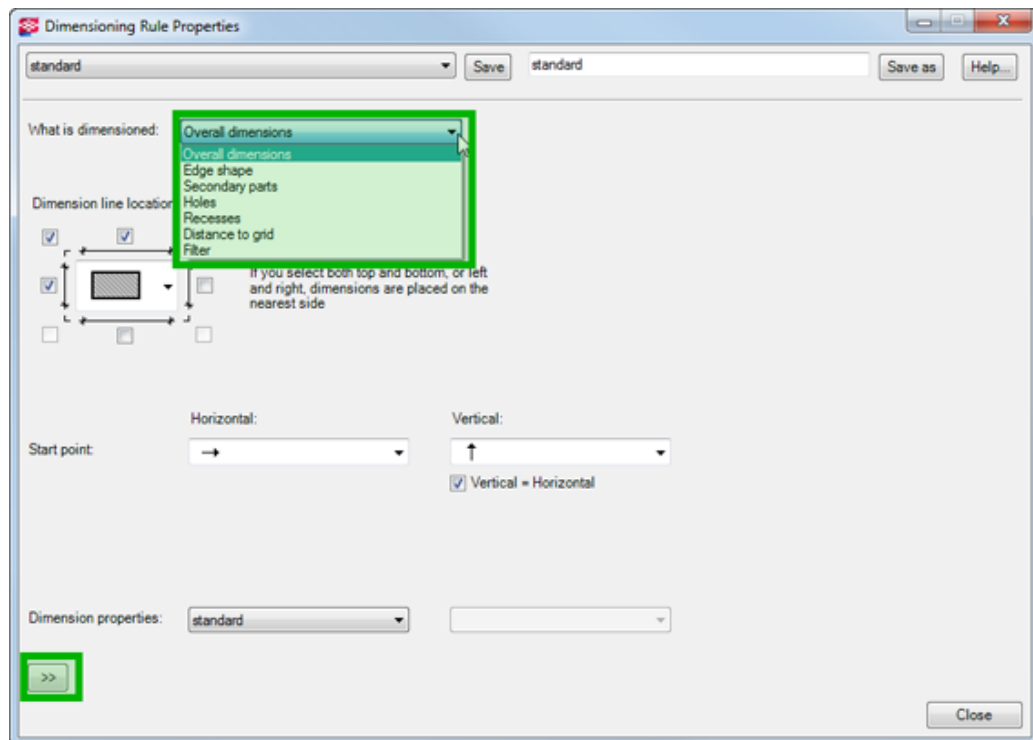


2. Once you have selected a dimensioning type, click the **Edit Rule** button, which opens the **Dimensioning Rule Properties** dialog box.

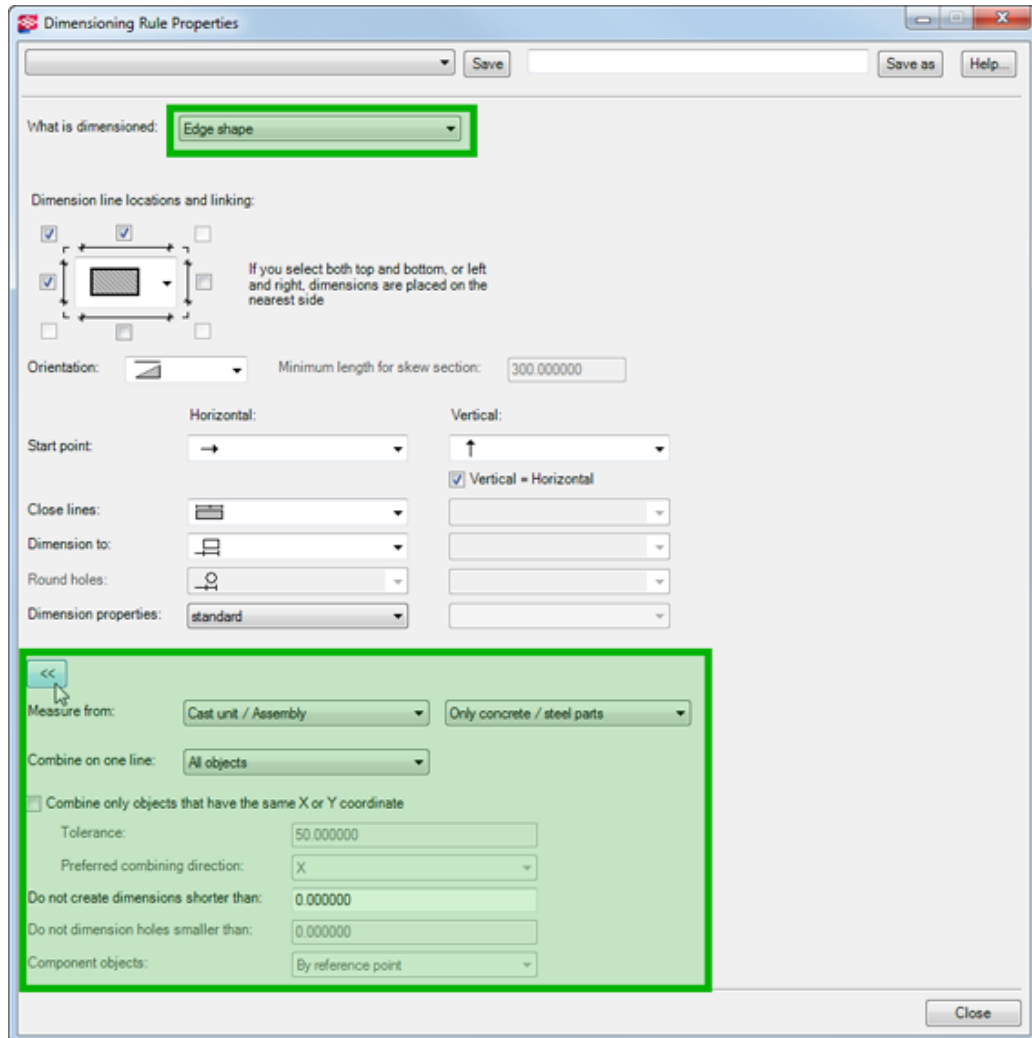


3. In the **Dimensioning Rule Properties** dialog box, you can still change the dimensioning type. Changing the type changes the available settings in the dialog box. You can see the settings for the type **Overall dimensions** below.

The ">>" button opens advanced settings for the rule. Press F1 in this dialog box (or search Tekla User Assistance) to get more information about what can be done here.



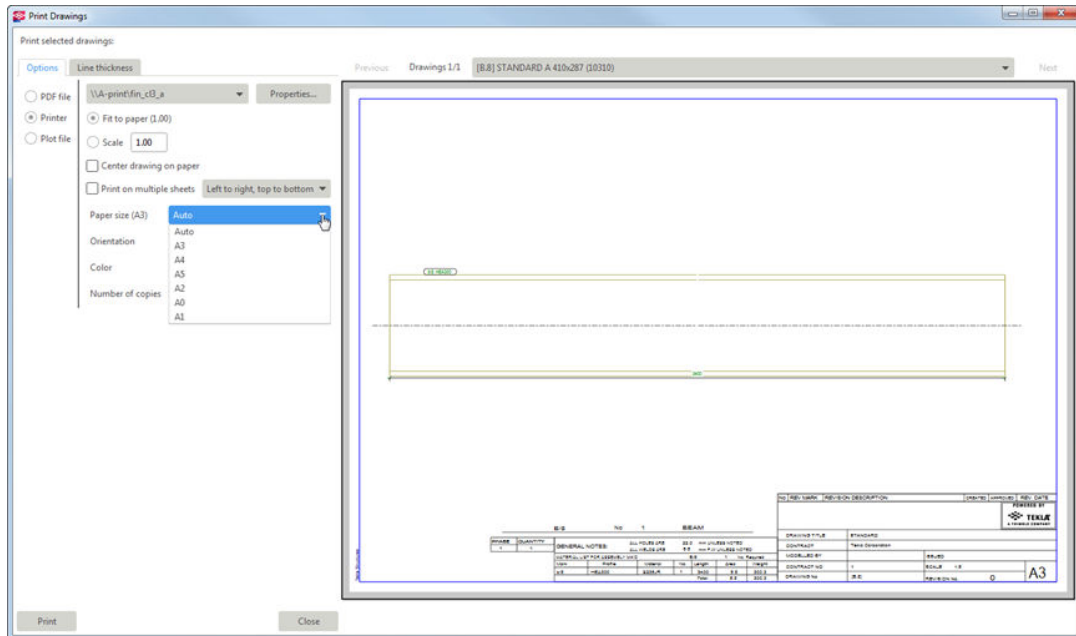
Here you can see the **Edge shape** settings and advanced settings.



4. Enter a unique name for the dimension rule properties next to the **Save as** and click **Save as** and click **Close**.
5. In the **Dimensioning rules** list, replace the old dimension rule properties with the new one and save the view properties.

### ***Administrator's Release Notes: Changes in Print Drawings dialog box***

You can now print drawings directly to PDF from the **Print Drawings** dialog box. Printing to a printer and into a plot file are also available. The **Print Drawings** dialog box contains a preview for the drawings that you have selected for printing.



Two files, `PaperSizesForDrawings.dat` and `DrawingSizes.dat`, control drawing and paper sizes and margins. These files can be localized. There are some instructions in the beginning of the files themselves with some examples.

- `PaperSizesForDrawings.dat` can be found in the `\Environments\Common\system` folder. This file controls what paper sizes are available in the **Print Drawings** dialog box, as shown in the image above.
- `DrawingSizes.dat` can be found in the `\system` folder in the Common, UK, Germany, US imperial and US metric environments. This file controls the sizes and margins for each paper size.

### ***Administrator's Release Notes: Drawing list information to drawing reports***

The following new fields are now available in drawing reports:

- CHANGES
- LOCKED\_BY
- IS\_LOCKED
- IS\_FROZEN
- IS\_ISSUED



IS\_LOCKED, IS\_FROZEN and IS\_ISSUED return value 0 if false, 1 if true. CHANGES and LOCKED\_BY are text fields.

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### ***Administrator's Release Notes: Custom presentation***

It is now possible to have a custom presentation for many drawing objects. You can download custom presentations from Tekla Warehouse when available. There are new rows in the related properties files for custom presentation, \*.CustomPresentation\_en 1 and \*.aCustomPresentation ". The files contain the custom presentation plugin names, if there are any plugins, and can otherwise be ignored for the time being.

