Tekla Structures Basic Training

Tekla Structures 10.0

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9 Numbering and Reports

In this lesson

This lesson introduces the principles of numbering the model in Tekla Structures.

You will learn:

- The options available for numbering your model
- How the marks are assigned in numbering
- How to check part marks
- To use report templates

9.1 Numbering Basics

Defining Numbers to Be Used for Parts

You use numbering series to divide part, assembly and cast unit numbers into groups.

For example, you can allocate separate numbering series to different part types (BEAM, COLUMN, BRACING, etc…) or according the floor the part is located in (1st floor, 2nd floor, etc.).

You can name the numbering series to which a part, assembly or cast unit belongs, using the part properties dialog box. The numbering series name consists of a prefix and a starting number.

Part Position and Assembly Position numbers are material specific and apply only to steel by default. Concrete members have part prefix "Concrete", and the starting number is 1 and they have Cast Unit Position number instead of Assembly Position number. See more in **Help: Modeling > Parts > Numbering parts > Defining numbers to be used for parts**.

Running the Numbering

When you initiate the numbering process, Tekla Structures assigns marks to parts, assemblies and cast units.

You run the numbering by clicking **Tools > Numbering > Modified** or **Tools > Numbering > Full**. The **Full** option will check all parts in the model even if they have not been modified. The **Modified** option only checks the new and modified parts and is much faster.

Help: Modeling > Settings and tools > Settings and tools reference > Tools > Numbering > Modified

Help: Modeling > Settings and tools > Settings and tools reference > Tools > Numbering > Full

How the Marks Are Assigned in Numbering

In numbering, parts with the same Part prefix and Start number will be compared with each other. All identical parts within such a group will be given the same number. The prefix and start number together define what numbers the part will be given; E.g. if prefix is PC and starting number 1 (steel columns in our model), the numbering result will be PC1, PC2, PC3, etc.

Help: Modeling > Parts > Numbering parts > What affects numbering

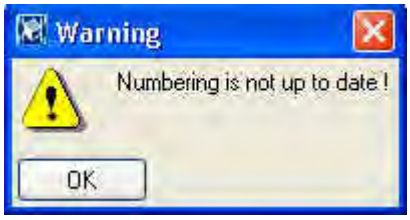
Numbering Settings

Numbering is carried out according to the settings in the **Numbering setup** dialog box. In the **Numbering setup** dialog you can define how new or modified parts are handled in numbering, does a profile name affect the part number, what is the degree of tolerance in comparing the parts in numbering, etc.

Help: Modeling > Settings and tools > Numbering > Numbering settings

9.2 Number the Model

In lesson 5 Basic modeling 2 we defined the numbering series for our model members. So the members already have the numbering series information but not the actual marks. If we try to create a report or a drawing there will be a warning that the numbering is not up to date.

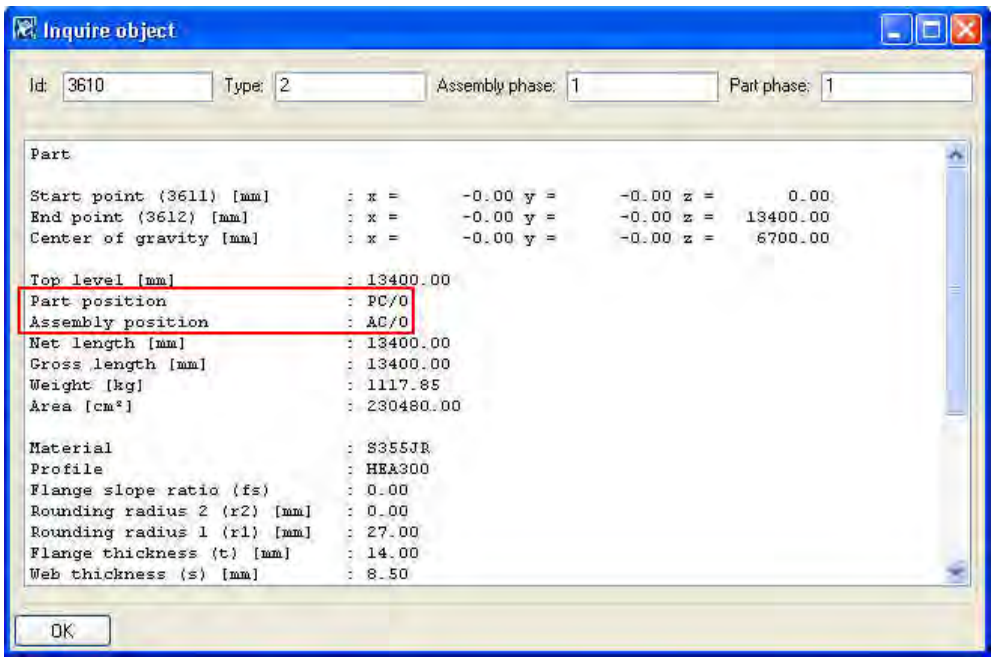


We will use **Inquire object** to see the current state of numbering of parts and then we will number the model.

Inquire a part

1. Select **Inquire > Object...**
2. Select any steel column.

   The **Inquire object** dialog box opens. The **Part position** and **Assembly position** marks are shown as PC/0 and AC/0 so the numbers shown are 1 less than the starting numbers defined for the column (PC/1 and AC/1). This indicates that the part and assembly have not been numbered yet.



