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Autodesk Advance Steel

Drawing Style Manager’s guide

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Chapter 1
Introduction

In this chapter:

- *Details and Detail Views*
- *Drawing Styles*
- *Drawing Style Manager*
- *Accessing the Drawing Style Manager*
- *Drawing Style Manager User Interface*
- *Using the Context Help*
- *Drawing Styles Management*

This guide is an introduction to Advance **Drawing Style Manager**. It describes the basic operations of the Drawing Style Manager and presents a precise guide of the most important configuration options offered by this complex tool.

*All software tools described in this guide and all remarks related to the product pertain only to the Advance Steel suite and for reading simplification only the generic name **Advance** is used.*

Advance contains a variety of predefined drawing styles for the automatic creation of general arrangement drawings, shop drawings for single parts and assemblies and much more. Moreover, individual drawing styles can be defined by the user. The creation and editing of user-defined drawing styles is described in this guide.

The general features of the Drawing Style Manager are explained in the **Introduction** chapter.

The **Drawing Style Properties** chapter offers a thorough description of the user interface and the tools for creating new drawing styles.

In addition to drawing styles, Advance includes processes for accelerating drawing creation. These processes automatically assign drawing styles and layouts to selected parts of the drawing. The **Processes** chapter describes how to use the Drawing Process Manager to create and configure drawing processes.

Details and Detail Views

A drawing may consist of several created details, which are individual Advance objects with their own properties.

An **Advance detail** is a drawing created from the Advance model. For example:

- View of the complete model
- Single part drawing with several views
- Main part drawing with several view/cuts

The views and cuts in an Advance detail are called detail views. They represent a model part with the following settings:

- Scale
- Coordinate system
- Presentation type of model objects
- Labels of model objects
- Dimensions

Drawing Styles

Advance offers a variety of **drawing styles** for the creation of general arrangement drawings, sections and shop drawings in various layouts.

*A **drawing style** is a group of instructions used to create a detail drawing. It defines how the elements are displayed, labeled and dimensioned.*

Drawing styles automatically create drawings with a layout modified exactly to the user's requirements. Drawing styles are used similarly to dimension styles, line styles, etc., in AutoCAD®.

The styles contain various settings (displayed parts, view, dimension, labeling, representation, etc.) in database tables (libraries). They are available in Drawing styles Manager accessible in the **Output** ribbon**,** the **Document Manager** panel.

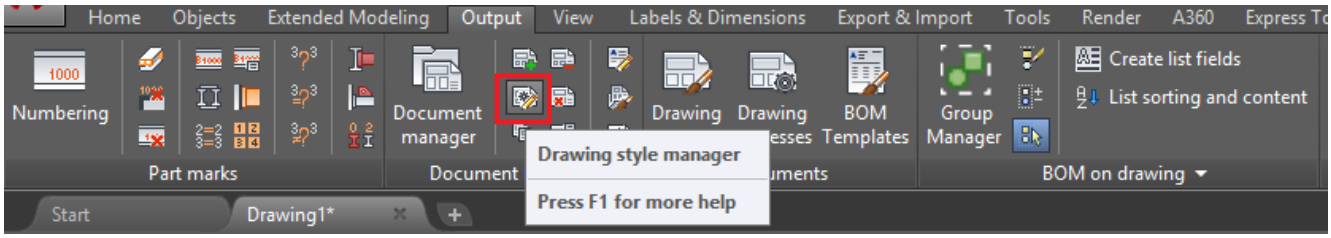
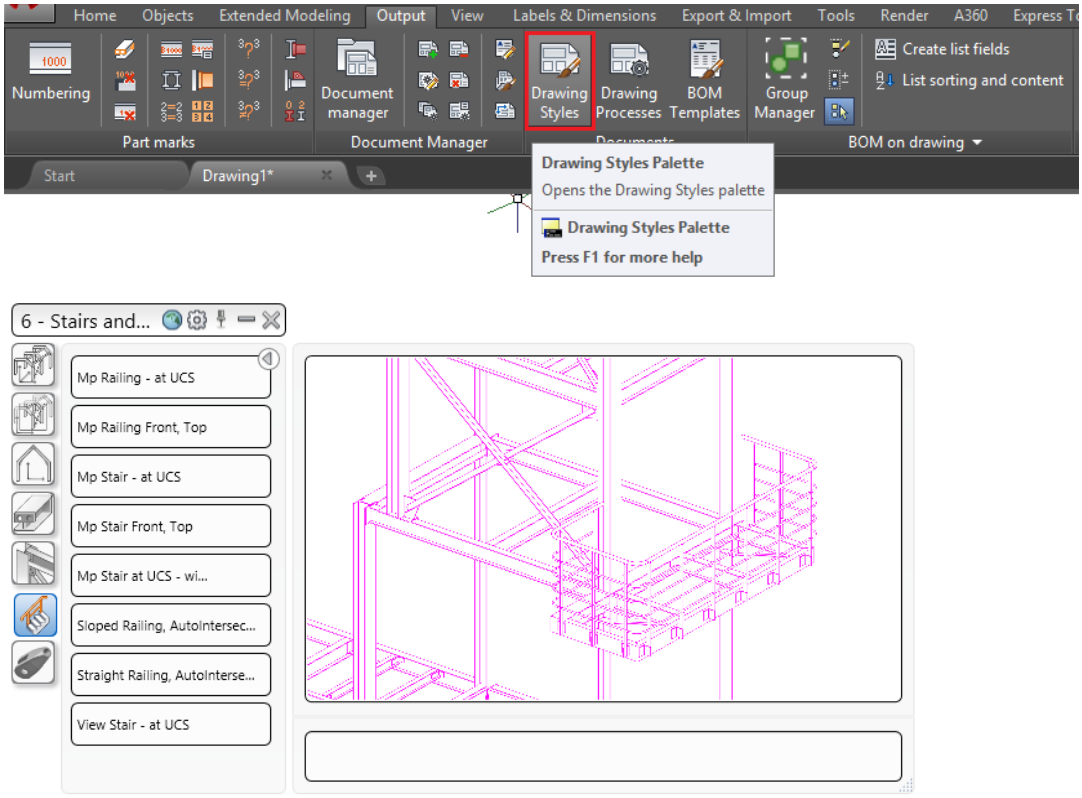


Figure 1: Drawing styles the **Output** ribbon**, Documents** panel

The preferred selection of the existing drawing styles are displayed in Drawing Style Palette, accessible in the **Output** ribbon**,** the **Documents** panel.



The rules included in a drawing style can be modified. The user can also define new drawing styles.

A drawing style for a model or for selected objects can be assigned during the drawing creation. It can be assigned to an object when it is created or, later, via the **Drawing style** tab in the “Properties” dialog. The drawing style distinguishes between single parts and assemblies and is used for the drawing creation.

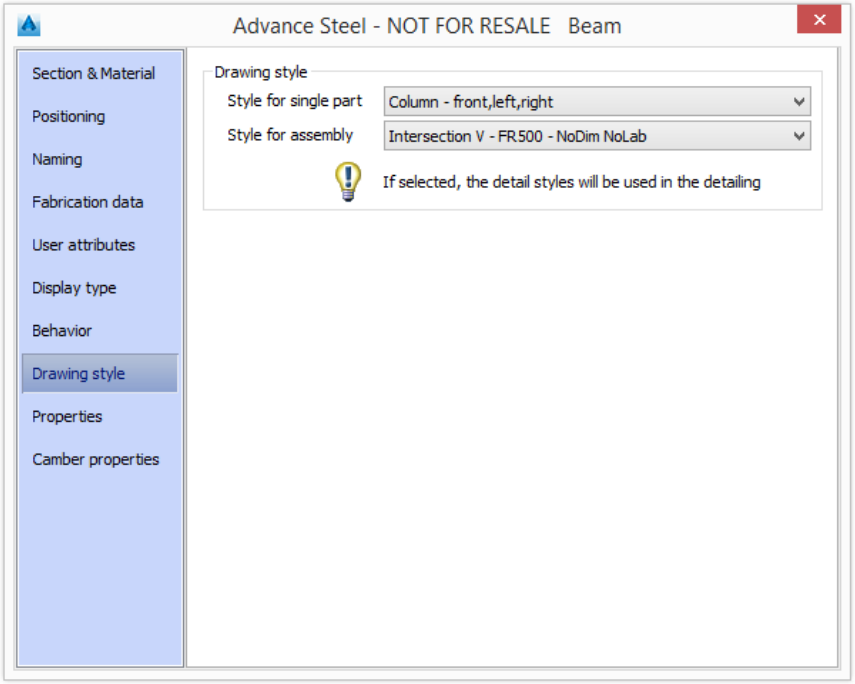


Figure 2: **Drawing style** tab in the “Properties” dialog box

Drawing Style Manager

The styles used in drawing creation can be customized to conform to the user's requirements and company standards using the **Drawing Style Manager**. The geometry presentation, type and content as well as the dimension can be modified.

A drawing style has a large number of properties to accommodate the numerous requirements in steel detailing. The Drawing Style Manager logically groups the properties in *sub-styles* and gives them a name. The group of properties (*sub-style*) can be reused for multiple details.

The behavior of several drawing styles can be changed with a single sub-style modification. For example, the label content for slotted holes in the top view can be modified without changing all drawing styles.