### ***Administrator's Release Notes: New advanced option***

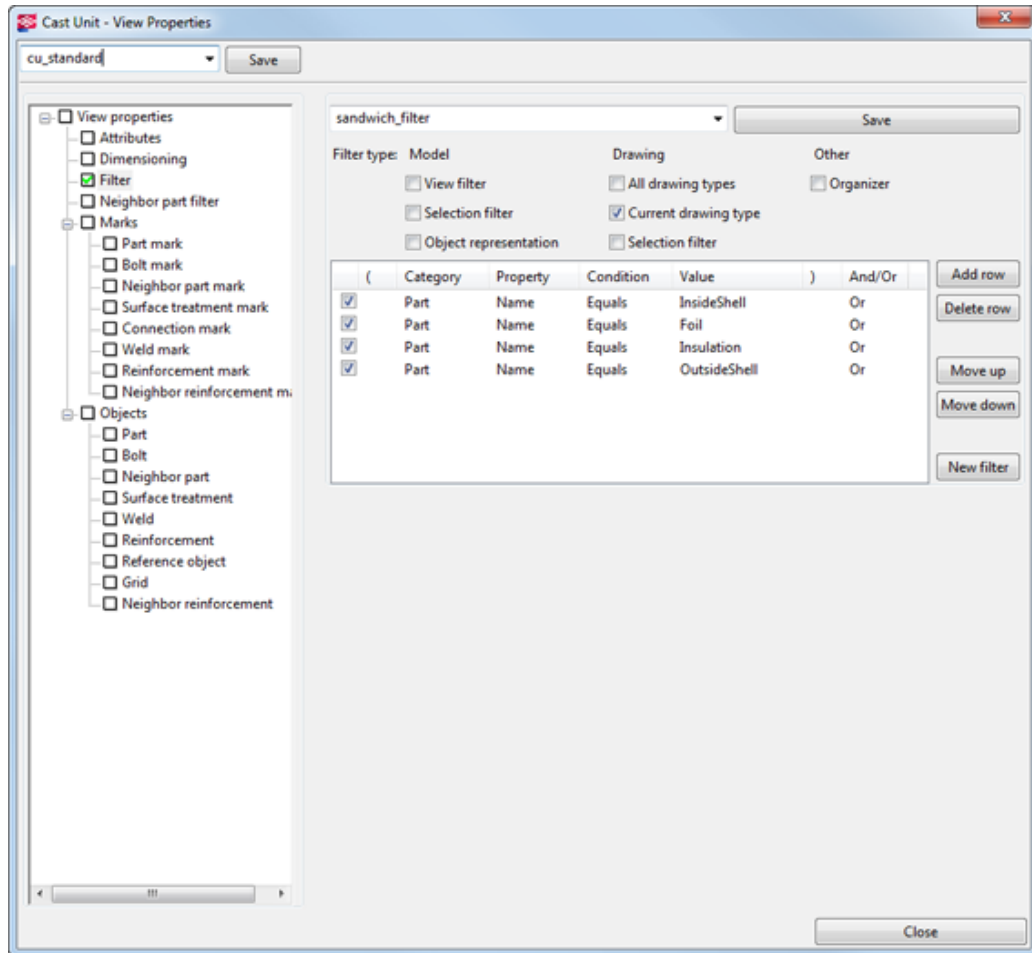
#### ***XS\_USE\_ASSEMBLY\_EXTREMA\_IN\_MARK\_PLACING for better part mark placing***

Part marks can now be placed on top of the assembly instead of on top of the main part. You need to create a drawing view filter and enter its name as the value for the advanced option XS\_USE\_ASSEMBLY\_EXTREMA\_IN\_MARK\_PLACING.

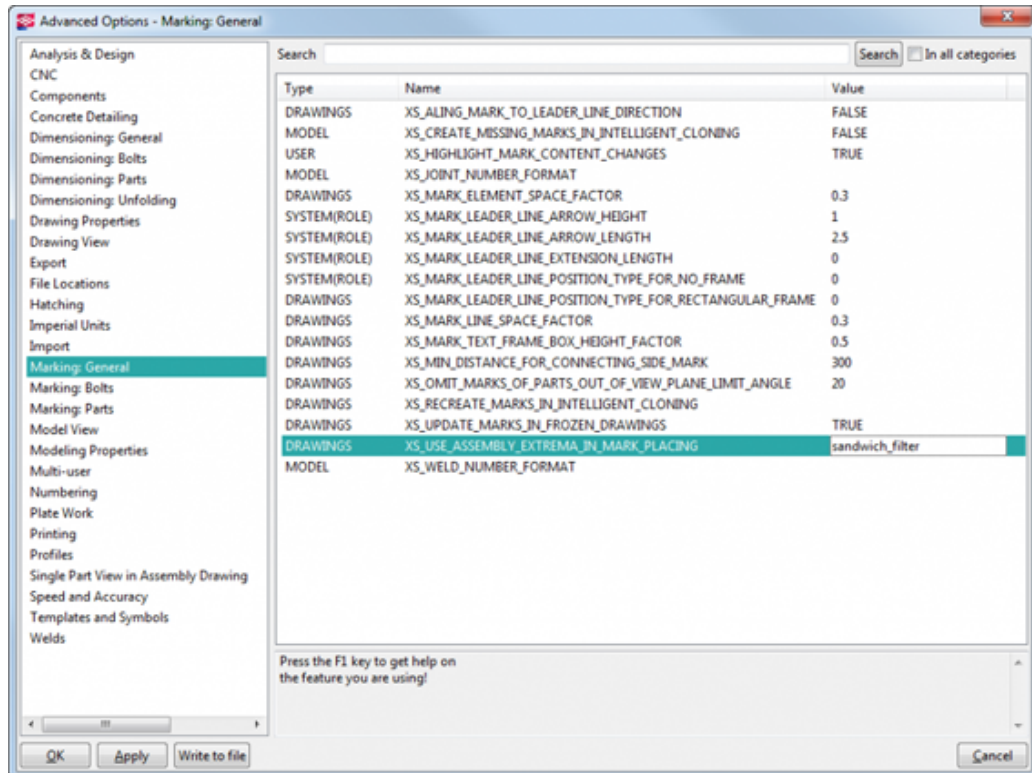
To use this you need to:

1. Set up a drawing filter that selects all the relevant parts of the assembly or cast unit. Select **Current drawing type** or **All drawing types** from the filter type.

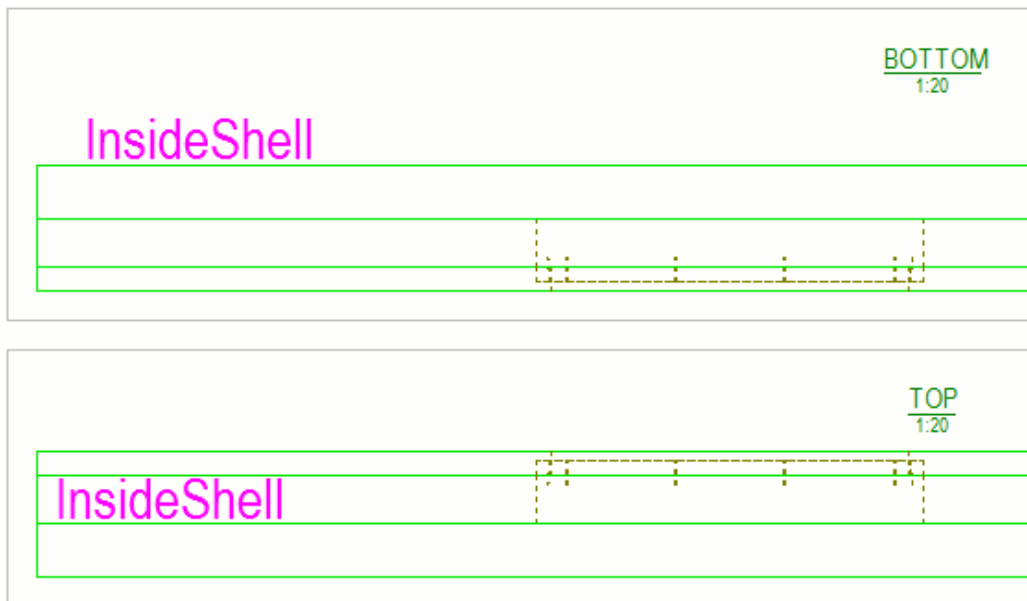
The example below uses part names as the filtering criteria.



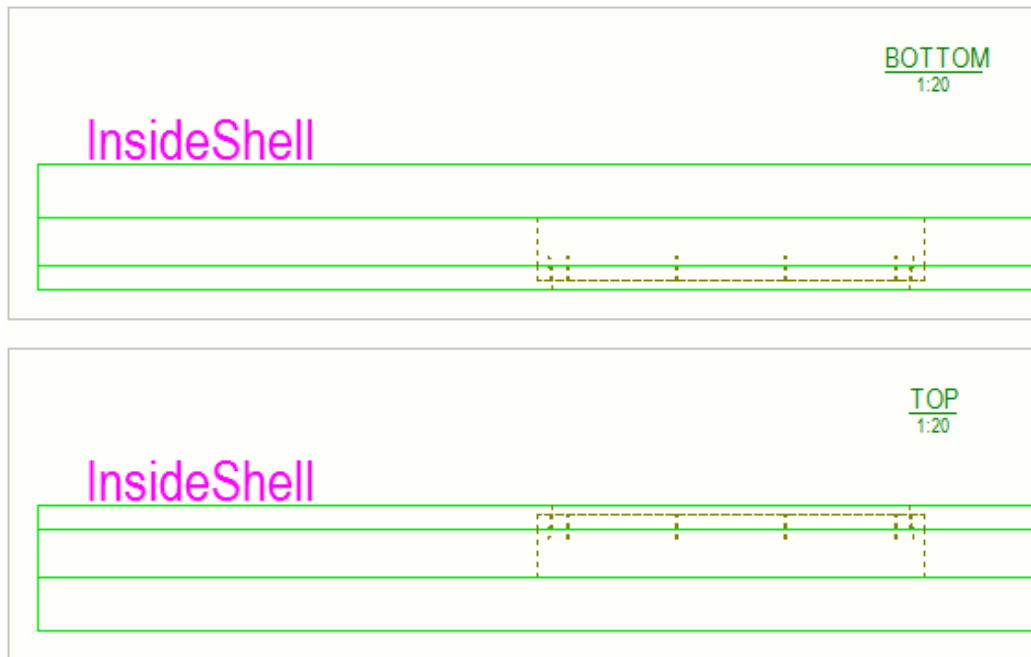
2. Add the filter name as the value for the advanced option  
XS\_USE\_ASSEMBLY\_EXTREMA\_IN\_MARK\_PLACING in the **Marking: General**  
category.