Tekla Structures uses numbers to identify parts, assemblies and cast units when producing drawings and reports. You must have Tekla Structures number the model parts before you can create drawings or reports.

Run numbering full

Select **Tools > Numbering > Full** from the pull-down menu.

Now all the parts, assemblies and cast units in our model have up to date position numbers.

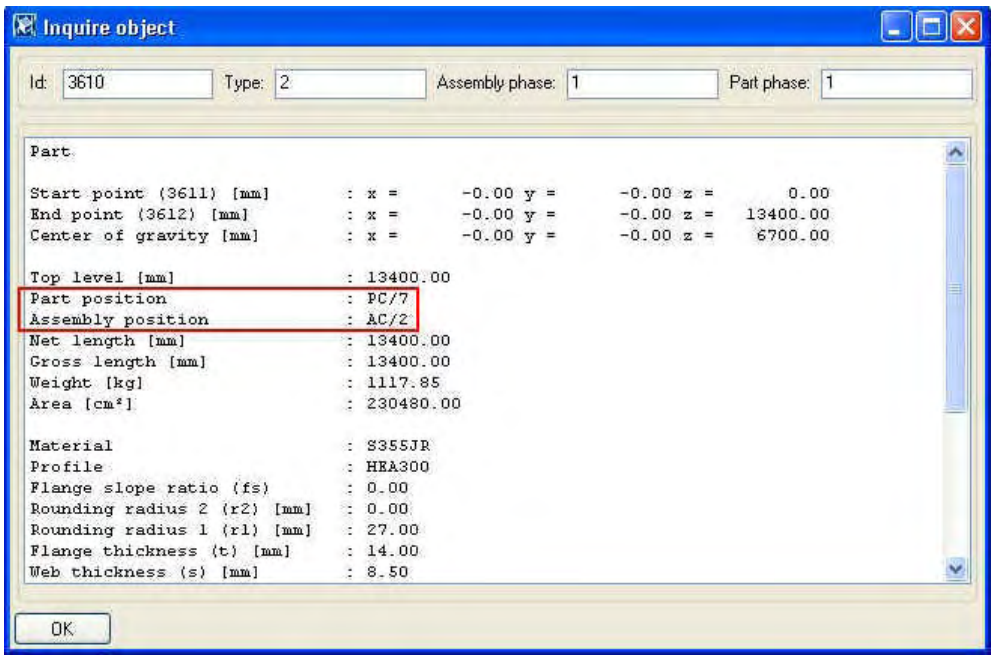
9.3 Check the Numbering, Create Reports

We will now check the marks assigned to parts, assemblies and cast units.

Inquire part

1. Select **Inquire > Object...**
2. Select any column

   The Inquire object dialog box opens. Now the steel columns have Part position and Assembly position numbers and concrete columns cast unit numbers (the position numbers may differ in your model).



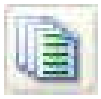
The numbering is now up to date and we can create reports. We will next create assembly part list and cast unit list of the whole model.

Help: Drawing > Printing > Printing reports > Producing reports on entire model

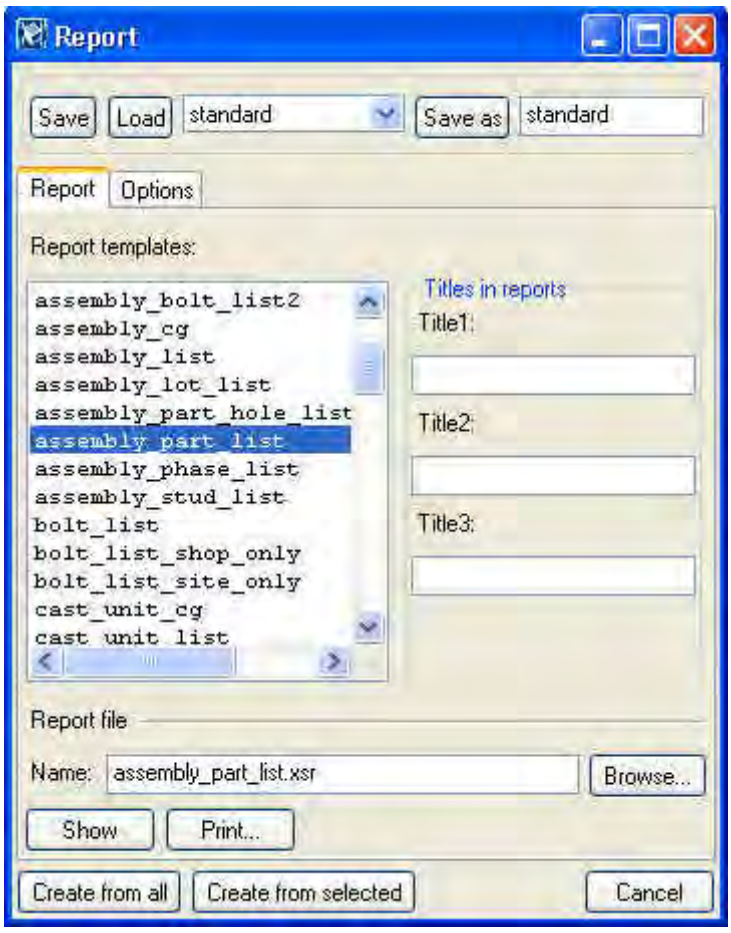
You can create reports from the early stage of the project to check the model and get pre-bill of material lists at quotation stage, cut lists, bolt lists, weld lists etc.