The drawing style structure is hierarchical: each detail contains one or several views and each view has its own properties (direction, clipping, etc.), objects, dimensions and labels. This hierarchy is also reflected in the user interface. The interface clearly shows that modifying a sub-style modifies all drawing styles that use that sub-style.

Accessing the Drawing Style Manager

_AstM5DetailStylesManagerNew

- On the **Output ribbon, Document Manager** category, click "Drawing Style Manager" .

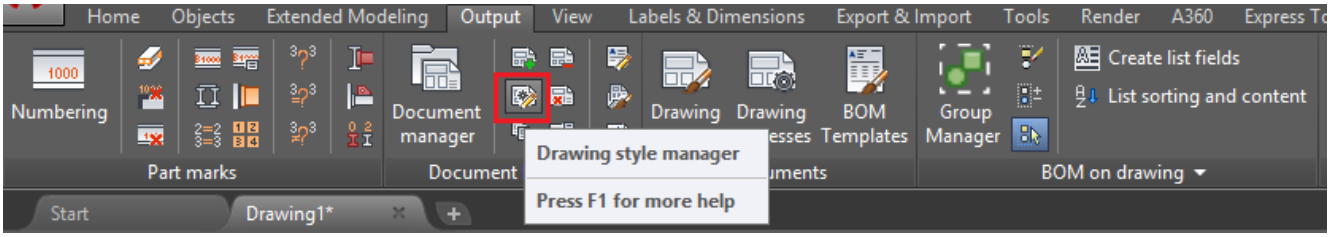
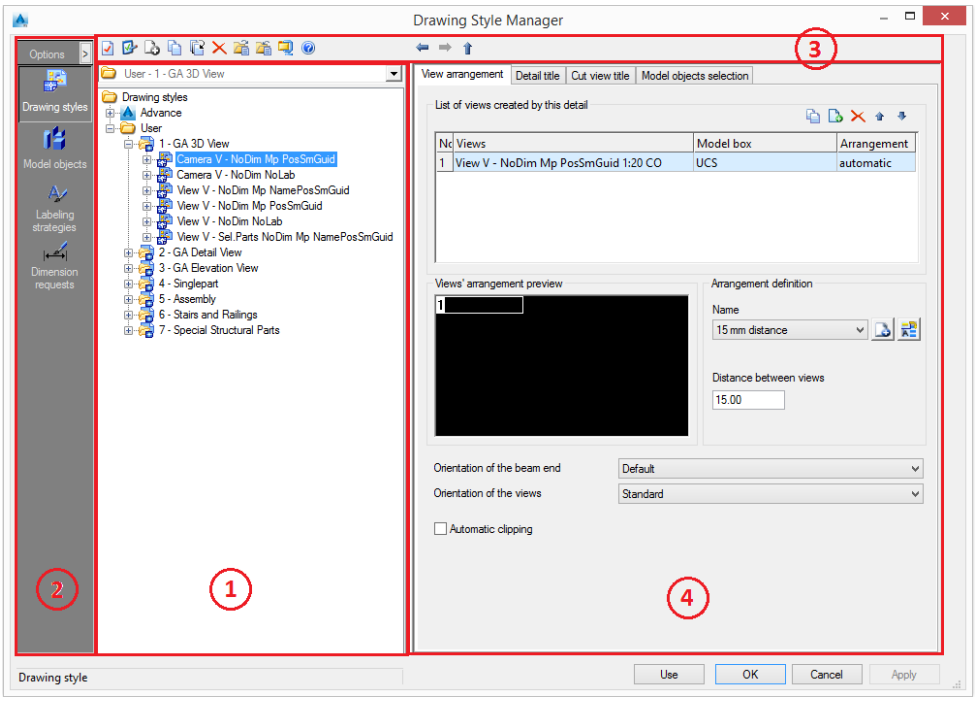


Figure 3: Accessing the Drawing Style Manager from ribbon

Drawing Style Manager User Interface

The Drawing Style Manager user interface reflects the structure of a drawing style.



1: Tree Panel

2: Component Panel

3: Toolbar

4: Properties Panel

Figure 4: Drawing Style Manager

Tree Panel

By clicking ⊞ sign, the tree branch expands. The drawing styles in the tree are separated into two main categories:

- Advance – This category includes all the drawing styles available in Advance. Their properties cannot be modified. If additional country settings are installed, a category will be created for each country setting.
- User – This category includes a copy of all the drawing styles from the Advance category that can be modified at any level.

The drawing styles are grouped in categories (Camera, columns, etc.).

A category is selected using the drop-down list above the tree panel. The tree panel displays all the drawing styles in the selected category.

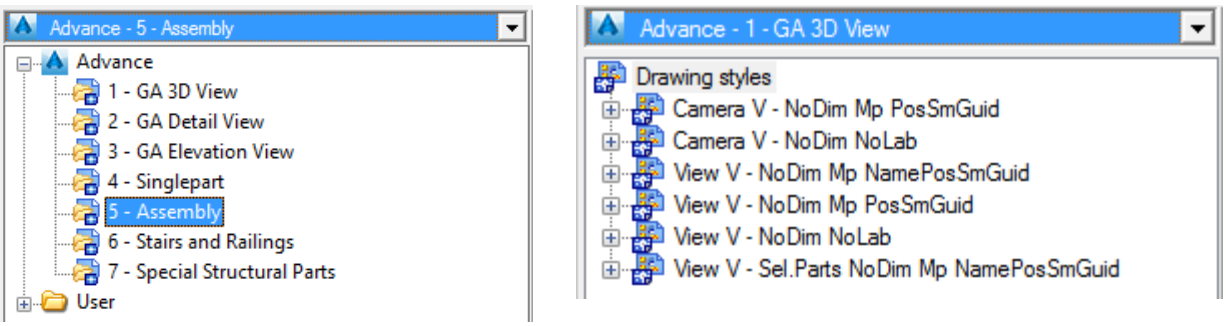


Figure 5: Category drop-down list (left) and tree panel display of Assembly category (right)

To view the entire tree, select the option **Show full tree** from the **Options** menu.

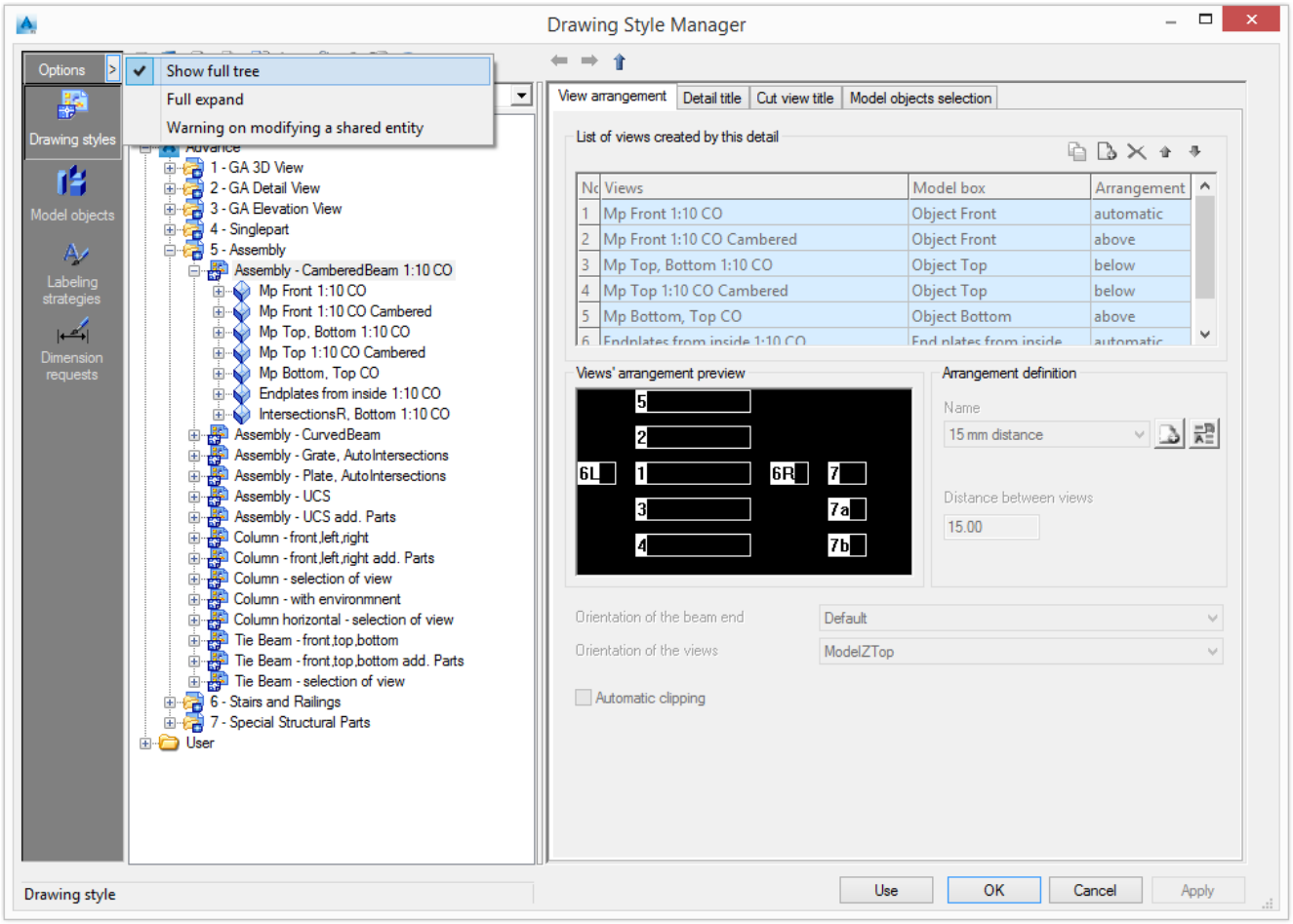


Figure 6: Drawing Style Manager - Full tree view

***Note**: Modifying a sub-style modifies all drawing styles that use that sub-style. The Drawing Style Manager can be set up to display a warning when a shared item (labeling strategy, dimension request, etc.) is modified.*

Component Panel

The component panel displays the most important sub-styles.