When you (re)create the drawing, the mark place changes from this:

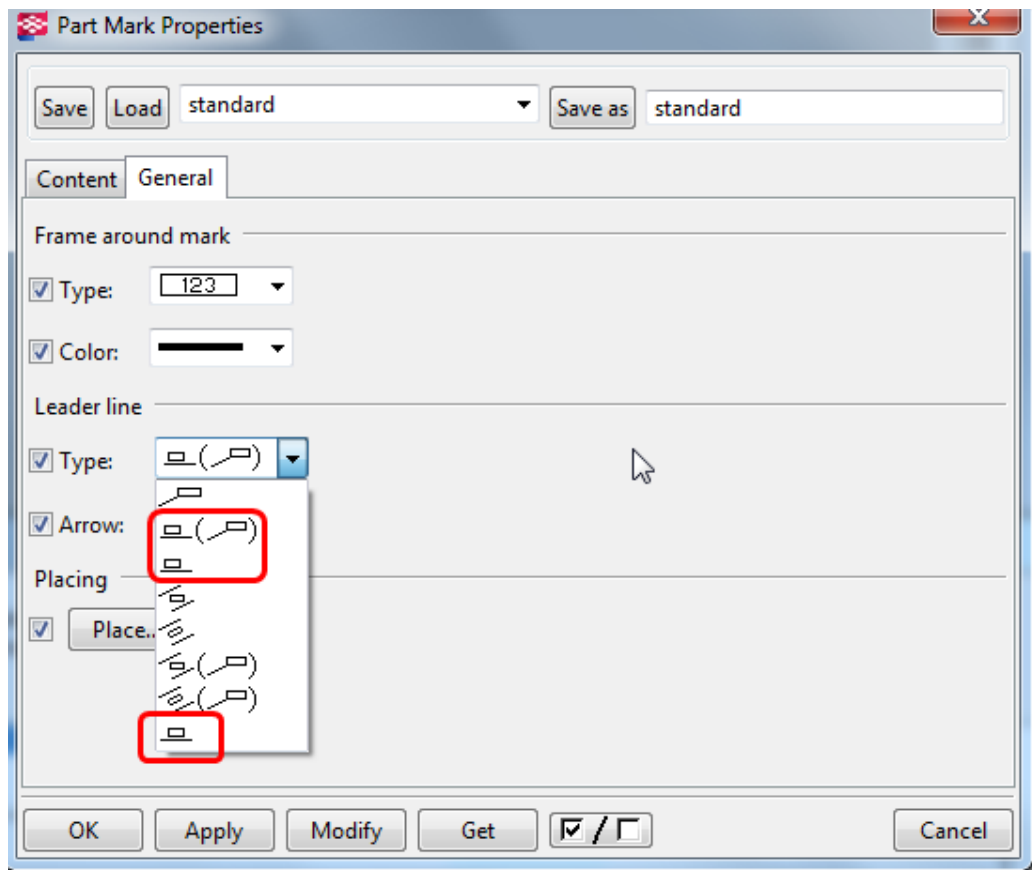


To this:



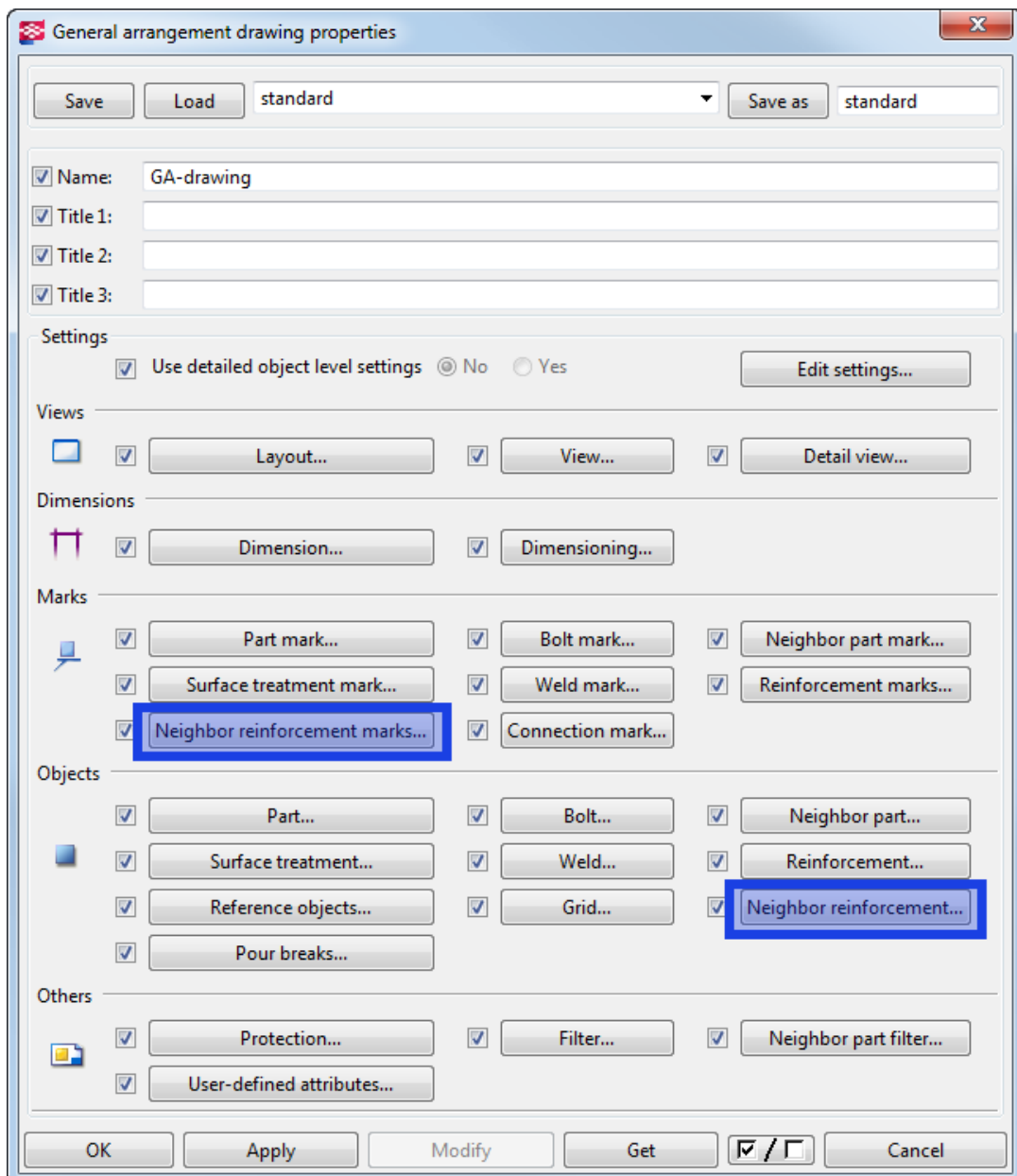
This works only with the main parts of an assembly or cast unit, not secondary parts.

Supported leader line types are highlighted in the image below:



### *Administrator's Release Notes: New general arrangement drawing dialog boxes*

The **Neighbor reinforcement properties** and **Neighbor reinforcement mark properties** settings have been separated from the **Reinforcement properties** and **Reinforcement mark properties** dialog boxes in general arrangement drawings. Neighbor reinforcement properties are saved in a \*.gnr file and neighbor reinforcement mark settings in a \*.gnrm file in the \attributes folder under the model folder. Save proper properties settings in these dialog boxes, and apply the saved properties and close the dialog box by clicking **OK**. Then save the general arrangement drawing properties. Repeat the same for all applicable general arrangement drawing properties.



The new dialogs boxes are as follows:

General - Neighbor Reinforcement Properties

Save Load  Save as

Bar content Bar appearance Mesh content Mesh appearance

Reinforcing bar representation

☒ Visibility of all reinforcing bars: Not visible

☒ Representation: double lines

☒ Visibility of reinforcing bars in group: all

Lines

☒ Hide lines behind parts ☐ on/off

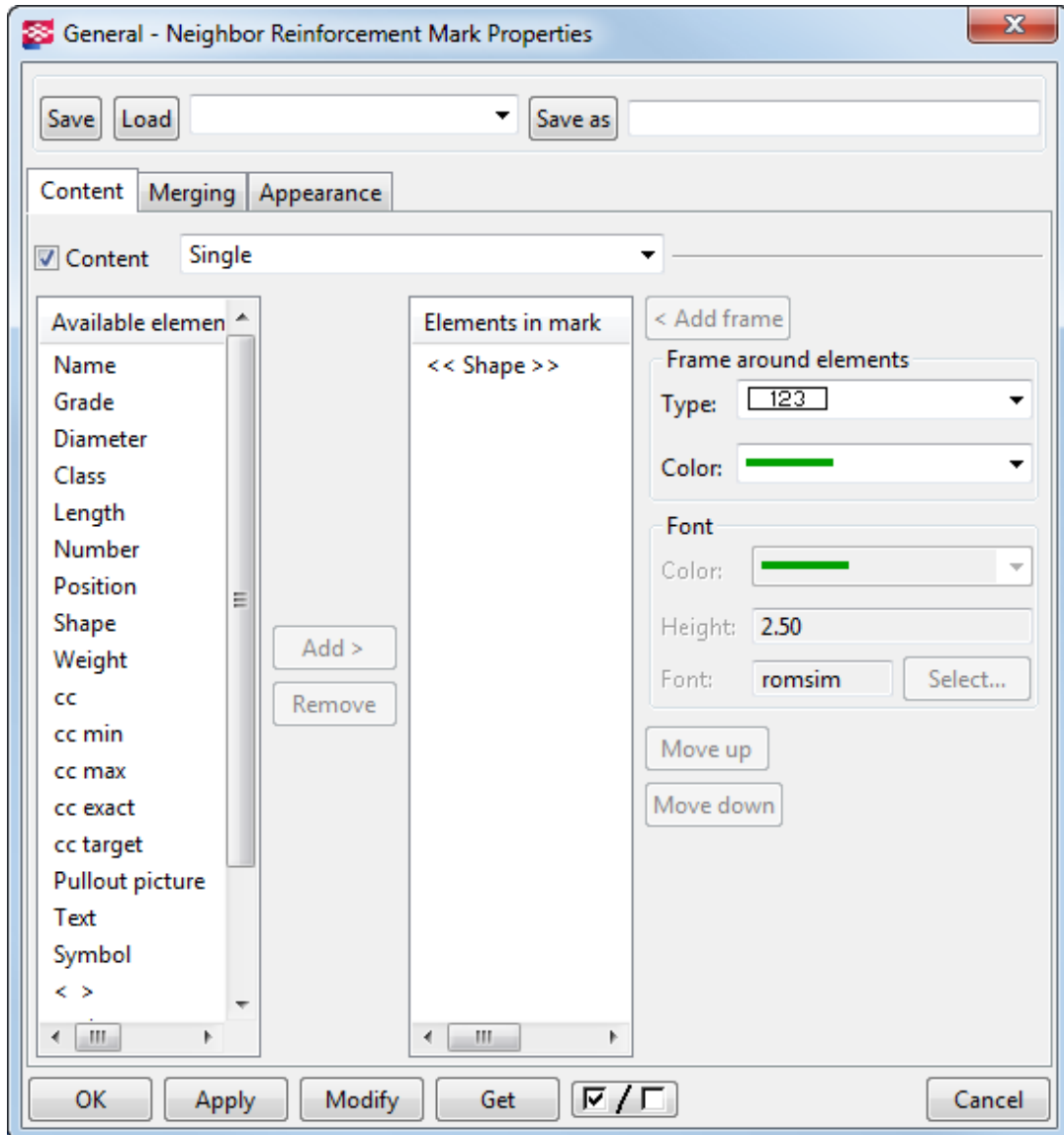
☒ Hide lines behind other rebars ☐ on/off