Create assembly part list and cast unit list

1. Click the **Report** icon to display the **Report** dialog box.



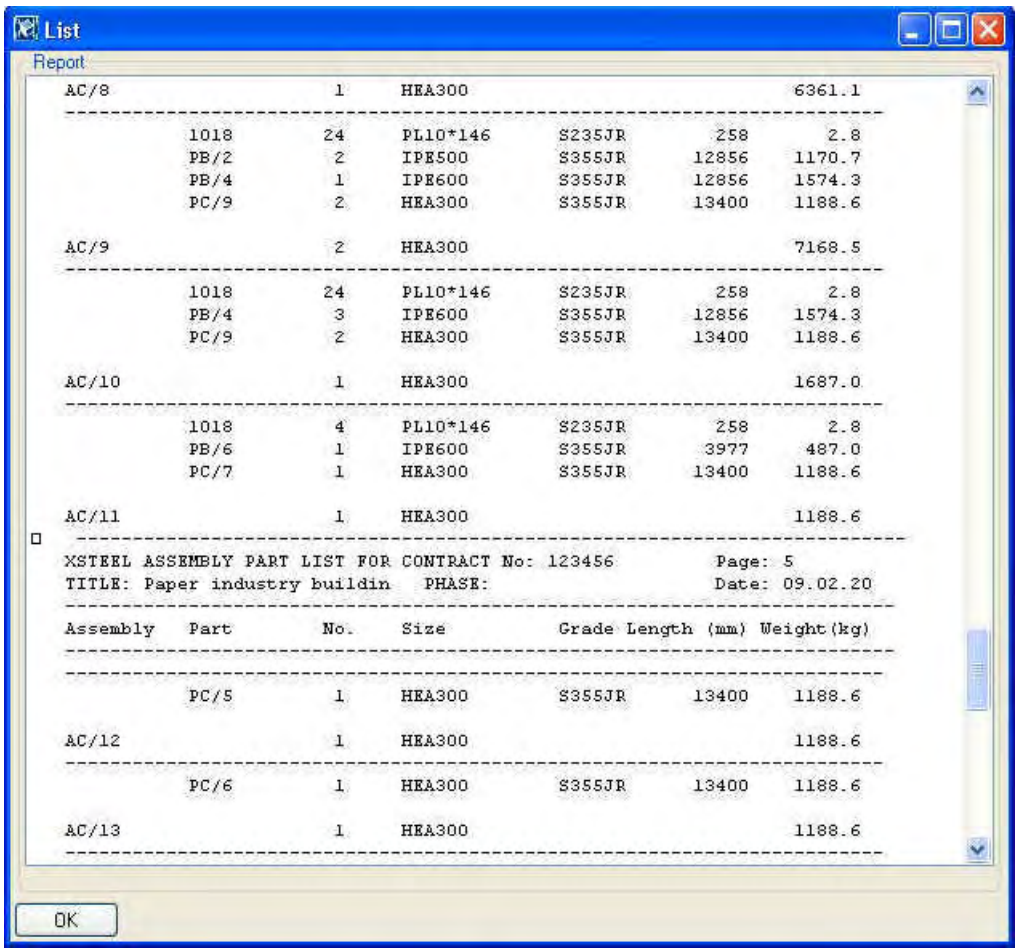
2. Select **Assembly_part_list** report template from the list.



3. On the **Options** tab check the options as shown below.

4. Click **Create from all** to run a report on the entire model.

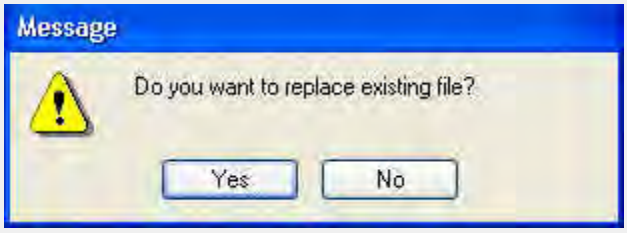
   The report is now automatically displayed in a dialog. Also the text file is created in the model folder.



5. Check the numbering range of the assemblies and parts.
6. Repeat the procedure above to create a cast unit list of the entire model

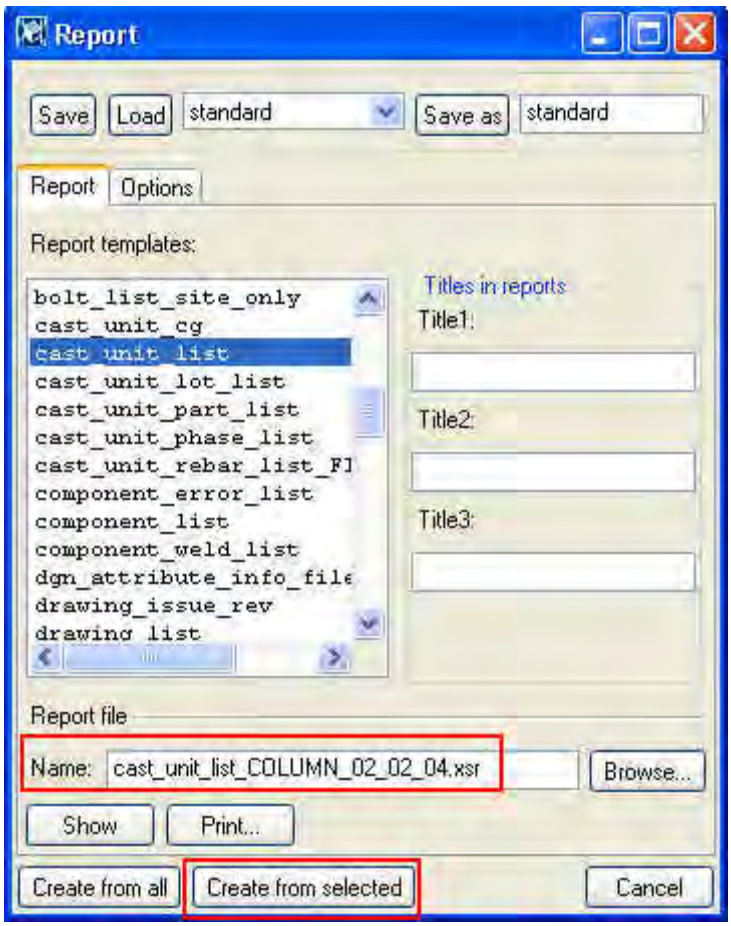
We will next create a cast unit list of all the concrete columns in our model. We will name the report with a specific name in order to keep the information on the stage of the project.