Component	Description
Drawing styles	Style definitions, including the label and dimensions
Model objects	The list of model objects and functions
Labeling strategies	Definition of the label content, orientation and positioning for the text.
Dimension requests	Definition of the object dimension points in a dimension chain.

Toolbar

The toolbar contains all the necessary management functions:

Button	Function
	Change the drawing style name and category

Button	Function
	Use the selected drawing style
	New
	Copy
	Deep copy
	Delete
	Export
	Import
	Compact
	Drawing Style Manager wizard
	Context help

A context menu provides quick access to the management functions available for the selected element (drawing style, view, model object, etc.).

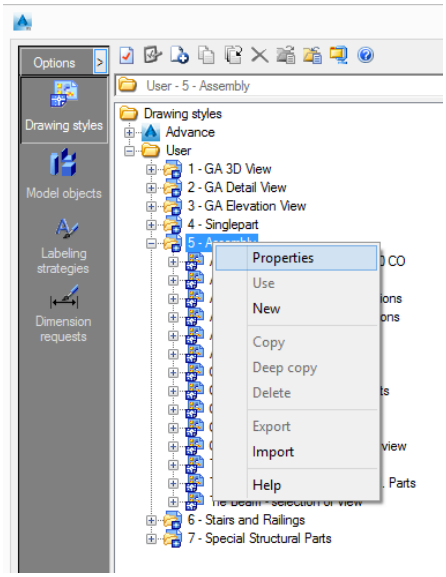


Figure 7: Drawing Style Manager - Context menu

Three arrow buttons are used to navigate between the properties sheet.

Button	Function
	Return to a previously displayed sheet
	Go to the next sheet
	Up one level

Properties Panel

When an item is selected on the tree panel, the item's properties are displayed in the properties panel.

To modify the column width, drag the boundary on the right side of the column until the column is the desired width.

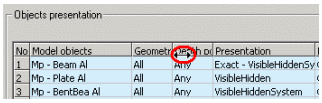


Figure 8: Column resizing

Buttons

Button	Function
Use	Opens the selected drawing style. The Drawing Style Manager closes and the drawing creation begins.
Apply	Saves any modifications without closing the Drawing Style Manager window.
OK	Saves any modifications and exits the Drawing Style Manager.
Cancel	Exits the Drawing Style Manager without saving any modifications.
Help	Opens the online help.

Drawing Styles Management

The **Drawing Style Manager** offers all the necessary tools for managing drawing styles.

Creating a new category

1. Click **New** .

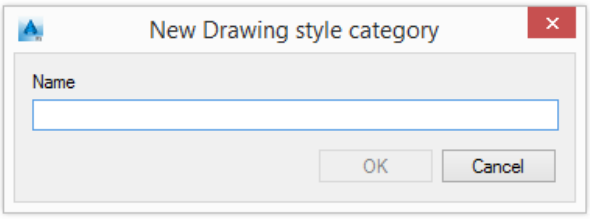


Figure 9: “New drawing style category” dialog box

2. Enter the category name.

The new category appears in the tree panel.

***Note**: Only empty categories can be deleted from the **Drawing Style Manager**. To delete a category, delete all the contained drawing styles.*

Moving a drawing style to another category

1. Select a drawing style.
2. Click **Properties** .

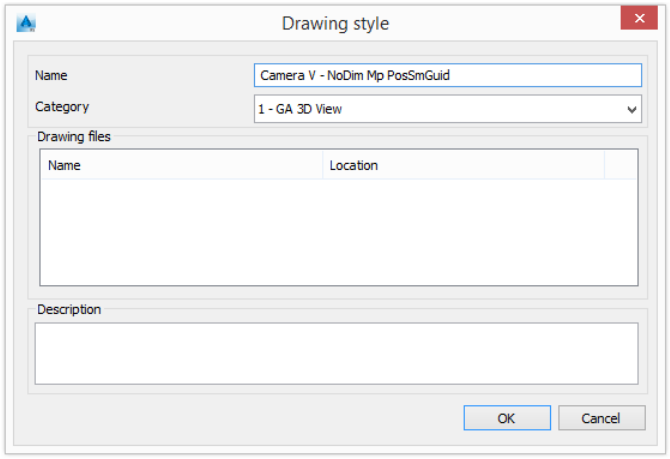


Figure 10: “Drawing style” dialog box

3. Select a destination category.

The selected drawing style is moved to the selected category.

***Hint**: Use drag and drop to move drawing styles from one category to another.*

Using an existing drawing style

⚠ *Before using a main part drawing style (columns, main part, special structural parts), the model objects must be numbered; otherwise, drawing creation is not possible.*

Drawing styles can be used from inside Drawing Style Manager:

1. On the **Output** ribbon, click “Drawing Style Manager” .
2. Select a drawing style.
3. Click **Use**. The “Drawing type” window appears.
4. Modify the settings (as necessary) and click **OK** to confirm.
5. Select the objects in the model.
6. Enter the file name and the drawing number in the “Select destination file” dialog box. The drawing number field is automatically filled with the next drawing number.
7. In the “Prototype” area, select a drawing prototype file. A preview of the selected template is shown on the right.

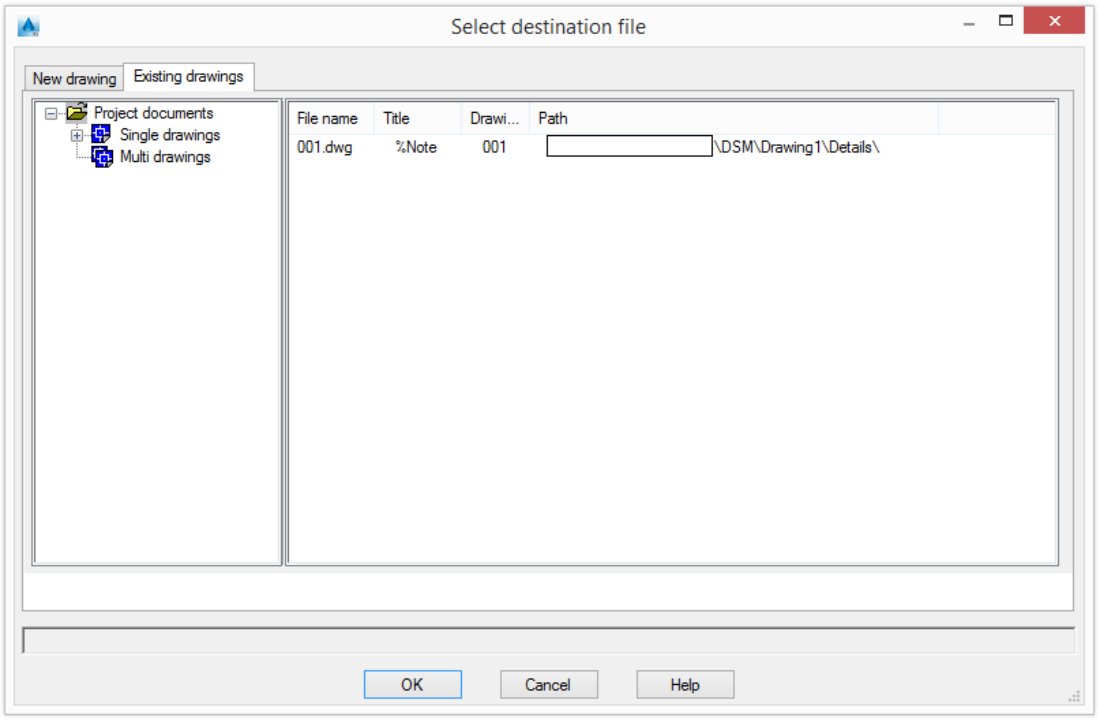


Figure 11: “Select destination file” dialog box

The **Existing drawings** tab displays the list of drawings.

