

Numbering and Reports

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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 marks are assigned in numbering
- How to check part marks
- To use report templates.

8.1 Numbering Basics

Defining numbers to be used for parts

8

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 to which floor the part is located in (1st floor, 2nd floor, etc.).

You can name the numbering series to which a part, an assembly or a 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 a Cast Unit Position number instead of an 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 selecting **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 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 the prefix is PC and the starting number is 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. For example, you decide whether a profile name affects the part number, and define the degree of tolerance in comparing the parts in numbering.

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

8.2 Number the Model

In lesson 5 (Basic Modeling 2) we defined the numbering series for the members in our model. Thus, 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 about the numbering not being up to date.



We will use **Inquire object** to see the current state of the 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.

ld: 3610 Type: 2			A	ssembly p	ihase:	1			Part phase: 1	
Part										
Start point (3611) [mm]	12	x	2	-0.00	v =		-0 00 3	z =	0.00	
End point (3612) [mm]		x	¥	-0.00	v =		-0.00	z =	13400.00	
Center of gravity [mm]	32	x	₩.	-0.00	y =		-0.00 :	z =	6700.00	
Top level [mm]		13	400.00	5						
Part position	10	PC	/0							
Assembly position	32	AC	/0							
Net length [mm]	1	13	400.00	5						
Gross length [mm]	1	13	400.00	0						
Weight [kg]	1	11	17.85							
Area [cm²]	32	23	0480.0	00						
Material		S 3	55JR							
Profile	1	HE	A300							
Flange slope ratio (fs)	33	Ο.	00							
Rounding radius 2 (r2) [mm]	4	Ο.	00							
Rounding radius 1 (r1) [mm]	1	27	.00							
Flange thickness (t) [mm]	18	14	.00							
Web thickness (s) [mm]	32	8.	50							



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 full numbering 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.

8.3 Check the Numbering, Create Reports

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

Inquire part

2. Select any column.

1. Select Inquire > Object...

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

ld: 3610 Type: 2				Ass	sembly (ohase	: 1				Part phase:	1	
Part													
Start noint (3611) [mm]		v	£		-0 00	w :		-0	nn	7 =	0.0	າດ	
Rnd noint (3612) [mm]	- 18	x	=		-0.00	v :		-0	00	7 =	13400 1	10	
Center of gravity [mm]	52	x	=		-0.00	y :		-0.	00	z =	6700.0	00	
Top level [mm]	35	1:	400.	00									
Part position	22	P	/7										
Assembly position	:	A	12										
Net length [mm]	82	1:	400.	00									
Gross length [mm]		1:	400.	00									
Weight [kg]	33	1.	17.8	5									
Area [cm²]	2.5	2:	0480	.00	į.								
Material	35	s	55JR										
Profile	32	H	A300										
Flange slope ratio (fs)	1	0.	00										
Rounding radius 2 (r2) [mm]	1	0.	00										
Rounding radius 1 (rl) [mm]	10	2'	.00										
Flange thickness (t) [mm]	13	1.	.00										
Web thickness (s) [mm]	12	8	50										

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

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



You can create reports already at an 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 on the **Report** icon to display the **Report** dialog box.



2. Select Assembly_part_list report template from the list.

🕅 Report	
Save Load standard	Save as standard
Report Options	
Report templates:	
assembly_bolt_list2 assembly_cg assembly_list assembly lot list	Titles in reports Title1:
assembly part hole list assembly part list assembly phase_list	Title2;
assembly_stud_list bolt_list bolt_list_shop_only	Title3:
cast_unit_cg cast_unit_list	
Report file	
Name: assembly_part_list.xsr	Browse
Show Print	
Create from all Create from selected	d Cancel

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

Report	
Save Load standard	Save as standard
Report Options	
Show report:	On dialog 🛛
Show created report:	Yes 💌
Create from all Create fr	om selected Cancel