To keep the report files you have created give them a specific name. If you try to create a report with the existing name, Tekla Structures asks before it overwrites the existing report.



Create cast unit list of concrete columns

1. Use select filter **COLUMN_CONCRETE** to select all the concrete columns.
2. In the **Report** dialog box edit report file name to read: **cast_unit_list_COLUMN_02_02_04.xsr**.
3. (Next time you create the cast unit list of columns just change the date)



4. Click **Create from selected.**
5. The report is now displayed in a dialog box.
6. Select **Tools > Open model folder** to check that the actual text file appears in the model folder.

Tekla Structures stores a full numbering history in the file: **numbering.history**.

The file contains the following model numbering details:

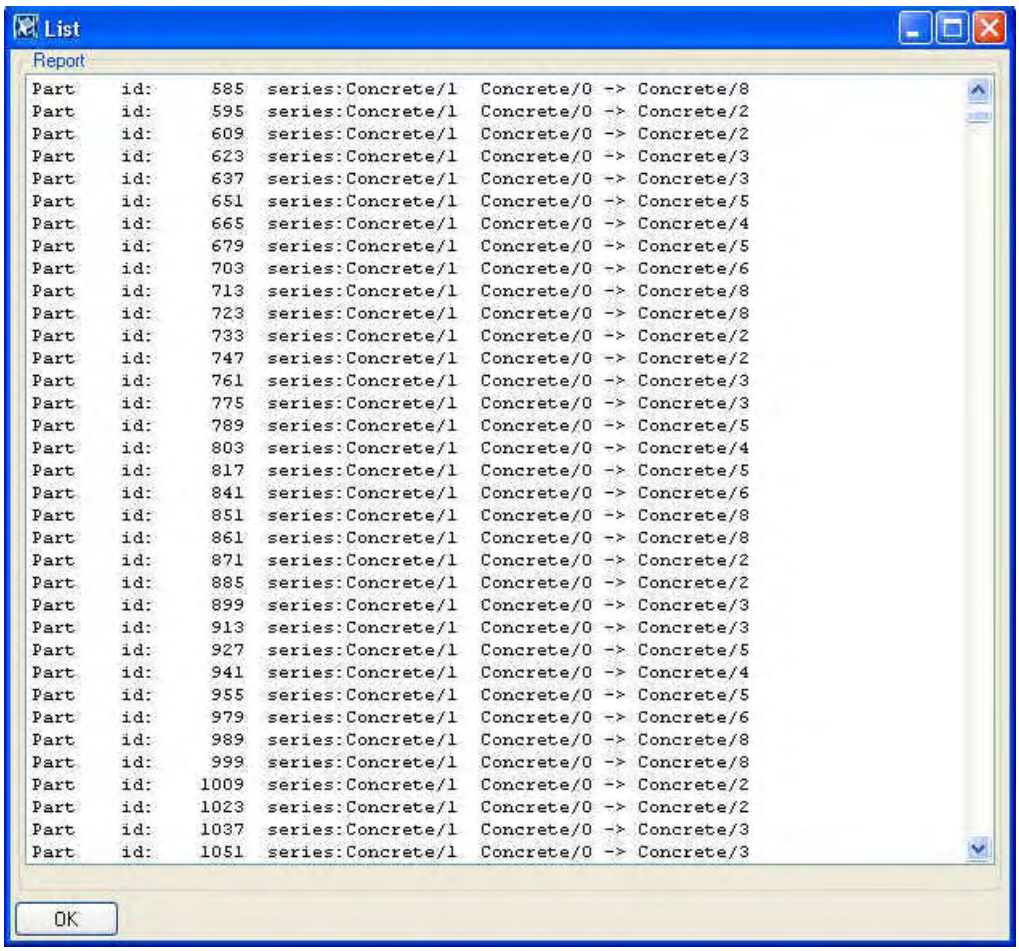
- User who carried out the numbering and the date
- Numbering Full / Modified
- Numbering settings used
- A list of defined numbering series
- Information on the parts, assemblies and cast units numbered

Help: System > Files and folders > Log files > Numbering history log

Study the numbering history log

1. From the menu select: **Tools > Display log file > Numbering history log...**

   This displays the numbering history in a dialog box.
2. For addition information on the log file refer to the Tekla Structures Online help.



When you select a list entry that contains the ID numbers of the parts or assembly, Tekla Structures highlights them in the model.