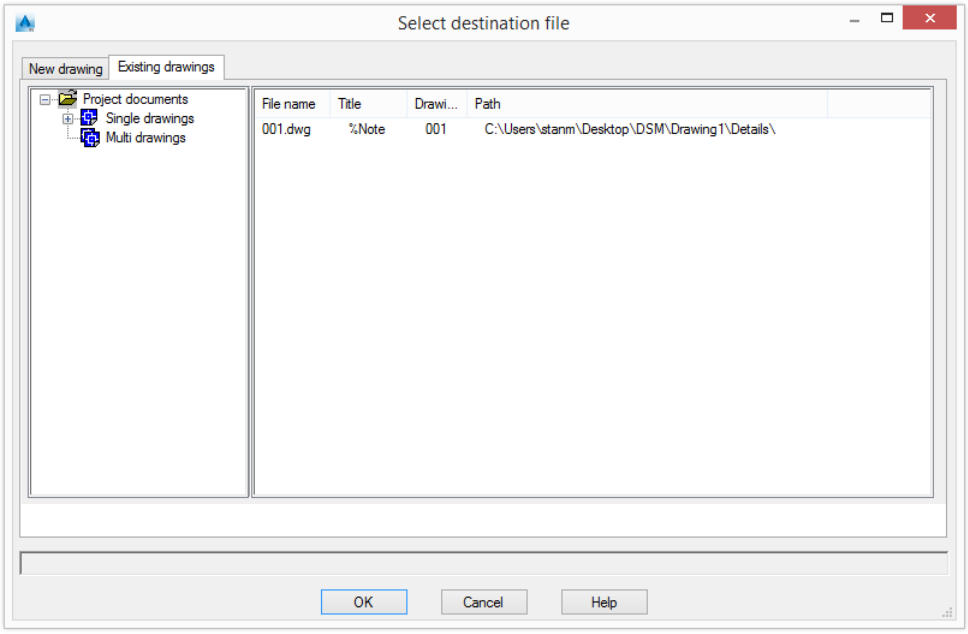


Figure 12: **Existing drawings** tab in the "Select destination file" dialog box

The drawings are grouped into two categories based on their number of details:

- Single drawings – one detail per drawing
- Multidrawings – several details per drawing

All detail properties such as name, title, state (current, deleted, update required, etc.), date of change, drawing style, process, etc., are displayed on the right panel.

The drawing is created and the Drawing Style Manager reappears.

8. Click **Cancel** to exit.

The styles can also be called manually using the *_astm4CommDetailing User* command and two numbers. The correspondence is available in the Drawing Style Manager' window

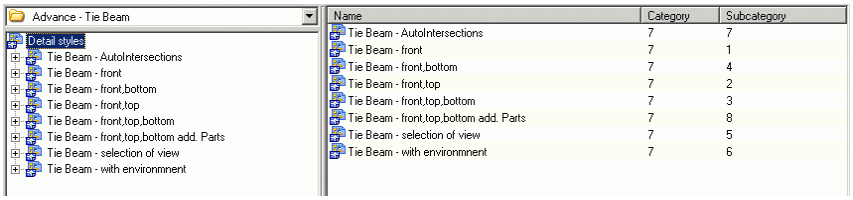


Figure 13: Opening styles from the command line

The **Name** column displays the drawing style. The first number stands for the **base category** (e.g. column, tie beam), while the second one stands for the **subcategory**.

***Example**: _astm4CommDetailing User 7 1* accesses the *Tie Beam – front* drawing style.

Copying a drawing style

1. Select the drawing style to use as a template for the new style.

2. On the Drawing Style Manager's toolbar, click **Copy** .

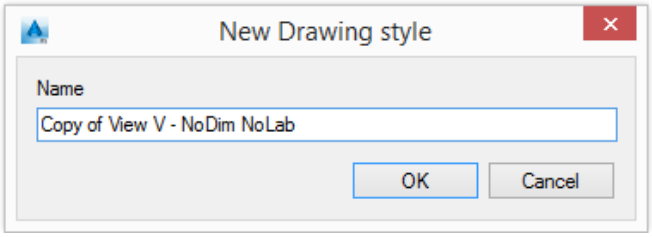


Figure 14: “New drawing style” dialog box

3. Enter the name for the drawing style.

The new drawing style appears in the tree and can be moved to another category.

The associated sub-styles are not copied with the drawing style therefore modifying a sub-style affects all the drawing styles that are using it.

Deep copying

The drawing style definitions provided by Advance cannot be modified but can be used as templates for new drawing styles.

The **Deep copy** function copies the selected drawing style and all associated sub-styles. The new copy can then be modified at any level, without changing the original drawing style.

1. Click **Deep copy** .

2. Enter the name for the drawing style.

The new drawing style appears in the tree and can be moved to another category.

Deleting a drawing style

1. On the tree panel select a drawing style to delete. Click **Delete** .

2. In the warning box, click **Yes** to delete the drawing style.

Importing a drawing style

1. Select a category in which to import the drawing style. Click **Import** .

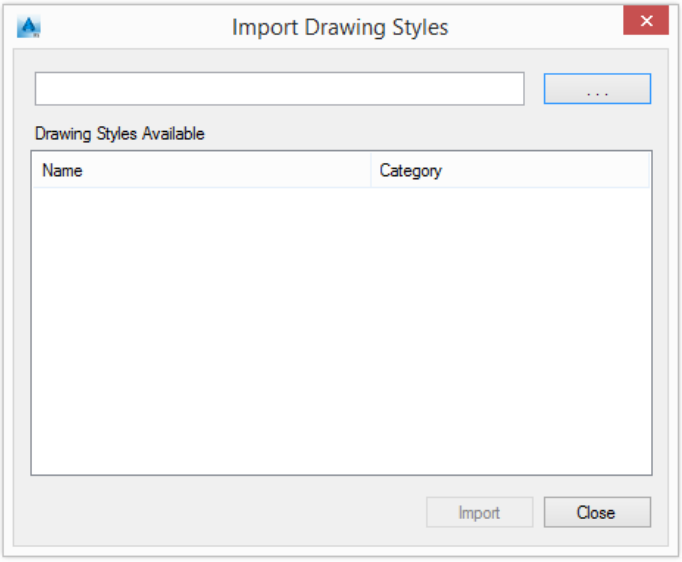


Figure 15: “Import drawing style” dialog box

2. Click .
3. From the “Import” dialog box, select the **.mdb** file with the drawing style to import. The available drawing styles are listed in the **Available Drawing Styles** table.
4. Select a drawing style and click **Import**.

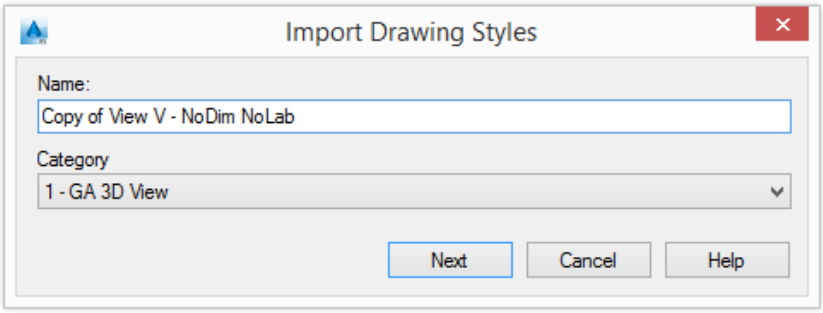


Figure 16: “Create new drawing process” dialog box

5. Change the name of the drawing style and the category (as necessary) and click **Next** to import the drawing style.

Exporting a drawing style

1. Select a drawing style to export.
2. Click **Export** .
3. In the “Import” dialog box, enter the name of the export database file.
4. Click **Export**.

The drawing style is exported as an **.mdb** file.

Compacting the database

The database size may increase after deep copying a drawing style. The **Compact database** function is used to decrease the size of the database.

The **Compact database** function searches for equal records inside all detail tables of the selected database (except control tables such as *DetRole*, etc.). It combines the records and updates all records that have a relationship to the current combined object.

1. Click **Compact** .

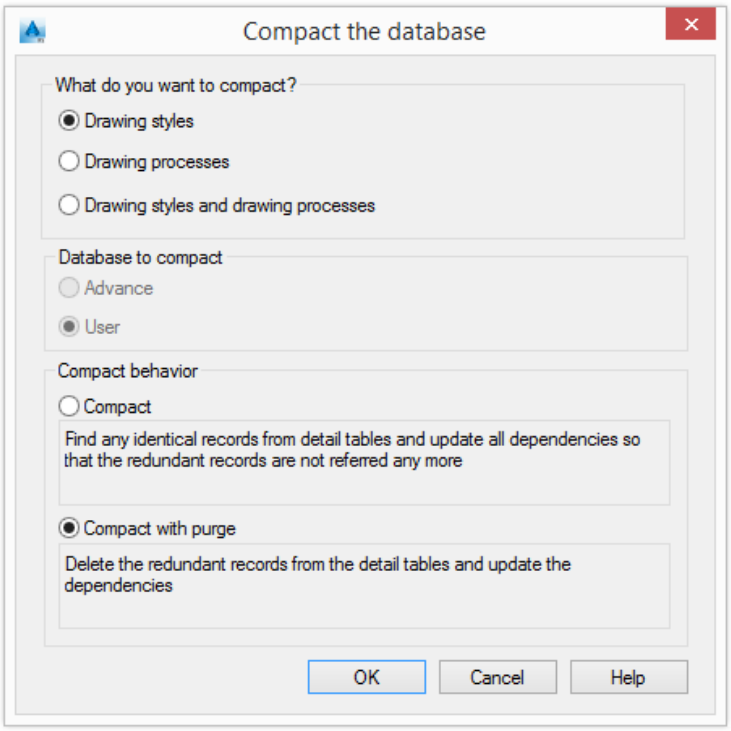


Figure 17: “Compact the database” dialog box

2. Select what to compact (drawing styles and/or drawing processes) and the compacting method.
3. Click **OK** to start the compacting process.