Symbols

☒ Symbol at straight end:

☒ Symbol at hooked end:

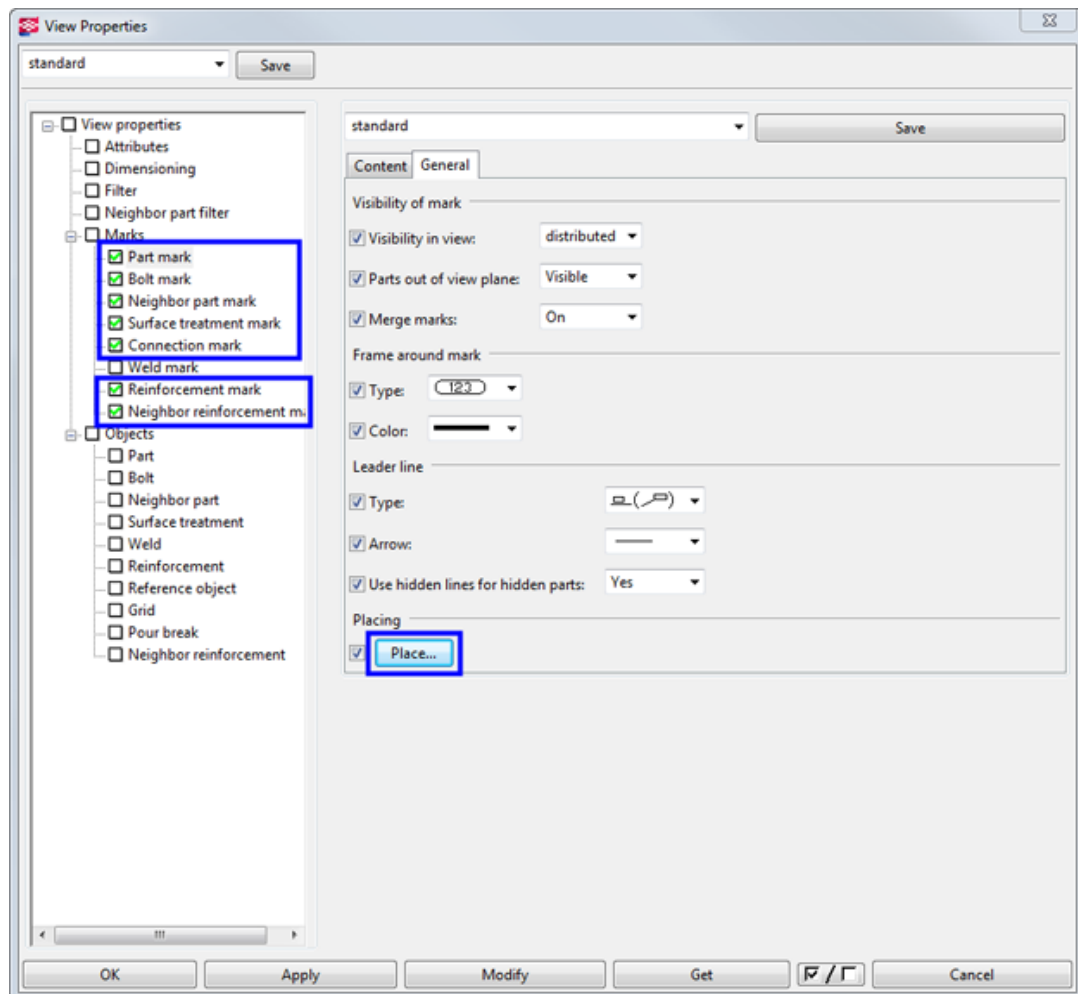
OK Apply Modify Get ☒ / ☐ Cancel



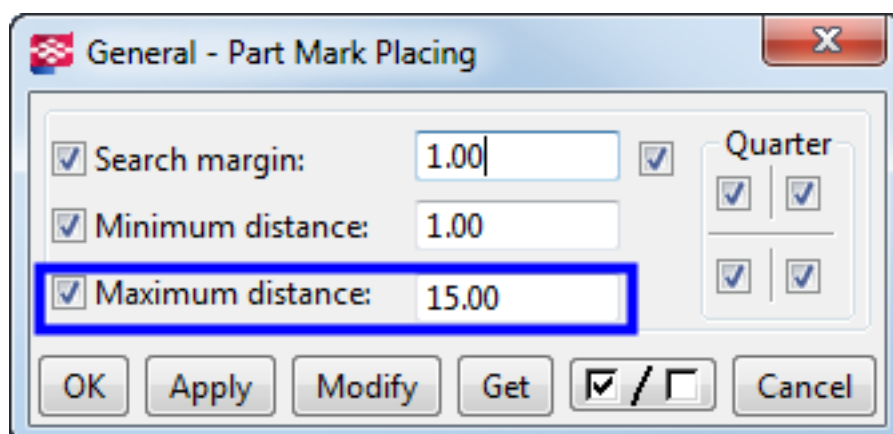
### ***Administrator's Release Notes: Maximum distance to mark placing***

It is now possible to set a maximum distance to place marks for parts, bolts, neighbor parts, surface treatment, connections, reinforcement and neighbor reinforcement. You can set the maximum distance by opening the view properties dialog box and the option panels for the mentioned marks in assembly, single part and cast unit drawings. In general arrangement

drawings, the corresponding subdialog boxes can be found on the drawing level. Go to the **General** tab and click **Place** to open the **Mark Placing** dialog box.

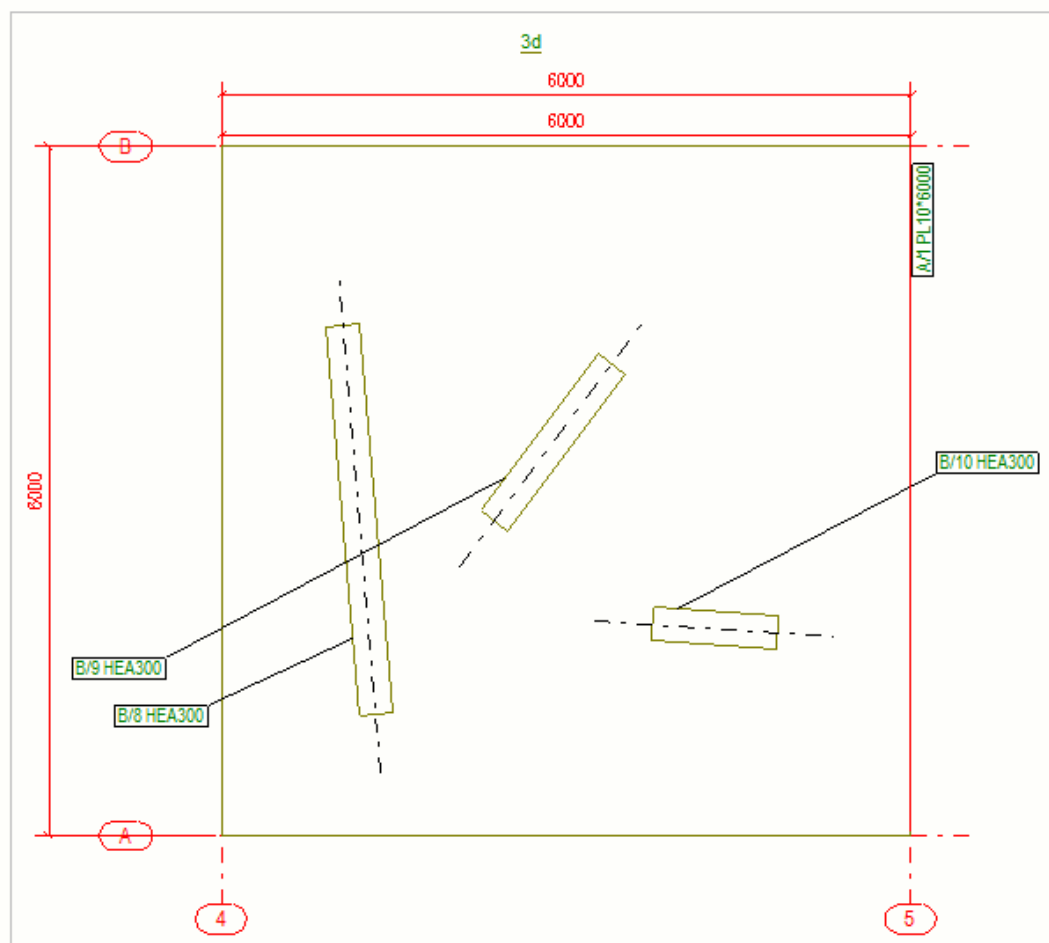


Set the maximum distance to limit how far the marks will be placed if they cannot be placed near the object.