9.4 Example: Change Numbering Settings

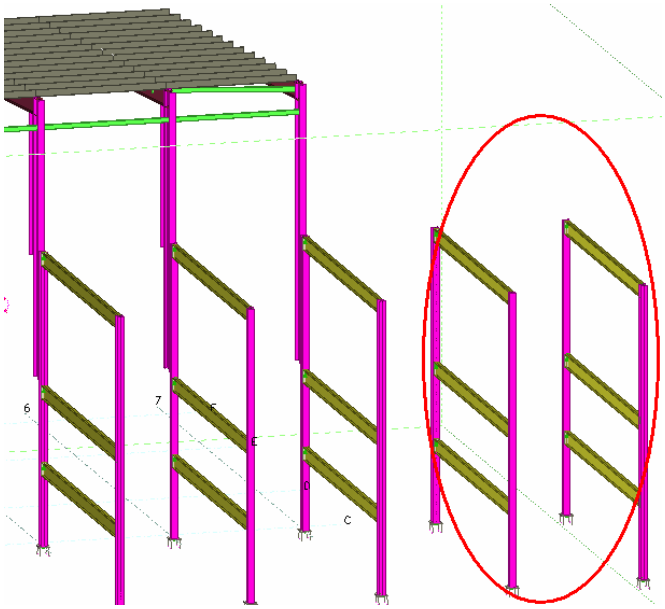
You may come across a situation in the middle of the project when you may need to change the numbering settings. For example, if some parts have already been ordered from the workshop you may need to have different part marks for additional parts even if they are the same as existing ones.

We will now choose the numbering setup option **Take new number** for new parts. As an example, we create some new parts to demonstrate the new numbering setup.

Changing the numbering settings in the middle of the project can be dangerous. In the case where you absolutely need to change the settings in the middle of the project make sure you understand how the changes will affect the part marks.

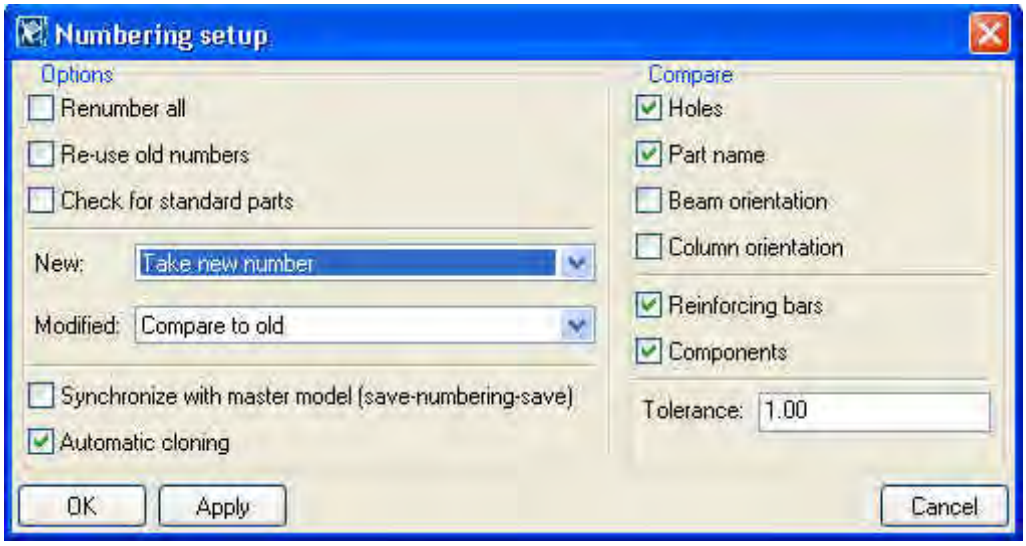
Copy beams and columns

1. Select the Model 1 beams and columns on grid line 7.
2. **Copy** them two times 6000 mm in the X direction



Change numbering settings

3. From the menu select: **Setup > Numbering…**
4. In the **New:** field choose the option, **Take new number**, click **Apply**



Number the model

From the menu select: **Tools > Numbering > Full.**

Always carry out a full numbering on the model after you have changed the numbering settings.

Inquire the result

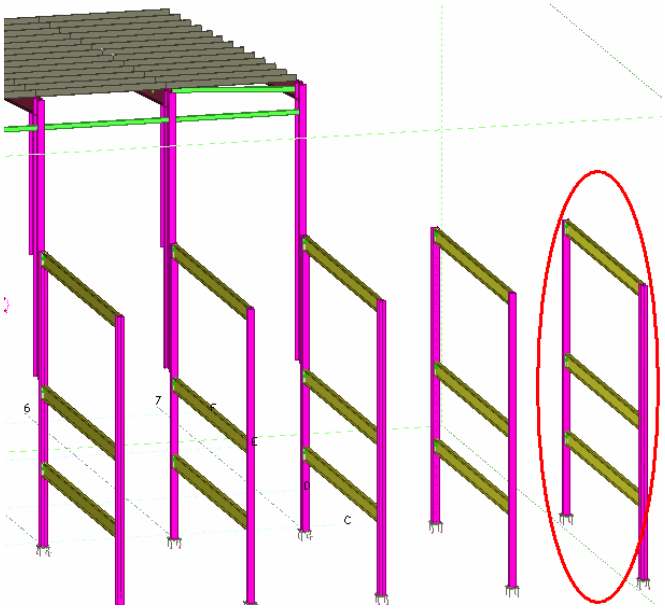
1. Use the **Inquire object** command to compare the marks of corresponding old and new parts.
2. Study the changes in the numbering history log (the position numbers in your model may differ from the example below).

```
Assembly id:  264219  series:AC/1  AC/0 -> AC/14
Assembly id:  266143  series:AC/1  AC/0 -> AC/14
```