Chapter 2
Drawing Style Properties

A drawing style is composed from one or several views. A view has properties, objects, dimensions and labels. The drawing style also has properties accessible on the properties panel using three tabs.

In this chapter:

- *Views Arrangement*
- *Detail Title*
- *Model Object Selection*

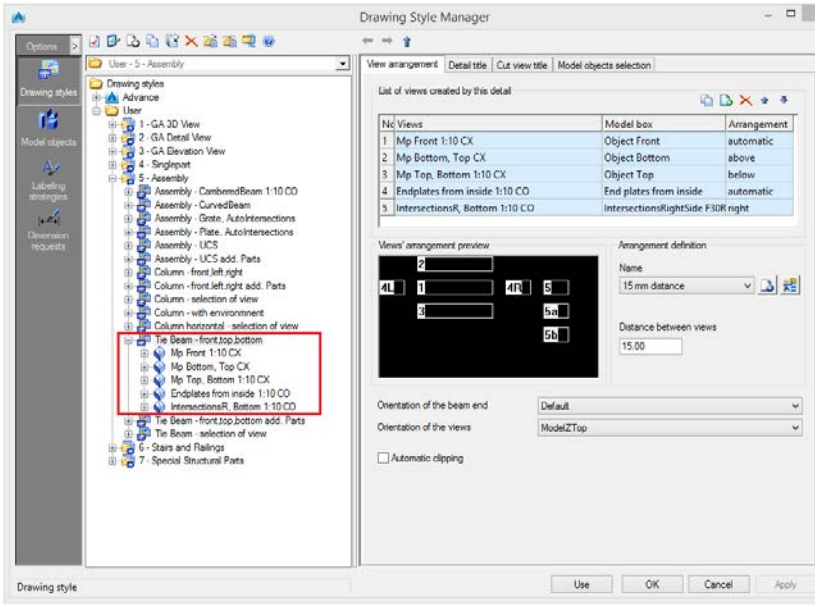


Figure 18: Drawing style properties

- **Views arrangement** – Select views, their orientation, their arrangement, and the distances between them.
- **Detail title** – Define the title content, using the label designer, and its position.
- **Model object selection** – Define the objects that will be detailed by the selected style. For example, the drawing style can use Single Parts, Main Parts or All objects (overviews).

Views Arrangement

Managing the list of views

The views created by the selected drawing style are listed in a table. For each view, a predefined model box and arrangement may be selected. View properties are displayed by double-clicking a view in the table. For more information, refer to the **View Properties** chapter.

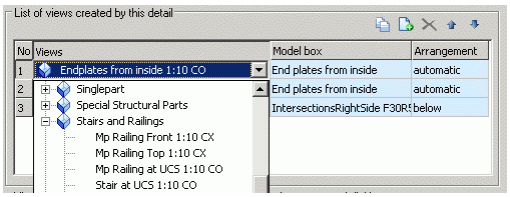


Figure 19: Selection of views

The toolbar contains all the necessary management functions:

Button	Function
	Create a new view
	Add an existing view
	Delete the selected view
	Move the selected view up the list
	Move the selected view down the list

Creating a new view

A new view is created by copying a view from the list.

1. Select a view from the list.
2. On the properties panel, click **Create a new view** .
3. Enter the name for the new view.

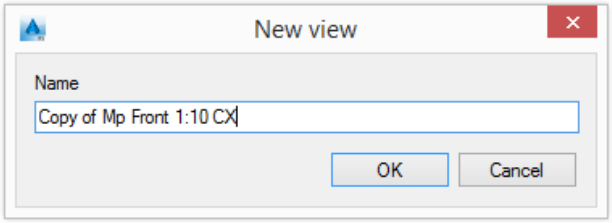


Figure 20: “New view” dialog box

The new view appears in the tree and in the list.

A **model box** and a **view arrangement** may be assigned to the newly created view. This does not affect the original view.

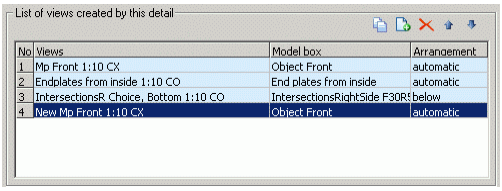


Figure 21: New view added to the list

Adding an existing view

1. On the properties panel, click **Add existing view** .

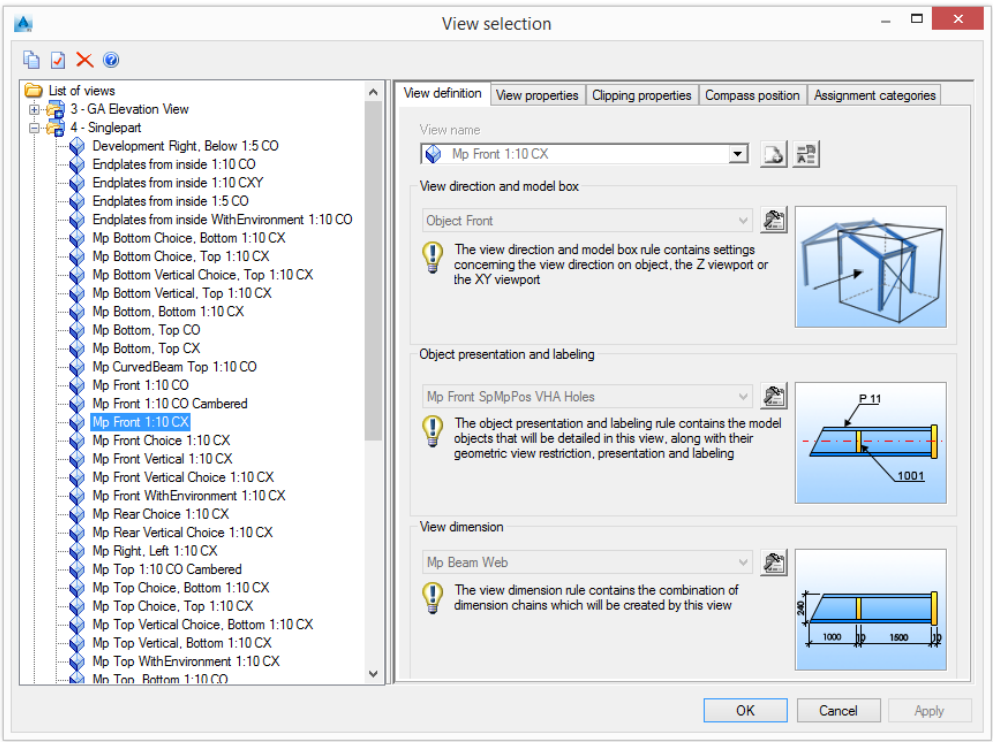


Figure 22: “View selection” dialog box

2. Select a view from the tree and click **OK**.

   The selected view appears in the tree and in the list.

   A **model box** and a **view arrangement** may be assigned to the newly added view. This does not affect the original view.

Deleting a view

1. Select a view to delete from the list.

2. On the properties panel, click **Remove view** to delete the view.

***Note**: The first entry in the table cannot be deleted. To delete an item in the first row of the table, it must be moved down the list.*

Changing the order

The order of views in the list is modified using the two arrow buttons, and .

***Note**: Changing the order does not affect the drawing creation and is only useful for organizing the list.*

View arrangement strategy

Defining a distance between views (always measured from the extreme object of the detail view) avoids overlapping of individual views on the drawing.

Several predefined distances are available for use.

Two functions are available for adding new strategies and modifying existing strategies.

Button	Function
	Define a new strategy
	Rename a strategy

Adding a new strategy

1. On the properties panel, click **New** .
2. Enter the name for the new strategy.

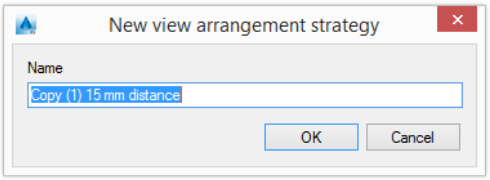


Figure 23: “New view arrangement strategy” dialog box

3. Enter the distance between views for this strategy.

Renaming a strategy

1. Select a strategy to rename.
2. Click **Rename** .
3. Enter the new name for the selected strategy.

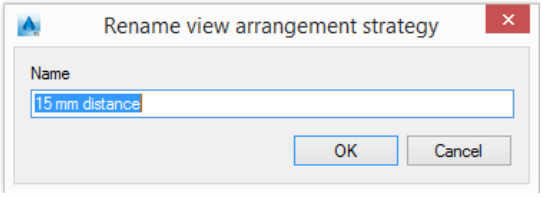


Figure 24: “Rename view arrangement strategy” dialog box

Orientation of the beam end

There are several options for setting the beam end orientation inside a detail.

***Example**: Beam end orientation settings*

A beam with the starting coordinates 200, 500, 300 and the ending coordinates 500, 1500, 800 has at the end an inclined cut.