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

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

aw);							
.C/8		213 1	HEA300			6361.1	
A 11 20 20 20 20	1010	24	DT 10+14C	8225TD		~ ~ ~	
	1010	24	LPELO. 140	COLOUR	12056	1120 2	
	PD/2	1	TRESCO	COLLIN	12056	1574 0	
	PB/4 DC/9	2	TAF9300	COLLIN	12856	1199 6	
	1075	-5 -7- 8	IIAASOO	SSSSE	10400	1100.0	
.C/9		2	HEA300			7168.5	
	1018	24	PL10*146	\$235JB	258	2.8	
	PB/4	3	IPR600	S355JR	12856	1574.3	
	PC/9	2	HEAGOO	S355JR	13400	1188.6	
6410		2000 - 10	1123.200			1607.0	
			HEASOO			1007.0	
	1018	4	PL10*146	S235JR	258	2.8	
	PB/6	1	IPE600	S355JR	3977	487.0	
	PC/7	L	HEA300	S355JR	13400	1188.6	
.C/11		1	HEA300			1188.6	
STEEL ITLE:	ASSEMBLY PAI Paper indust	T LIST FO	OR CONTRACT No: in PHASE:	123456	Page: Date:	5 09.02.20	
ssemb.	ly Part	No.	Size	Grade Len	igth (mm) W	eight (kg)	
0000000	PC/5	1	HEA300	S355JR	13400	1188.6	
C/12		I	HEA300			1188.6	
	PC/6	1	HEA300	S355JR	13400	1188.6	
.C/13		I	HEA300			1188.6	

- 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 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.

-	
•	Do you want to replace existing file?
:)	
	Yes No

Create cast unit list of concrete columns

- 1. Use select filter COLUMN_CONCRETE to select all concrete columns.
- 2. In the **Report** dialog box, edit report file name to read: cast_unit_list_COLUMN_02_02_04.xsr.

(Next time you create the cast unit list of columns just change the date)

🕷 Report	
Save Load standard	Save as standard
Report Options	
Report templates:	Titles in reports
bolt_list_site_only	Title1:
cast_unit_lot_list cast_unit_part_list cast_unit_phase_list	Title2:
cast_unit_rebar_list_F1 component_error_list component_list component weld list	Title3:
dgn_attribute_info_file drawing_issue_rev drawing list	
Report file	4ł
Name: cast_unit_list_COLUMN_02_	02_04.xsr Browse
Show Print	
Create from all Create from selecte	d Cancel

- 3. Click Create from selected.
- 4. The report is now displayed in a dialog box.
- 5. 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

Study the numbering history log

1. Select Tools > Display log file > Numbering history log...

This displays the numbering history in a dialog box.

2. For more information on the log file, see help file Help: System > Files and folders > Log files > Numbering history log.

Report					
Part	id:	585	series:Concrete/l	Concrete/0 -> Concrete/8	
Part	id:	595	series:Concrete/l	Concrete/0 -> Concrete/2	
Part	id:	609	series:Concrete/l	Concrete/O -> Concrete/2	
Part	id:	623	series:Concrete/l	Concrete/0 -> Concrete/3	
Part	id:	637	series:Concrete/1	Concrete/O -> Concrete/3	
Part	id:	651	series:Concrete/1	Concrete/0 -> Concrete/5	
Part	id:	665	series:Concrete/l	Concrete/0 -> Concrete/4	
Part	id:	679	series:Concrete/l	Concrete/0 -> Concrete/5	
Part	id:	703	series:Concrete/1	Concrete/0 -> Concrete/6	
Part	id:	713	series:Concrete/1	Concrete/0 -> Concrete/8	
Part	id:	723	series:Concrete/l	Concrete/0 -> Concrete/8	
Part	id:	733	series:Concrete/l	Concrete/O -> Concrete/2	
Part	id:	747	series:Concrete/1	Concrete/0 -> Concrete/2	
Part	id:	761	series:Concrete/1	Concrete/0 -> Concrete/3	
Part	id:	775	series:Concrete/l	Concrete/O -> Concrete/3	
Part	id:	789	series:Concrete/l	Concrete/O -> Concrete/5	
Part	id:	803	series:Concrete/l	Concrete/0 -> Concrete/4	
Part	id:	817	series:Concrete/1	Concrete/0 -> Concrete/5	
Part	id:	841	series:Concrete/l	Concrete/O -> Concrete/6	
Part	id:	851	series:Concrete/l	Concrete/0 -> Concrete/8	
Part	id:	861	series:Concrete/1	Concrete/0 -> Concrete/8	
Part	id:	871	series:Concrete/1	Concrete/0 -> Concrete/2	
Part	id:	885	series:Concrete/l	Concrete/O -> Concrete/2	
Part	id:	899	series:Concrete/l	Concrete/0 -> Concrete/3	
Part	id:	913	series:Concrete/l	Concrete/O -> Concrete/3	
Part	id:	927	series:Concrete/1	Concrete/0 -> Concrete/5	
Part	id:	941	series:Concrete/l	Concrete/0 -> Concrete/4	
Part	id:	955	series:Concrete/l	Concrete/0 -> Concrete/5	
Part	id:	979	series:Concrete/l	Concrete/0 -≻ Concrete/6	
Part	id:	989	series:Concrete/1	Concrete/0 -> Concrete/8	
Part	id:	999	series:Concrete/l	Concrete/0 -> Concrete/8	
Part	id:	1009	series:Concrete/l	Concrete/0 -> Concrete/2	
Part	id:	1023	series:Concrete/l	Concrete/0 -≻ Concrete/2	
Part	id:	1037	series:Concrete/l	Concrete/0 -> Concrete/3	
Part	id:	1051	series:Concrete/l	Concrete/O -> Concrete/3	



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

8.4 Change Numbering Settings

You may come across a situation in the middle of the project when you 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 the 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 a 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 gridline 7.
- 2. **Copy** them twice 6000 mm in the x direction.