9.5 Example: Change Numbering Series

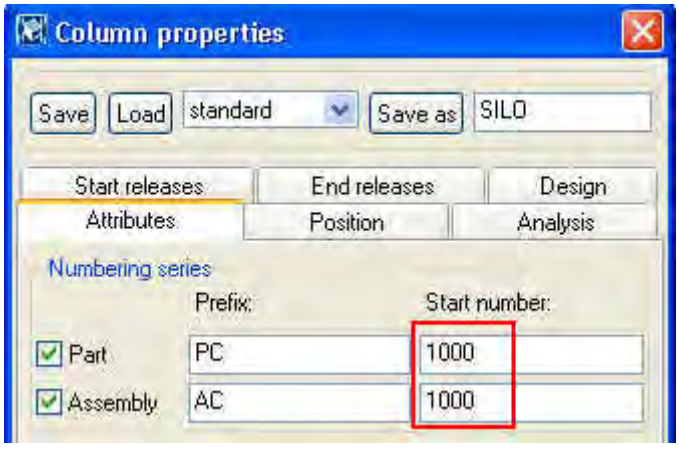
By defining the numbering series (numbering prefixes and start numbers) we can group the parts, assemblies and cast units the way we want. This way we can allocate parts in an area of a building to a particular numbering series.

We will now change the numbering series of the outermost frame that we copied by changing the start numbers from 1 to 1000. We will then change the numbering series of the end plates in the frame to 2001, by using the connection dialog box (which will overwrite the position number defined in the preferences dialog box).

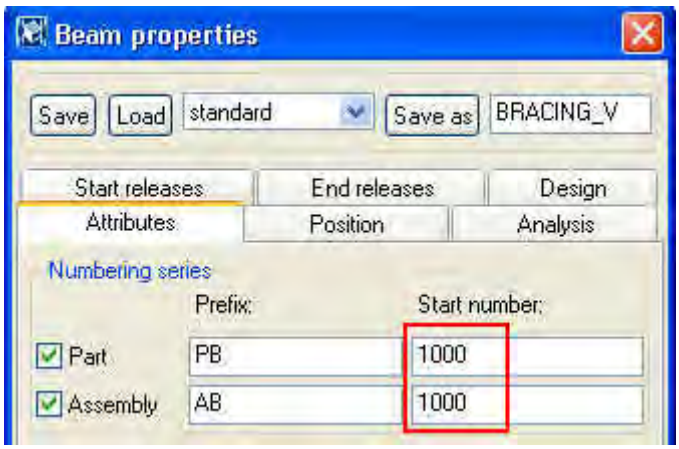


Change the numbering series

1. Select the columns on the outermost frame.
2. Modify the numbering series (only numbering series) of the columns as shown.



3. Select the beams on the outermost frame.
4. Modify the numbering series of the beams as shown

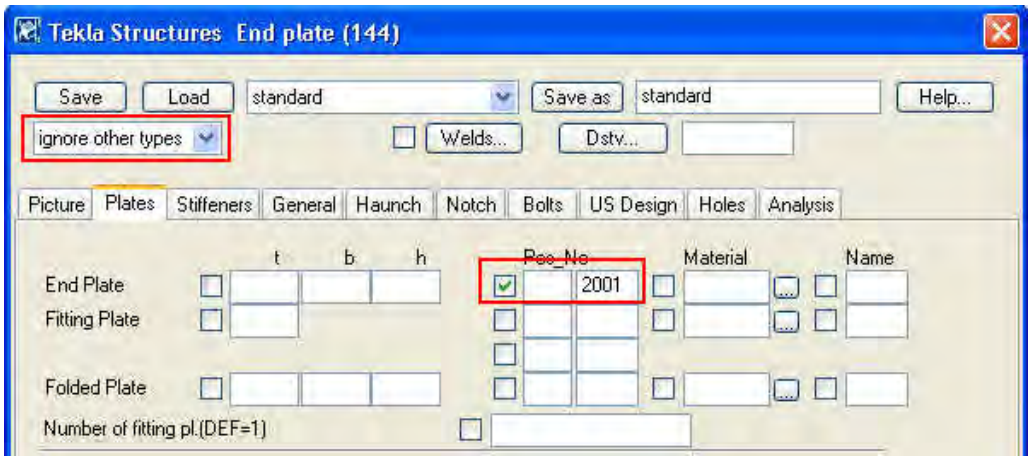


STOP

When planning numbering, ensure that you reserve enough numbers for each series. If one series overflows into another, Tekla Structures might allocate the same number to different parts. Tekla Structures will warn you about series overlaps. View the numbering history log to check which numbers overlap.

Change numbering series of the connection members

1. Open the **End plate 144** dialog box.
2. On the **Plates** tab edit the **End plate** position number to **2001.**
3. Modify all the end plate connections of the frame with only the **Pos. No** field checked.