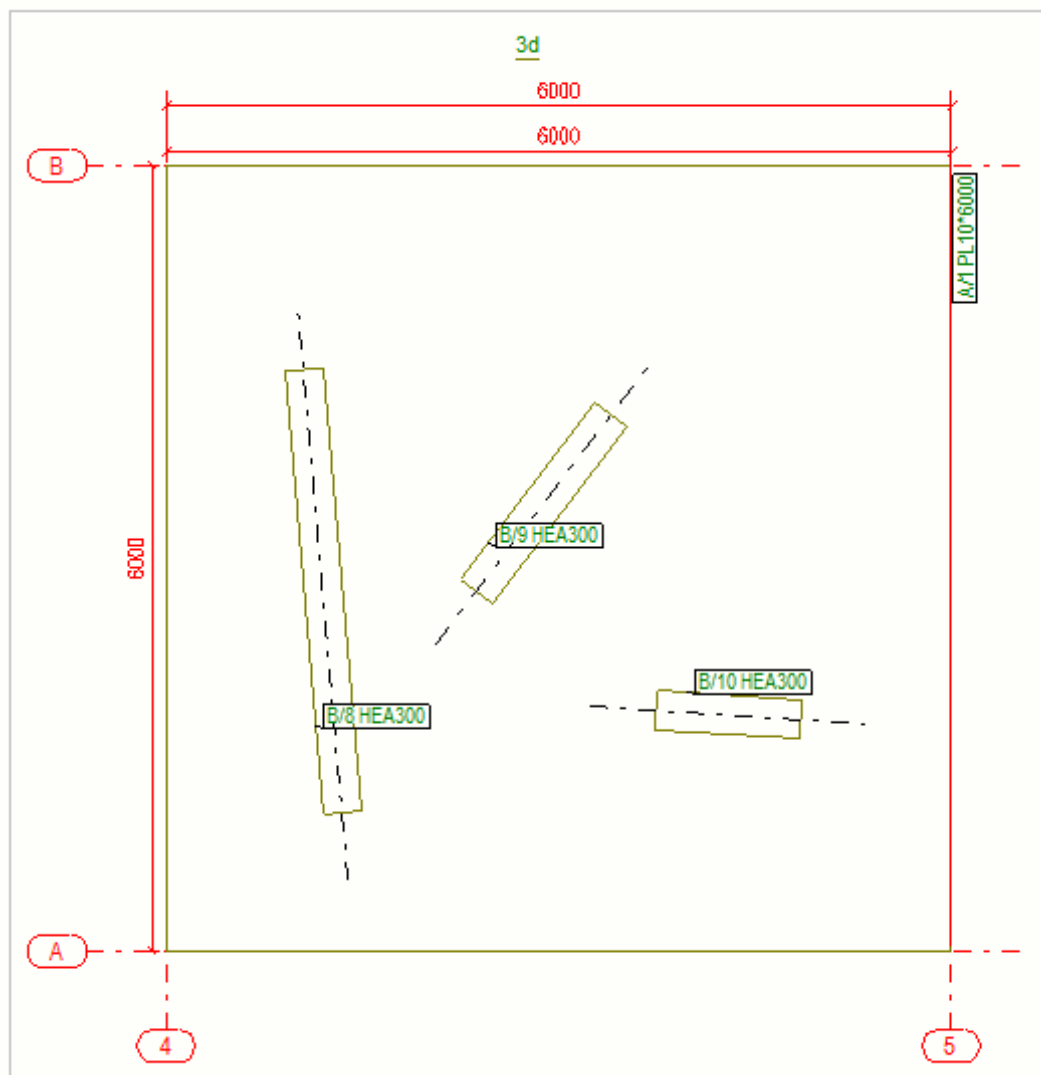


The image below shows how the marks of the beams are placed outside the square plate.





When the maximum distance is set to 15 mm, the marks are placed near the beams.



The default value is 0, which means the maximum distance is not set.

### Administrator's Release Notes: Several folder search paths in some advanced options

You can now define more than one folder search path in the following advanced options:

- DAK\_BMPPATH
- XS\_INP
- XS\_TEMPLATE\_DIRECTORY
- XS\_TEMPLATE\_DIRECTORY\_SYSTEM

Having more than one folder path is useful if you need files from several folders instead of only one folder. Earlier you could define one folder path in the advanced options listed above.

When you define more than one folder path, separate the paths with a semicolon.

### **XS\_INP**

XS\_INP is useful, for example, in environments that use their own \inp folder. You can now include \Common\inp to the folder path in XS\_INP and remove the duplicate files from the \inp folder of your environment.

Here is an example of how to define the folder paths:

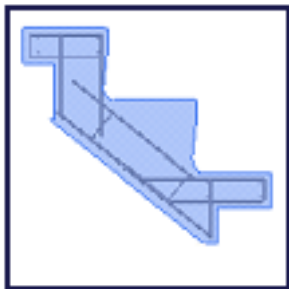
```
"set XS_INP=%XSDATADIR%\environments\japan\inp\"
```

```
-->
```

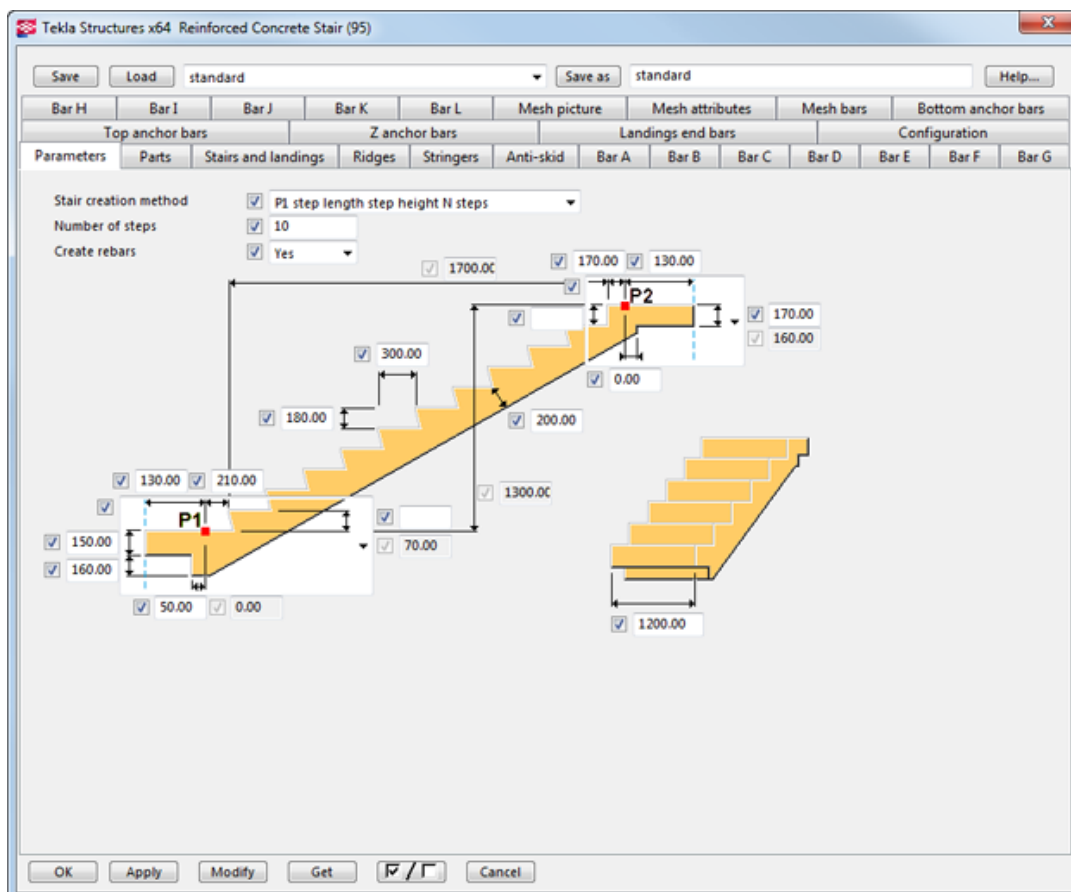
```
"set XS_INP=%XSDATADIR%\environments\japan\inp\;%XSDATADIR%\environments\common\inp\"
```

## **Administrator's Release Notes: New and improved components**

The **Reinforced Concrete Stair (95)** is a new component in Tekla Structures 21.0.



**Reinforced Concrete Stair (95)**



The following extensions are now available in the Tekla Structures **Component Catalog**:

- **Floor Layout**
- **Mesh Bars**
- **Mesh Bars by Area**
- **Wall Panel Reinforcement**

The following components have been improved:

- **Columns – automated reinforcement layout (57)**
- **Starter bars for pillar (86)**
- **Starter bars for footing (87)**
- **Stiffened base plate (1014)**
- **Stiffened end plate (27)**
- **Partial stiff end plate (65)**
- **Clip angle (141)**
- **Two sided clip angle (143)**
- **Shear plate simple (146)**
- **Cast-in plate (1069)**

## 1.2 Administrator's Release Notes: Organizer

The following customization settings apply to **Organizer**.

**See also** [Administrator's Release Notes: Excluding object types from Organizer on page 37](#)  
[Administrator's Release Notes: Any Organizer property template can be set as default on page 37](#)  
[Administrator's Release Notes: Organizer filters on page 38](#)

### Administrator's Release Notes: Excluding object types from Organizer

You can control the visibility of different model object types in **Organizer** using the `ExcludedTypesFromOrganizer.xml` file. The file contains a list of the object types that you can either exclude or include in **Organizer**.

When you exclude certain object types:

- Excluded object types are not displayed in the **Object Browser** property table. **Object Browser** does not show empty lines.
- Excluded object types are not included in the categories. When creating automatic subcategories using object properties, **Organizer** does not create unnamed categories.

The `ExcludedTypesFromOrganizer.xml` file can be found at least in the `\Common\System\ProjectOrganizerData\` folder in your environment folder. If you want to use the file only for a certain model, copy the file to the `\ProjectOrganizerData` folder that is under the model folder. Note that the `\ProjectOrganizerData` folder does not by default exist in the model folder so you may need to create it: `\ModelFolder\ProjectOrganizerData\`.