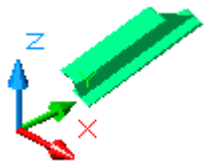
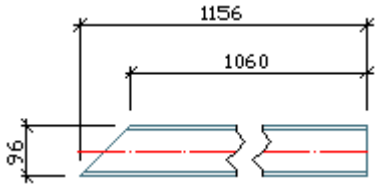
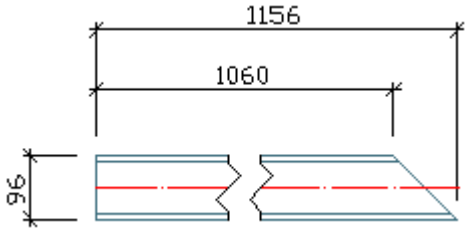
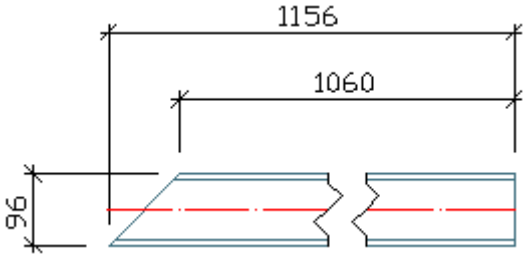
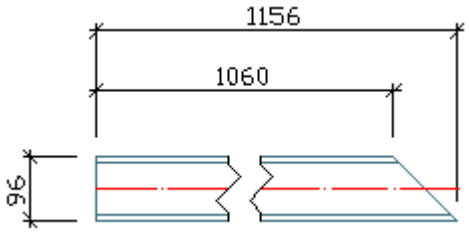
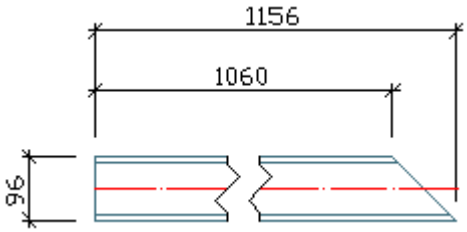
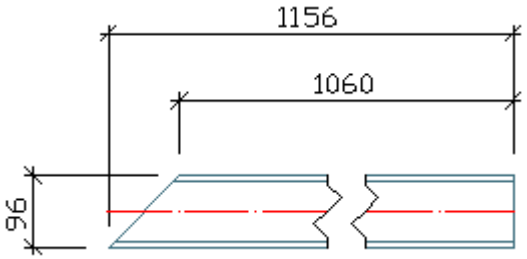


Figure 25: Example of beam end orientation

The following beam end orientation settings are available:

Beam end orientation	Example
Highest XYZ-Coordinate left side	From both ends, the highest X-, Y- or Z- coordinate is calculated. The corresponding end of the beam is situated on the left side of the drawing. 
Highest XYZ-Coordinate right side	From both ends, the highest X-, Y- or Z- coordinate is calculated. The corresponding end of the beam is situated on the right side of the drawing. 
Highest Z-Coordinate left side	From both ends, the highest Z-coordinate is calculated. The corresponding end of the beam is situated on the left side of the drawing. In the example, the end point has the highest Z-coordinate: **Z=800**. 
Highest Z-Coordinate right side	From both ends, the highest Z-coordinate is calculated. The corresponding end of the beam is situated on the right side of the drawing. 
Start point left side	The start point of the beam is situated on the left side of the drawing.

Beam end orientation	Example
	(Depends on how the beam was created.) 
Start point right side	The start point of the beam is situated on the right side of the drawing. (Depends on how the beam was created.) 

***Hint**: To distinguish between the start point and the end point of a beam, use **Define coordinate system** on the Palette, UCS category. The UCS is placed at the start point.*

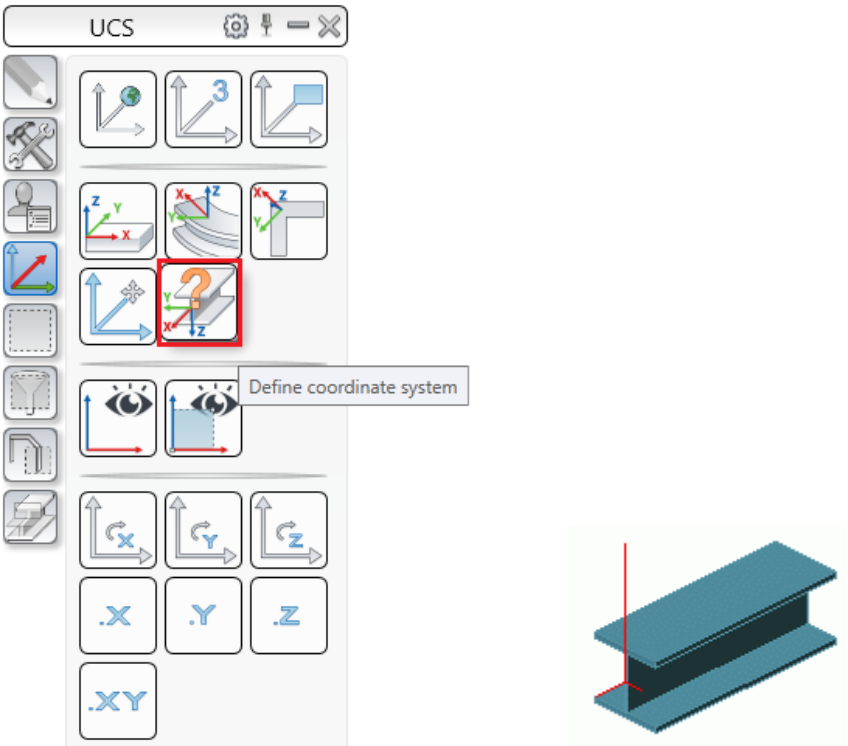


Figure 26: Defining the start point of a beam

Orientation of views

The orientation of views defines how the members are oriented on the drawings, e.g., the columns can always be shown vertically or horizontal. The following options are available:

Orientation of the views	Description
Standard	Without special orientation. Recommended for details and views.
Model Z Left	If the columns are represented lying, they will be tipped over to the left. This means that the base point is always on the right side on the drawing.
Model Z Right	If the columns are represented lying, they will be tipped over to the right. This means that the base point is always on the left side on the drawing.
Model Z Top	Side lying at the top in the model is also at top in the detail.
Perpendicular	The longitudinal beam axis is vertical on the drawing. The longer plate side is placed vertically on the drawing.
Reversed	The same principle is applied as for “Perpendicular” orientation of views. The coordinate system of the view is rotated by 180°.

Automatic clipping

The drawings are automatically well filled, so that there is no empty space on the left and on the right, and also above and below of the (main) views.

Detail Title

Configuration of the title content and the position is done on the **Detail title** tab.

The detail title can be placed in relation to the main view or the detail. Several options are available in the “Title position” area:

- No title – no title is created
- Above main view – the title is placed above the main view
- Above detail – the title is placed above the detail
- Below detail – the title is placed below the detail
- One of the detail corners – the title is placed in one of the detail corners

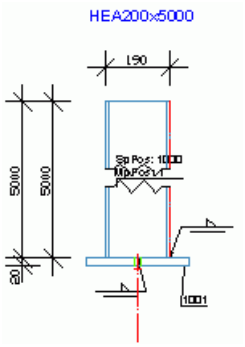


Figure 27: Title placed above the detail

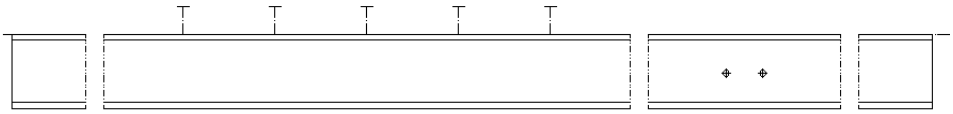
The content is defined using the label designer in the “Format and contents of the title” area. The text format (font, color, size, etc.) can also be set.

For more information on the label designer, refer to the **Labeling Strategies** chapter.

Model Object Selection

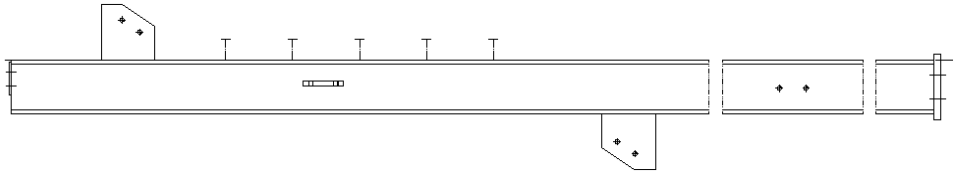
Object selection settings define the objects that will be detailed by the selected style. For example, the drawing style can use **Single Parts**, **Main Parts** or **Complete model**.