Number the model

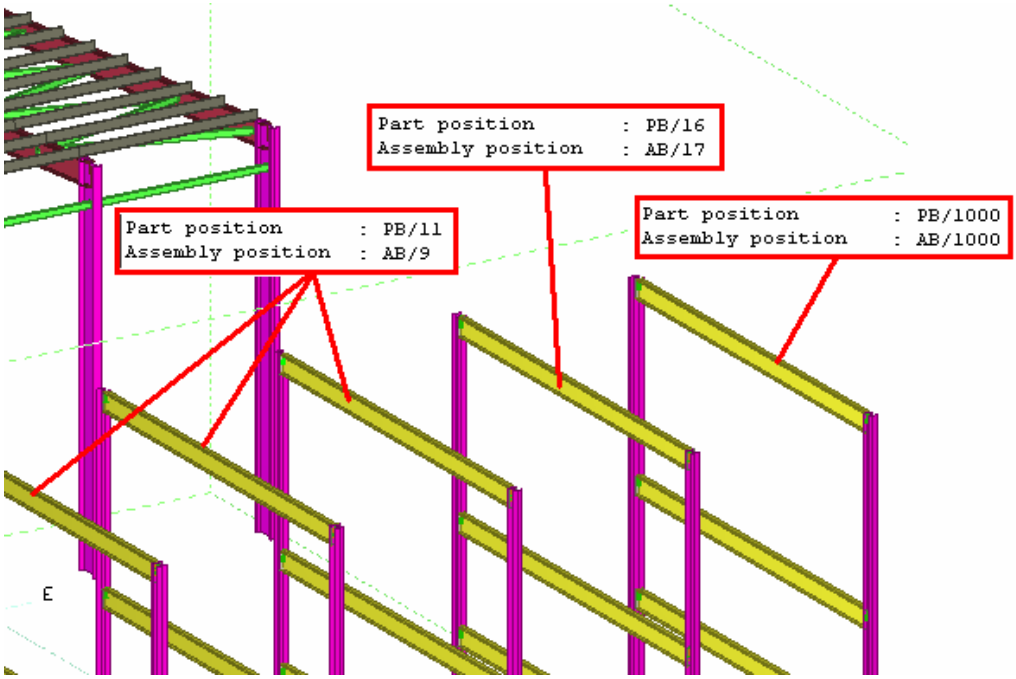
From the menu select **Tools > Numbering > Full**.

STOP

Always carry out full numbering on the model after you have changed numbering series.

Inquire the numbers

1. Use the **Inquire object** command to compare the marks of corresponding old and new parts



2. Study the changes in the numbering history log

We will now delete the parts created in this lesson.

Delete the frames

Delete the two frames created in this lesson.

9.6 Start Numbering from Scratch

After trying different numbering options (changing numbering settings and numbering series) there is a possibility that some earlier unwanted position numbers will remain. There may also be gaps in position numbers.

Before you start creating drawings to issue it is reasonable to start the numbering from scratch.

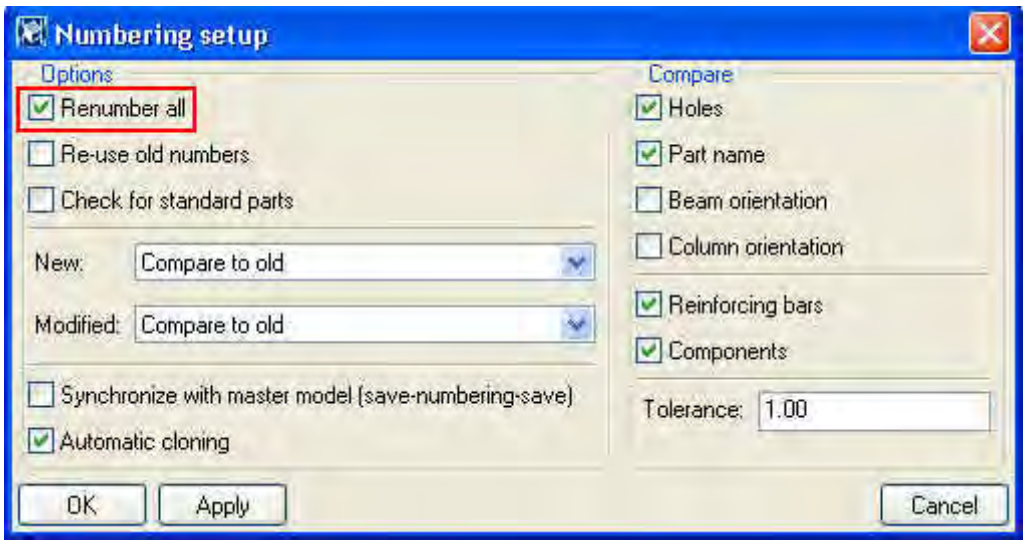
This method will ensure that each part in the model will really get the position numbers according the updated numbering series defined for them and no previous, unwanted numbers will be left.