The object types listed in the `ExcludedTypesFromOrganizer.xml` file have either the value `false` (excluded) or `true` (included). You can either exclude or include an object type by changing the value. For example, to include grids, change the value as follows:

```
<Grid>false</Grid>
```


to

```
<Grid>true</Grid>.
```

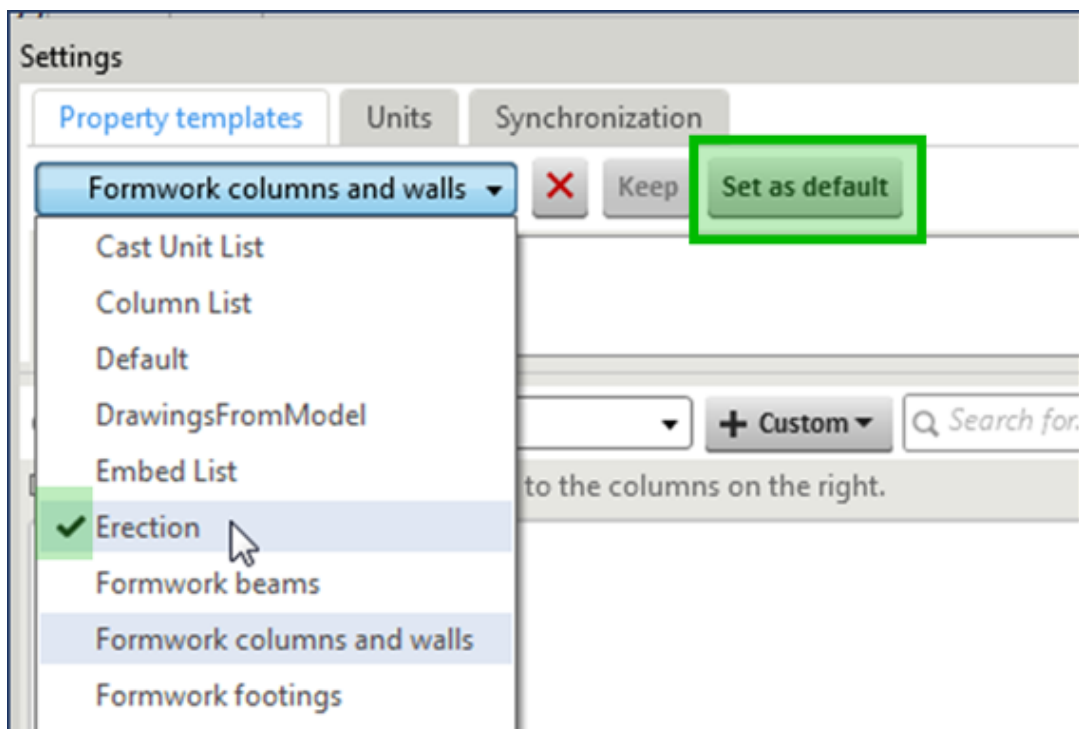
Do not edit the file in any other way, for example, add or remove lines from the file, otherwise **Organizer** will not be able to use the file.

## Administrator's Release Notes: Any Organizer property template can be set as default

You can now set any property template to be the default template in **Organizer**:

1. Click  to open **Organizer** settings.
2. Select a property template that you want to set as the default from the list of templates.
3. Click the **Set as default** button.

The default property template is marked with a check mark, as shown in the image below.



Only one property template can be the default template at a time.

When you export this property template to .xml, it will have a

```
<IsDefault>true</IsDefault>
```

line indicating that the property template is set as the default template. When you import a property template, the default setting is not loaded.

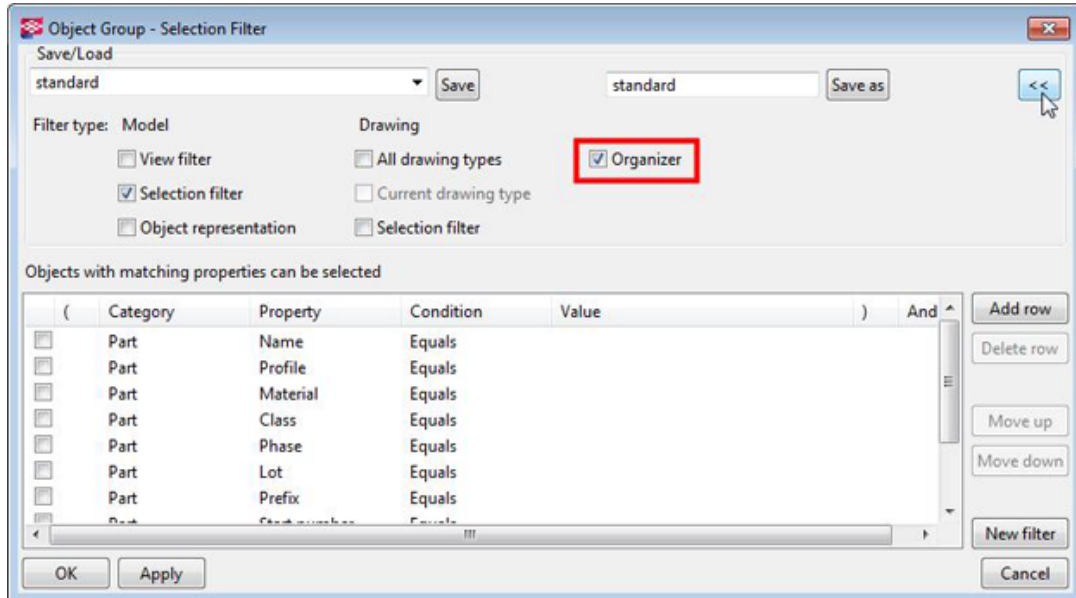


Setting a property template as the default template controls which property template is opened when you start **Organizer**. **Set as default** does not in any way affect the property template that has the name **Default**.

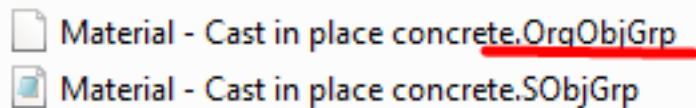
## Administrator's Release Notes: Organizer filters

**Organizer** now uses its own filters instead of Tekla Structures selection filters. The new file extension for **Organizer** filters is `.OrgObjGrp`.

Use the **Object Group – Selection Filter** dialog box or the **Object Group – Organizer** dialog box to create a filters for **Organizer**. When saving, select the check boxes of all the filter types you need as shown in the example below.



As a result, two filter files are saved, one for **Organizer** and one for the selection filter:



You can change existing filters to **Organizer** filters by doing one of the following:

- You can change the file extension of a filter file to `*.OrgObjGrp` if the filter is only used for **Organizer**.
- You can copy existing filter files and rename the file extensions of the copies to `*.OrgObjGrp`.
- You can save existing filters for **Organizer** through the filter properties dialog boxes by selecting **Organizer** as the filter type.

## 1.3 Administrator's Release Notes: Steel settings

The following customization settings apply to the steel user group.

See also [Administrator's Release Notes: Numbering option to ignore rotation of anchor rods on page 40](#)

[Administrator's Release Notes: Clash check between bolt and bolted part on page 41](#)

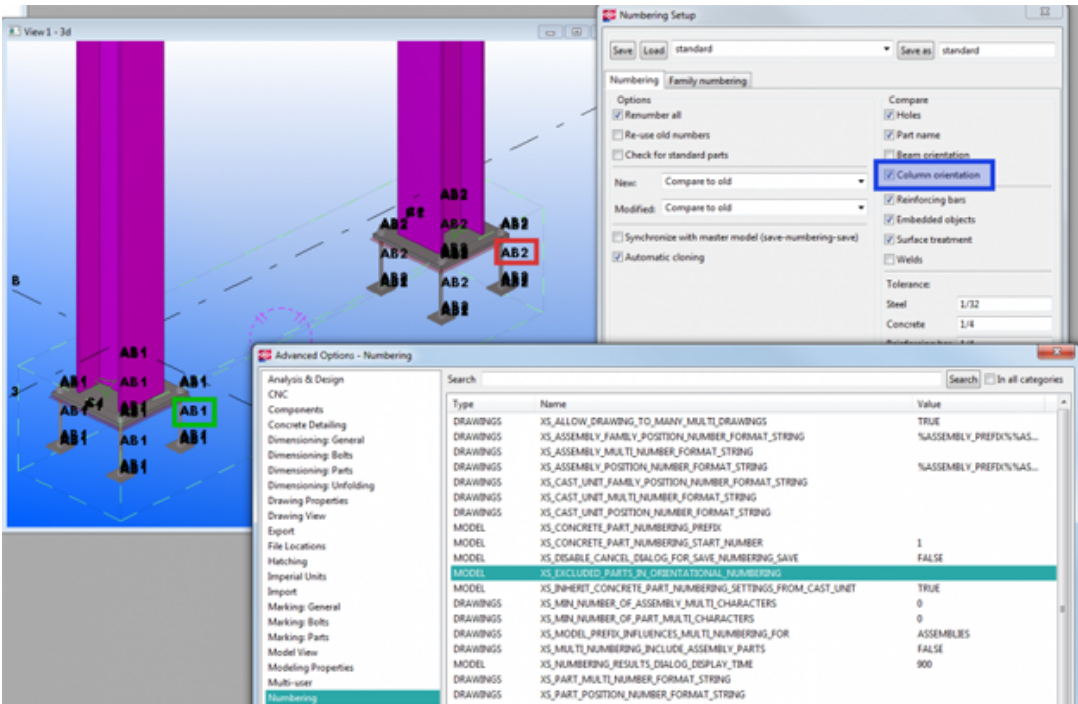
[Administrator's Release Notes: New advanced options for NC on page 43](#)

## Administrator's Release Notes: Numbering option to ignore rotation of anchor rods

Tekla Structures 21.0 has a new advanced option  
`XS_EXCLUDED_PARTS_IN_ORIENTATIONAL_NUMBERING` to control numbering.  
The advanced option can be used in conjunction with the orientation numbering setting. You can enter the desired part names separated by spaces. Wildcards are also allowed.