Complete model	All the objects in the model are detailed
Complete model with XRefs	All the objects in the model and the linked external references (XRefs) are detailed.
Detail box	With the appropriate definition in the model box, clippings can be defined from the model, e.g. node.
Detail box with XRefs	Same as **Detail box**, linked external references are also detailed
Selection set	Only the selected elements are detailed
Single part	Only the single parts are detailed

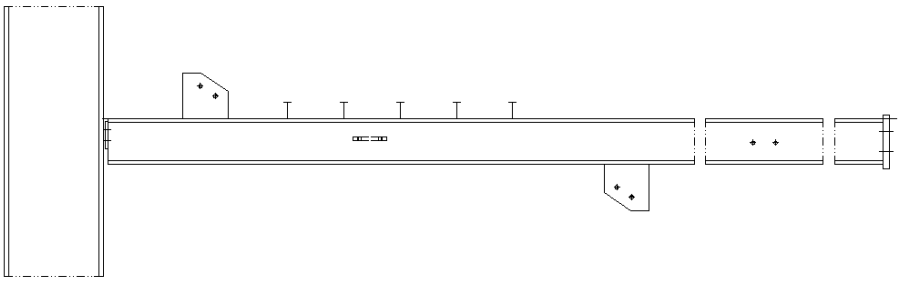


Single part and additional elements Only the single parts and additional elements are detailed

Main part Only the main parts are detailed



Main part with environment Main part with attaching parts and defined environment. In the model box, a XY- and a Z-viewport must be defined.



Main part and additional elements The main part and additional Advance- and ACIS-solids

Chapter 3
View Properties

In this chapter:

A view has properties, objects, dimensions and labels.

Three main aspects define a view:

- Direction
- Contained objects
- Dimension

The aspects for each view are contained on the tree panel of the Drawing Style Manager and also on the **View definition** tab. Selecting an item in the tree displays the item's properties in the properties panel.

- View direction and model box - Select how to look at the objects in the model (e.g., front, top, left, etc.) and the options for the viewport definition.
- Objects presentation – By expanding the tree, the list of model objects that determine the view content are visible. Model objects are predefined sets of model object types that behave like filters (e.g., a set can be all beams with the role "Columns").
- View dimension - Dimension types to use in the view and the settings for each type.

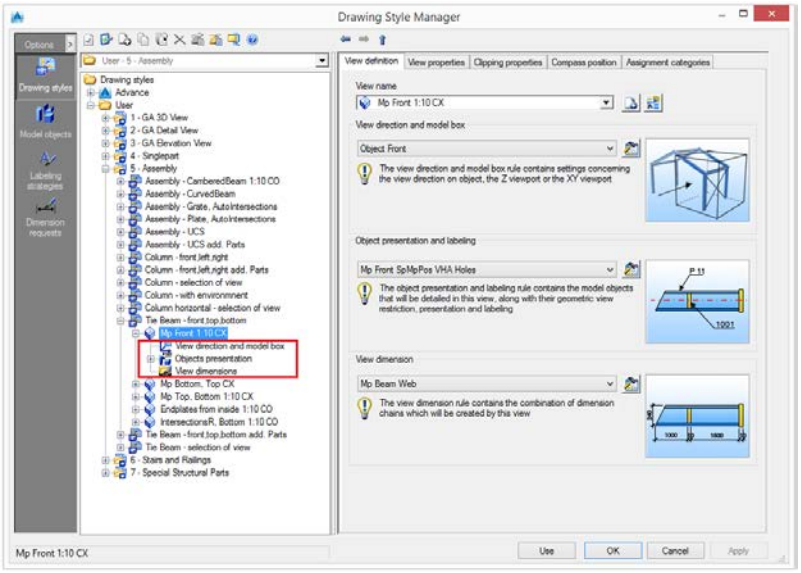


Figure 28: Drawing Style Manager - View definition

Select preconfigured settings or access the properties by clicking **Set** .

- *Setting the View Direction*
- *Setting the View Content*
- *Setting the View Dimension Style*
- *Additional View Properties*
- *Clipping Properties*
- *Assigning a View to Categories*

Setting the View Direction

Setting the view direction defines the way the model objects are shown in the view. For example, the main direction relative to the coordinate system (front, top, bottom etc.) and the main direction relative to the object that will be shown in the view can be defined.

The advanced options for defining the view direction and the viewports are available on the **View direction and model box** tab. They are accessed by two methods:

- On the tree panel, select the View direction and model box branch

or

- On the **View definition** tab, in the “View direction and model box” area, click **Set** .

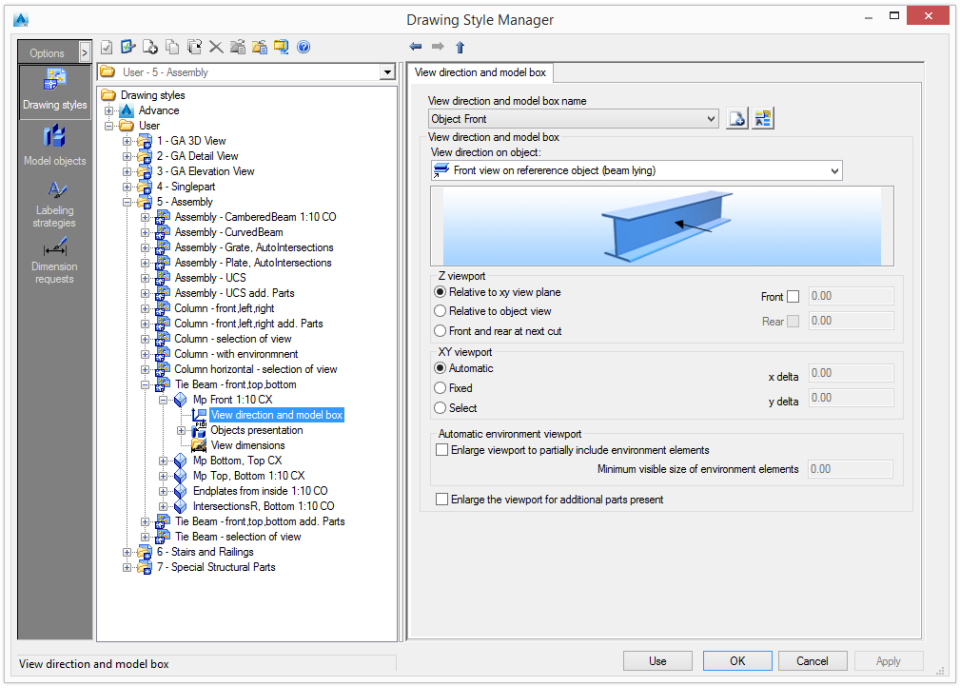


Figure 29: View properties - View direction and model box

View direction and model box

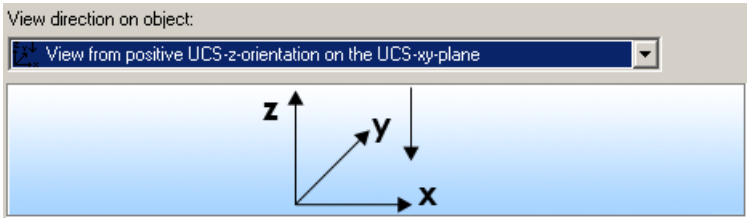
Select a preconfigured view direction from the list (e.g., front, top, left, etc.). The existing view directions can be renamed and new definitions can be added.

Button	Function
	Define a new system and box. A new item is inserted into the list.
	Rename a strategy. Saves the current settings under a different name.

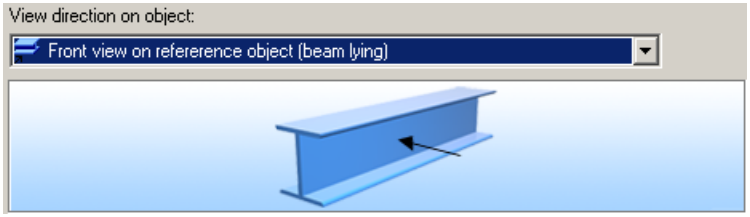
The way the reference object is viewed (e.g., from the front, right, active UCS, intersection) is determined by the **View direction on object**.

***Remarks**:*

- For General arrangement drawings, use:



- For Workshop drawings, in most of the cases, use:



Z-viewport

The Z-viewport defines the view depth of the front and rear (Z-orientation of the UCS).

Option	Function
Relative to XY view plane	Detailing relative to the XY plane of the UCS
Relative to object view	Automatic end plates detailing
Front and rear at next cut	This option is used only for options whose names start with **Cross sections…** for the **View direction on object**.

XY-viewport

The XY-viewport defines the height (Y-orientation of the UCS) and the width (X-orientation of the UCS) of the viewport. There are three available options:

Option	Function
Automatic	
Fixed	Enter X-, Y-delta values in the corresponding fields
Select	By selecting window points in the model

Enlarging the viewport to show additional parts

Enlarge the presentation of the viewport to show additional elements (e.g., filler pates). Normally, the viewport is as large as the reference object with attached parts.

Setting the View Content

Object presentation rules determine the view content by defining how objects are displayed and labeled.

An object presentation rule assigns a specific method of displaying and labeling of **model objects**.

A **model object** acts as a **filter** for objects from the 3D model. It is defined by the type of Advance object, model role and an additional filter.

***Example**:*

Object type	Model role	Additional filter
Beam	Column	With holes

The list of object presentation rules is available on the **Objects presentation** tab and is accessed by two methods:

- On the tree panel, select the Objects presentation branch

or

- On the **View definition** tab, in the “Object presentation and labeling” area, click **Set** .

The model objects are also displayed in the tree panel, under the **Objects presentation** branch.