Change numbering settings

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

Options		Compare
Renum	iber all	V Holes
🗌 Re-use	old numbers	Part name
Check	for standard parts	Beam orientation
New:	Take new number 💌	Column orientation
Modified:	Compare to old	 Reinforcing bars Components
📃 Synchr 🛃 Automa	onize with master model (save-numbering-save)	Tolerance: 1.00

Number the model On 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/l	AC/0 ->	AC/14
Assembly id:	266143	series:AC/l	AC/0 -≻	AC/14

8.5 Change Numbering Series

By defining a numbering series (numbering prefixes and start numbers) we can group parts, assemblies and cast units the way we want. This way we can allocate parts in a certain 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 (and only the numbering series) of the columns as shown.

Save Load	standard	💌 Sa	ive as SII	.0
Start relea:	ses	End relea	ises	Design
Attributes	8	Position		Analysis
Numbering se	eries Prefix:		Start nur	nber:
Part	PC		1000	
	AC		1000	

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

Save Load	standard	~ (Save as	BRACING_V
Start relea:	ses	End relea	ases	Design
Attributes		Position		Analysis
Numbering se	eries Prefix:		Start nu	umber:
🗹 Part	PB		1000	
Assemblu	AB		1000	



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.

🕅 Tekla Struc	tures End pla	te (144)				×
Save	Load standar	4	Sa Sa	ve as standard	1	Help
ignore other type	:5 🖌		welds	Dstv		
Picture Plates	Stiffeners Gene	eral Haunch	Notch Bolts	US Design H	Ioles Analysis	
	t	b h		Ne Ma	terial	Name
End Plate				2001		
Fitting Plate						
Folded Plate						
Number of fitting	pl.(DEF=1)					

Number the model On the menu, select Tools > Numbering > Full.



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



Study the changes in the numbering history log.
 We will now delete the parts created in this lesson.
 Delete the two frames created in this lesson.

Delete the frames

8.6 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 to the updated numbering series defined for them and no previous, unwanted numbers will be left.

Clear numbers of all parts

2

1. Select all the parts in the model.

2. On the menu, select: Tools > Numbering > Clear selected.

Renumber all

3.	Check-mark the option $\ensuremath{Renumber}\xspace$ all in the $\ensuremath{Numbering}\xspace$ setup	dialog box.

🕅 Numb	ering setup	
Options Renum Re-use	ber all old numbers for standard parts	Compare Holes Part name Beam orientation
New: Modified:	Compare to old	Column orientation Reinforcing bars
Synchr	onize with master model (save-numbering-save) atic cloning	Tolerance: 1.00
ОК		Cancel

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 the numbering to be carried out in the project.

Options		Compare		
Renumber all		V Holes		
Re-use old numbers		🗹 Part name		
Check	for standard parts	Beam orientation		
New:	Compare to old	Column orientation		
Modified:	Compare to old	 Reinforcing bars Components 		
🗌 Synchr 🗹 Automa	onize with master model (save-numbering-save) atic cloning	Tolerance: 1.00		

- 6. Click **OK**.
- 7. On the menu, select: **Setup > Save defaults**.



You must save the **Numbering setup** for the model with the 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.

In these cases, **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.

8.7 Create 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.

🕅 Report	
Save Load standard	Save as standard
Report Options	
Report templates:	
assembly_bolt_list1	Titles in reports Title1:
assembly_list assembly_lot_list assembly_part_hole_list assembly_part_list	Title2;
assembly_phase_list assembly_stud_list bolt_list bolt_list	Title3:
bolt_list_site_only cast unit co	
Report file	
Name: assembly_part_list.xsr	Browse
Show Print	
Create from all Create from selected	d Cancel

Check 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 that the grades that are used are correct
- **Rebar_schedule_FIN** Check the numbers and types of rebars

Other checks

Here are some other ways to check your model:

- Clash-check the entire model
- Check the erectability 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.