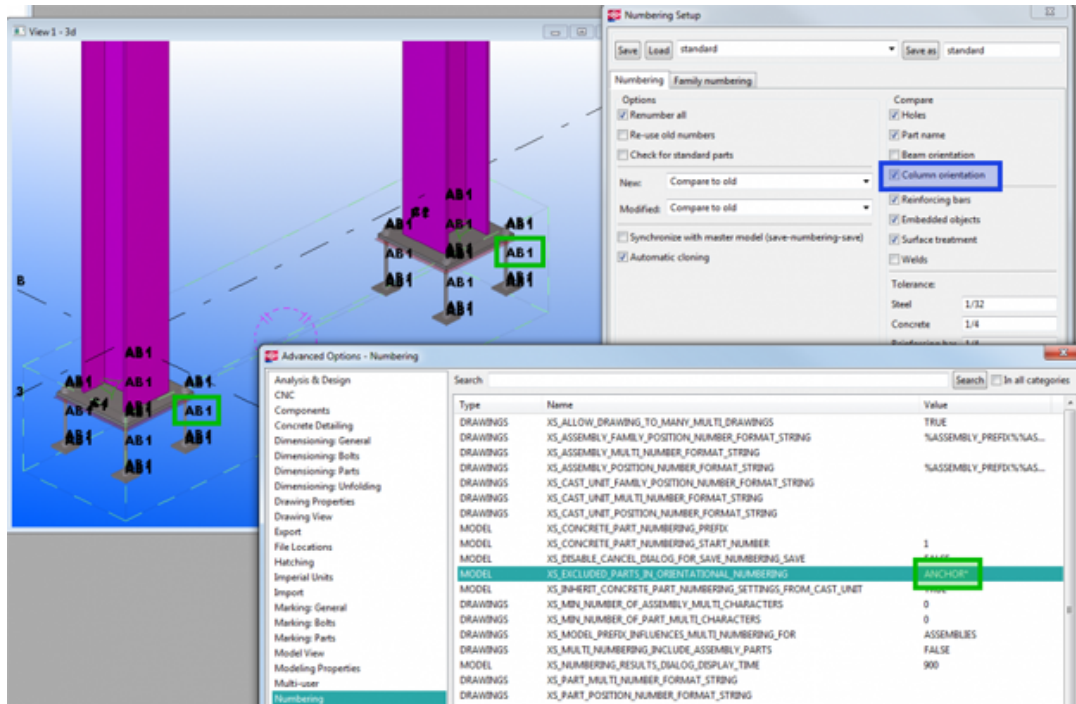
Similar parts will be numbered the same even if their orientation is different, and the orientation setting has been selected in the **Numbering Setup** dialog box.

The image below shows different assembly numbers on similar parts, when **Column orientation** is selected in the **Numbering Setup** dialog box, and the advanced option `XS_EXCLUDED_PARTS_IN_ORIENTATIONAL_NUMBERING` does not have a value.



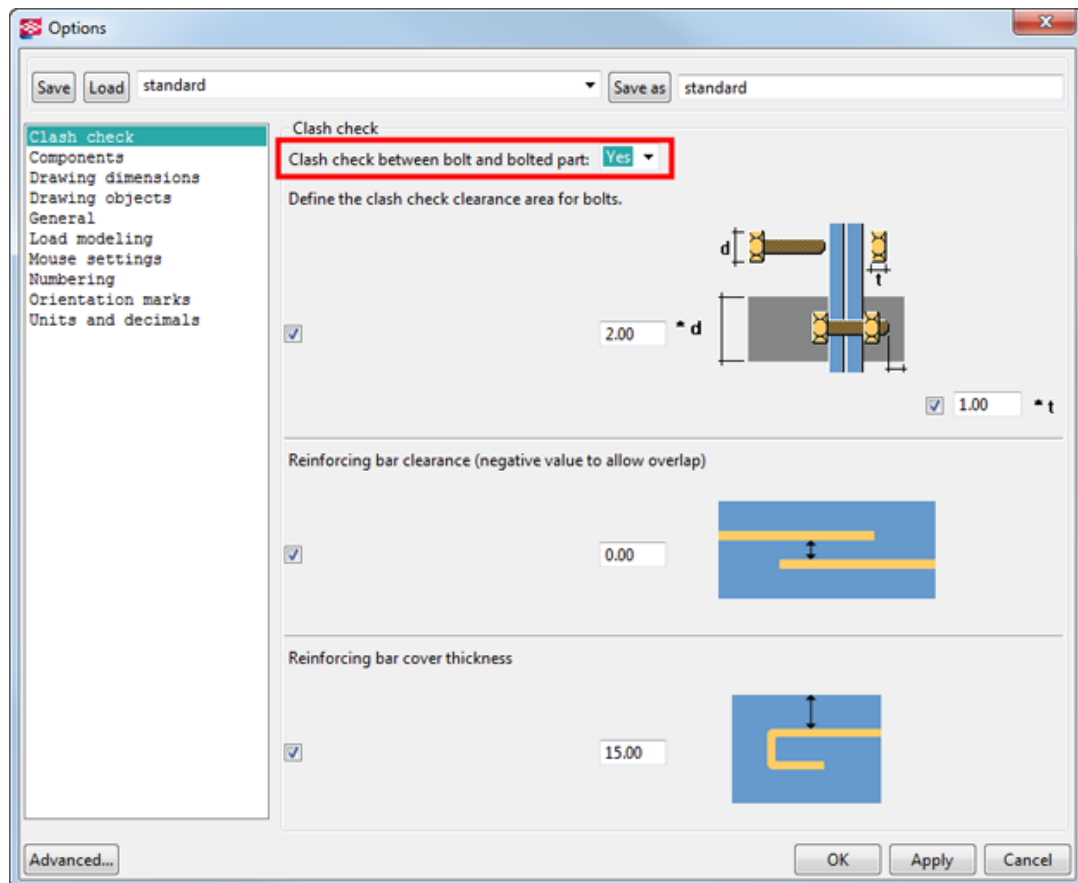
When `XS_EXCLUDED_PARTS_IN_ORIENTATIONAL_NUMBERING` is set to `ANCHOR*`, the rotation of anchor rods is ignored in numbering despite the orientation setting, and they get the same assembly numbers.



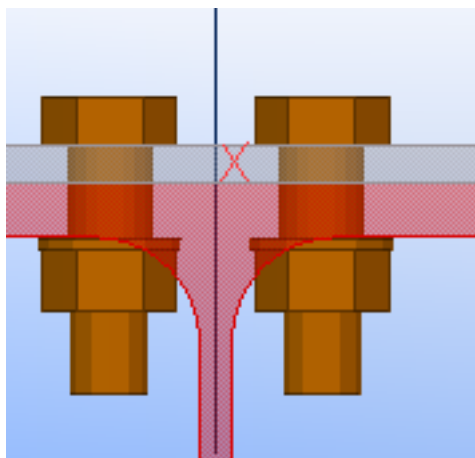


## Administrator's Release Notes: Clash check between bolt and bolted part

There is a new clash check option in the **Options** dialog box that activates clash checking between a bolt and a bolted part.



When set to **Yes**, clashes are detected, as shown in the image below. The bolt width tolerance is zero and the accuracy of the bolted part is high.



## Administrator's Release Notes: New advanced options for NC

There are new advanced options `XS_DSTV_CHANGE_AK_BLOCK_RADIUS_SIGN` and `XS_DSTV_CHANGE_IK_BLOCK_RADIUS_SIGN` to change AK or IK block curve radius signs for top and back faces.

These advanced options fix the incorrect radius sign on the top and back face of the AK and IK blocks at least in the ATEK, Peddimat, Controlled Automation, and Python systems.

The advanced options are available in Tekla Structures 19.0 and newer versions.

## 1.4 Administrator's Release Notes: Concrete settings

The following customization settings apply to the concrete user group.

**See also** [Administrator's Release Notes: XS\\_REBAR\\_REVERSE\\_END\\_SYMBOLS has a new value option on page 43](#)

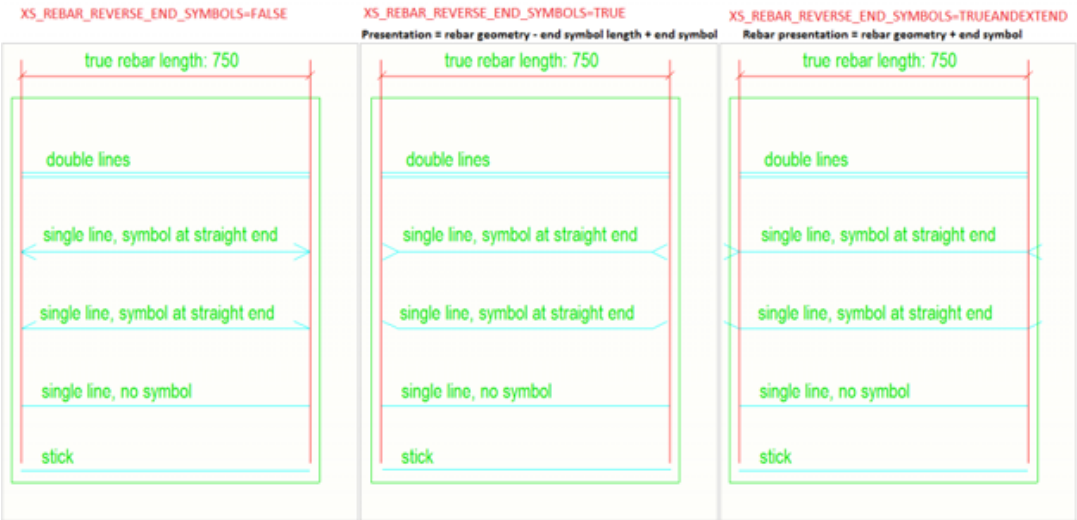
[Administrator's Release Notes: Pour breaks in model view settings on page 44](#)

[Administrator's Release Notes: New advanced option XS\\_INVALID\\_POUR\\_BREAK\\_COLOR on page 46](#)

[Administrator's Release Notes: New report template attributes on page 47](#)