Clear Numbers of all parts

1. Select all the parts in the model.
2. From the menu select: **Tools > Numbering > Clear selected**.

Renumber all

3. Check mark the option **Renumber all** in the **Numbering setup** dialog box.

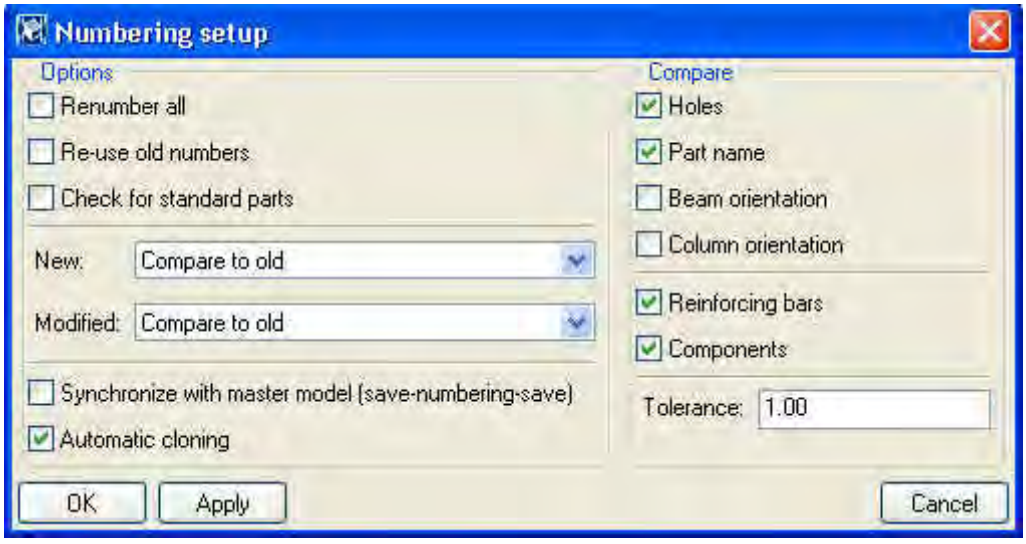


4. Select: **Tools > Numbering > Full**.

By using the **Unnumber selected** command or **Renumber all** setting you will loose all information about previous numbers. These settings can be safely used only at the beginning of a project.

Set the numbering settings for the project

5. Finally set the numbering setup the way you want numbering to be carried out in the project.



6. Click **OK**.
7. From the menu select: **Setup > Save defaults**.

You must save the **Numbering setup** for the model with command **Setup > Save Defaults** to restore the options by default when you open the model.

Use **Setup > Load Defaults** command to see the saved **Numbering setup** options.

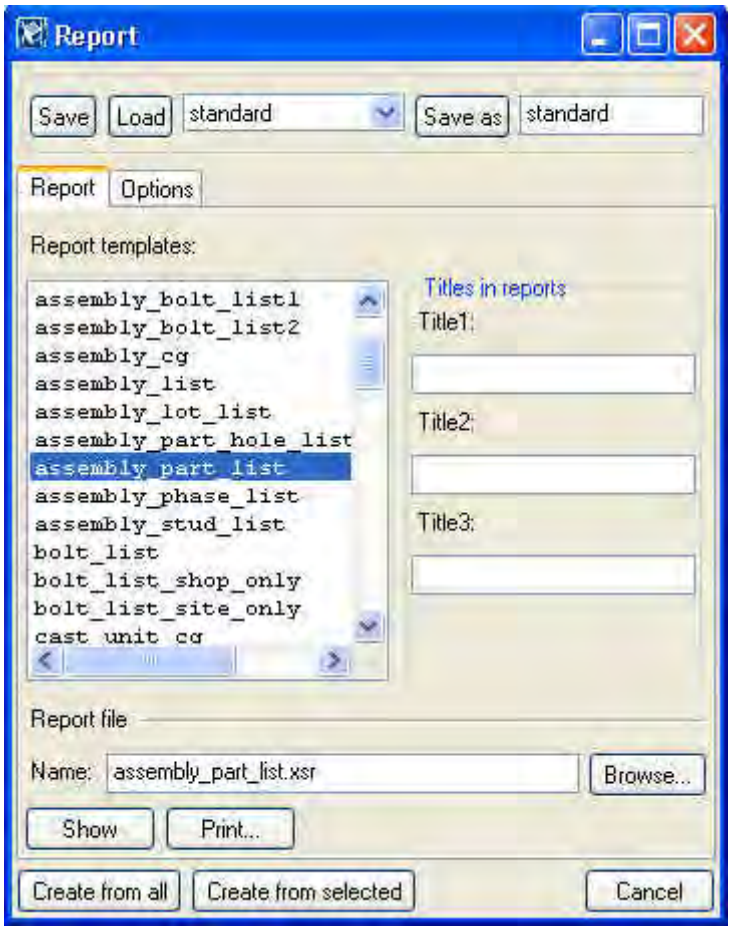
It is recommended that you normally use **Modified** numbering.

Here are a few cases in which **Full** numbering should be run instead of **Modified** numbering:

- When performing the first numbering after the numbering settings have been changed.
- When Standard part option is used
- When Pop marks are used in DSTV files

9.7 Create the Reports and Check Part Marks

Tekla Structures can produce many different reports from the information contained in the model. Study the available reports. You can also print the report with the **Print** option.



Check the Reports

Create the following reports and check the model:

- **Part_list** - Check the plate thicknesses for abnormalities
- **Part_list** - Check the numbering range
- **Part_list** - Check zero lengths of material
- **Part_list** - Check the steel grades
- **Assembly_list** - Check the numbering range for steel assemblies
- **Assembly_part_list** - Check the main item profile (plates or flats may indicate incorrect welding)
- **Cast_Sequence_list** - Check the numbering range
- **Cast_list** - Check the main item profile
- **Material_list** – Check the grades used are correct
- **Rebar_schedule_FIN** - Check the number and types of rebars

Other Checks

Below are listed some other ways to check your model:

- Clash Check the entire model
- Check the erect ability of precast members
- Use the view or select filter to ensure that, beams are called BEAM, columns are called COLUMN etc.
- Check the existence of marks on a marking plan and check that the updating of marks is done
- Check that the Title block information on each drawing is correct