# Administrator's Release Notes: XS\_REBAR\_REVERSE\_END\_SYMBOLS has a new value option

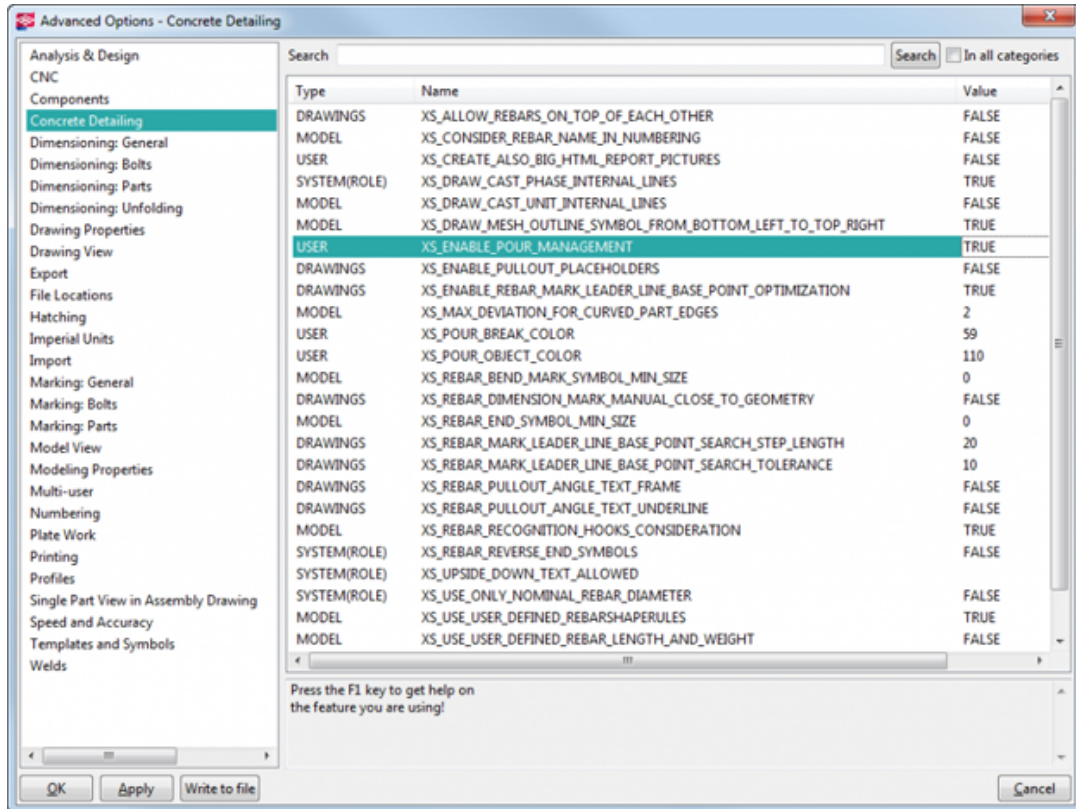
The XS\_REBAR\_REVERSE\_END\_SYMBOLS advanced option has a new value: TRUEANDEXTEND. This value reverses the reinforcing bar end symbols and extends them beyond the actual bar.



An old reinforcing bar visualization defect has also been fixed. Previously, the reinforcing bar was too short when end symbols were not used and XS\_REBAR\_REVERSE\_END\_SYMBOLS was set to anything else than FALSE. Now all reinforcing bars are shown correctly, as seen in the image above.

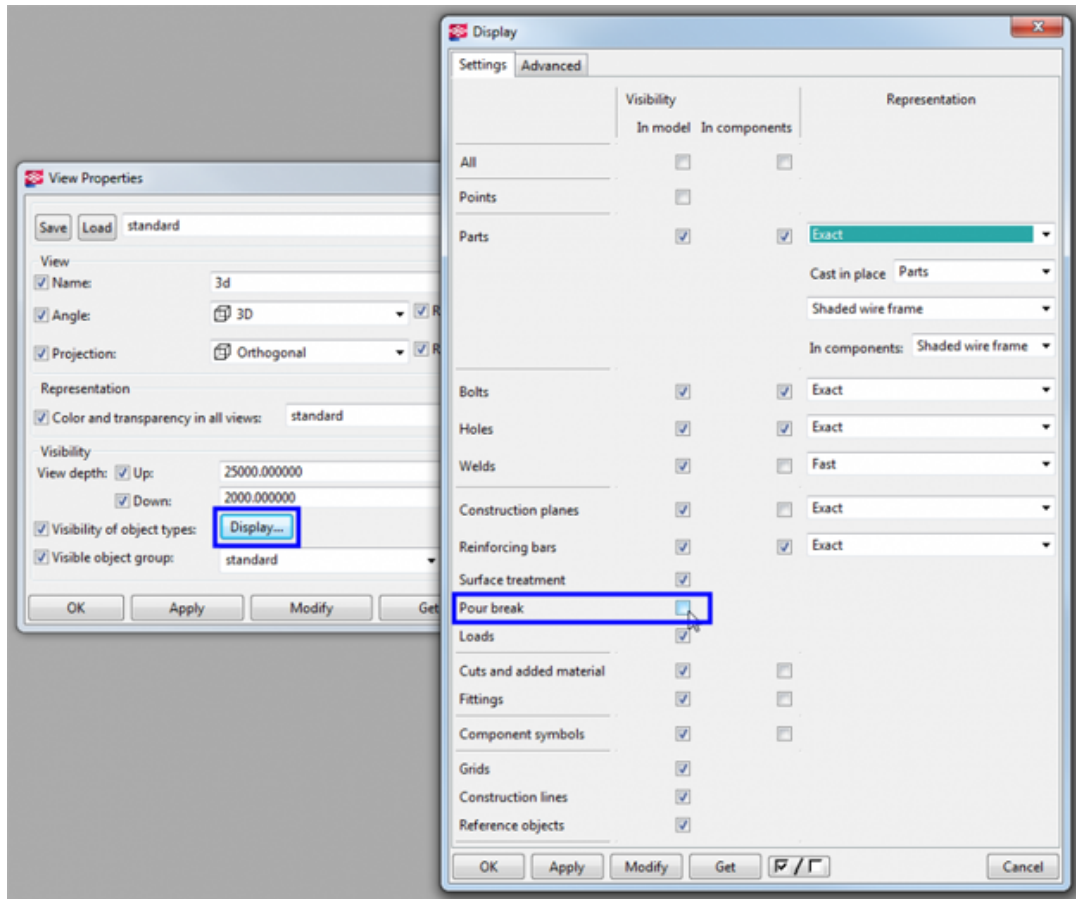
## Administrator's Release Notes: Pour breaks in model view settings

To change pour break visibility in model views, you first need to enable pour management by setting the advanced option `XS_ENABLE_POUR_MANAGEMENT` to `TRUE`.



When you have enabled pour management, modify the display settings to show pour breaks:

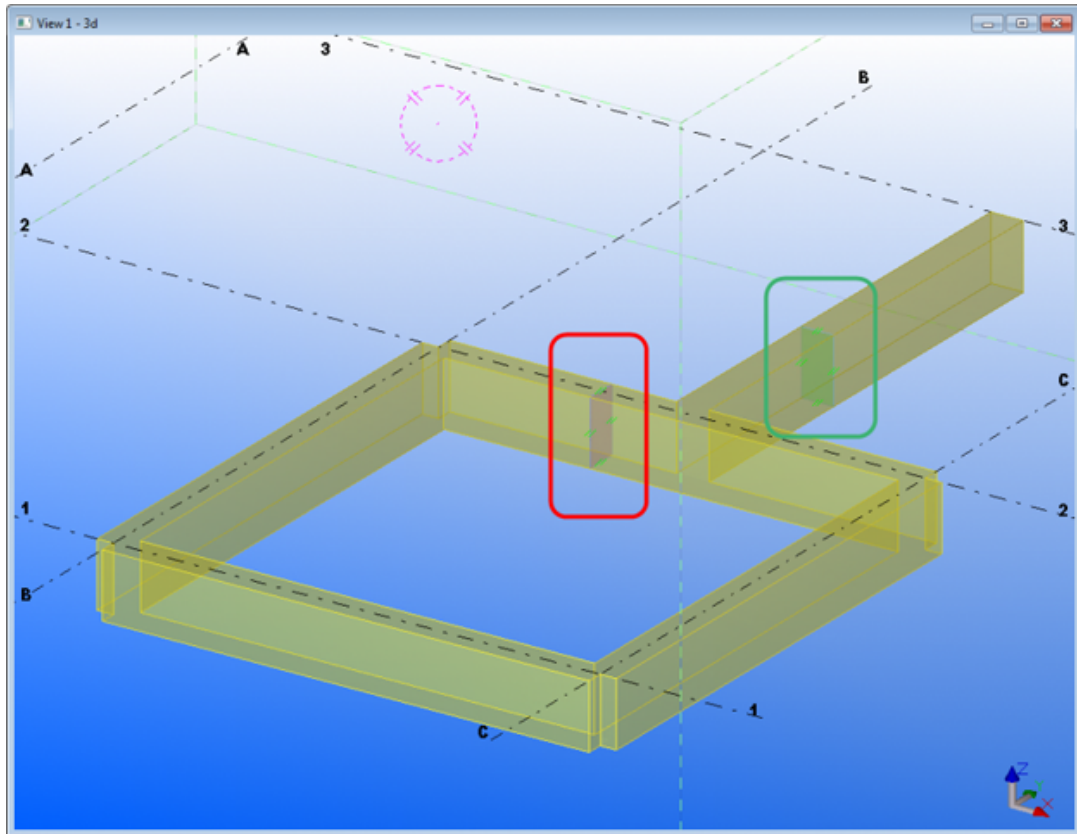
- In **View Properties**, click **Display** and select the **Pour break** option in the **Display** dialog box.



If pour management is not enabled, the **Pour break** option is not shown in the **Display** dialog box.

## Administrator's Release Notes: New advanced option XS\_INVALID\_POUR\_BREAK\_COLOR

You can now change the colors of invalid pour breaks. In the image below, the pour break inside the red rectangle is invalid because it has the same pour on both sides. The pour break inside the green rectangle is a valid pour break.



To change the color of invalid pour breaks, add

```
set XS_INVALID_POUR_BREAK_COLOR=[number]
```

to an `.ini` file. You need to set the color as a number, in the same way as the class in part property dialog boxes. For example, set `XS_INVALID_POUR_BREAK_COLOR=4` sets the color to blue.

The default value is red.

## Administrator's Release Notes: New report template attributes

The following report template attributes are available in Tekla Structures 21.0:

- `VOLUME_NET_ONLY_CONCRETE_PARTS`: Shows the volume by the solid of concrete parts in the cast unit. If a part uses a profile where cross section area is defined manually, it is ignored in calculation (cf. `VOLUME_ONLY_CONCRETE_PARTS`).
- `WEIGHT_NET_ONLY_CONCRETE_PARTS`: Shows the weight of a cast unit. It calculates the weight by the solid of the concrete parts in the cast unit. If a part uses a profile where cross section area is defined manually, it is ignored in calculation (cf. `WEIGHT_ONLY_CONCRETE_PARTS`).

Reinforcement and other non-concrete objects are excluded from the results.

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