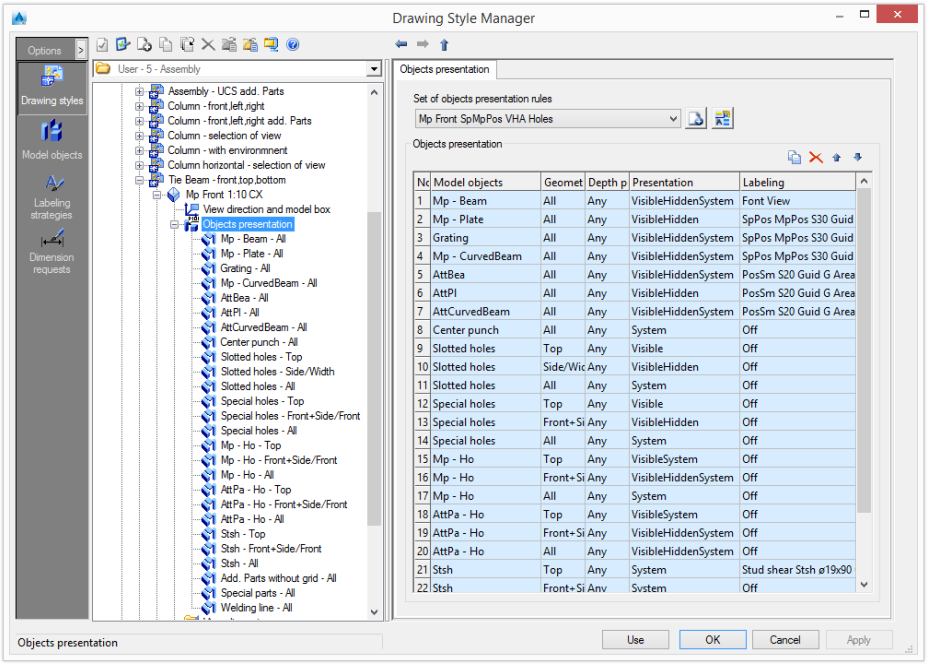


Figure 30: Drawing Style Manager - View content

Selecting a set of object presentation rules

Select a predefined set of object presentation rules from the list. The existing rules can be renamed and further definitions can be added.

Button	Function
	Create a new set of object presentation rules. A copy of the current settings is created and a new item appears in the drop-down list.
	Rename a set of object presentation rules. The current settings are saved under a different name.

Modifying a set of object presentation rules

Modifications of the object presentation rules are performed using the four buttons on the right side of the “Objects presentation” area. All the views containing the modified set of object presentation rules are also changed.

Button	Function
	Add a new object presentation rule
	Delete an object presentation rule

Adding a new object presentation rule

A new object presentation rule is created using an existing rule.

1. Select an object presentation rule to use as a template.
2. Click **Add** .

The new rule is added to the set of object presentation rules.

Deleting an object presentation rule

1. Select an object presentation rule to delete.
2. Click **Delete** to delete the rule from the list.

***Note**: The first entry in the table cannot be deleted. To delete an item in the first row of the table, it must be moved down the list.*

Changing the order of the list

The order of the object presentation rule list is modified with the two arrow buttons, and .

In the assignment of the model object, a certain order must be maintained to achieve the required results. Generally, the list is processed from top to bottom. If a setting can be applied, it will be used. Otherwise, it will move to the next entry.

Modifying an object presentation rule

Each objects presentation rule can be modified by defining the **geometric restriction**, **depth position**, **presentation rule** and **labeling rule**.

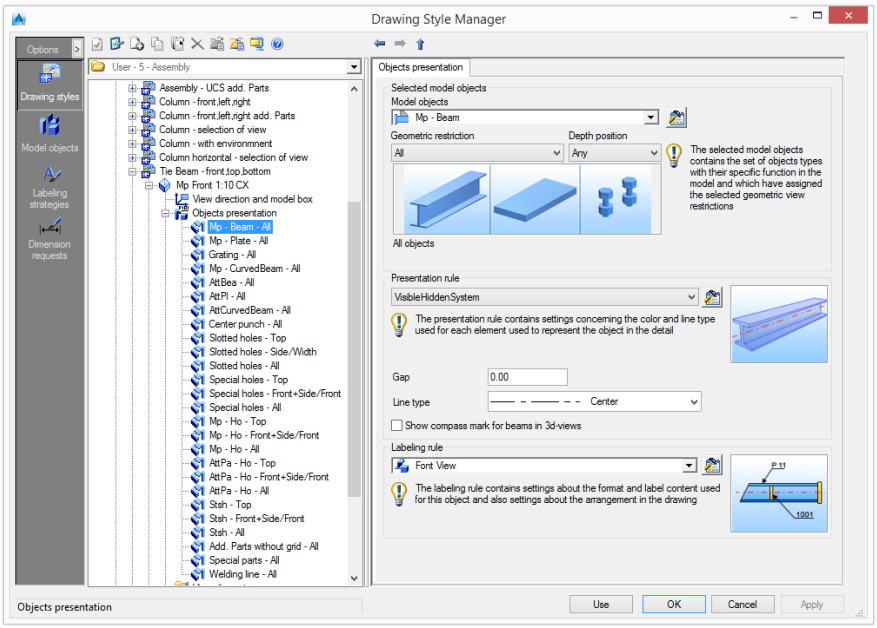


Figure 31: Objects presentation

Setting the view geometric restrictions for the selected model objects

Model objects are selected in the “Selected model objects” area.

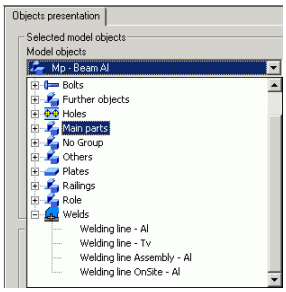


Figure 32: Select model objects

For details about the selected model objects, click **Set** . The **model objects** can be shared by different styles and can be managed separately as described in the **Model Objects** chapter.

The selected model objects define how they are seen in the detail. Two kinds of geometric view restrictions can be defined for each model object:

- Geometric restriction
- Depth position

The object presentation name is created by combining the name of the model object, the geometric restriction and the depth position.

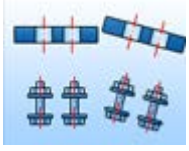
***Examples**: Object presentation names*

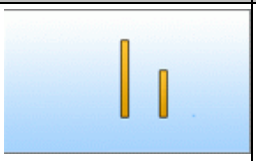
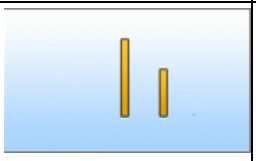
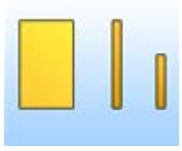
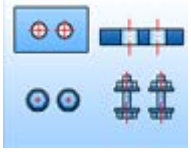
Column - Front	–	The *Column* model object seen in detail from *Front*
AttPlatesWithHoles-All-Rear	–	Advance *Plate* objects that are *attached* to a main part and have *holes* in them, seen in detail from any direction and are placed “*behind / under*” the main part.

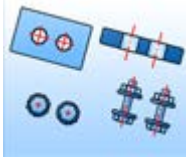
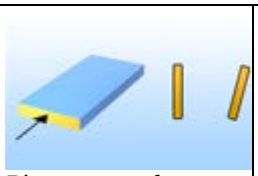
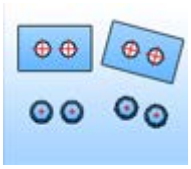
Geometric restriction

Defines the object view direction.

***Example**:* The beam is seen in detail from *Front* and the plates are seen from their *Side*.

Geometric restriction	Beams	Plates	Connecting elements
All	All model objects		
Front/Length	The beams seen from the front view	The plates seen from their length	
Front+Side/Front	The beams seen from the front view or side view	The plates seen from the front	 The bolts seen from the front

Geometric restriction	Beams	Plates	Connecting elements
Li Fr	The beams aligned with XY directions, seen from the front view	 The plates seen from the front or side and linear	
Li Side	The beams seen from the side view		
Li top			
	Elements aligned with XY directions seen from the top		
Linear			
	Elements aligned with the detail XY directions		
N-Li Fr			
	Elements not aligned with the detail XY directions seen from the front		
N-Li Side			
	Beams seen from the side and not aligned with XY directions	Plates and other elements seen from the side and not aligned with XY directions	
N-Li Top			
	Elements seen from the top and non-linear		

Geometric restriction	Beams	Plates	Connecting elements
NotLinear			
	Objects that are seen not aligned with the detail view XY directions		
Side/Width	The beams seen from their side	 Plates seen from their width	
Top	Objects that are seen from the element top direction		
Top+Front/Length	The beams seen from the top or front view	The plates seen from the top or their length	
Top+Side/Width	The beams seen from the top or side views	The plates seen from the top or their width	

Depth position

The depth position is the “Z” position of the object relative to the main object of the detail. The following options are available:

Depth position	Description
Any	On any side of the element
Both sides	On both sides (front and rear) of the main element (Figure 33 plates B, C, E)
Both sides-Center	(Figure 33 plate C)
Both sides-CenterFront	The attached element is on both sides (front and rear) but the center is in the front side of the main part (Figure 33 plate B)
Both sides-CenterRear	The attached element is on both sides (front and rear) but the center is in the rear side of the main part (Figure 33 plate E)

Depth position	Description
Front (by center)	The center of the attached element is in the front side of the main part (Figure 33 plates B, D)
Front (entirely)	The entire attached element is in the front side of the main part (Figure 33 plate D)
Rear (by center)	The center of the attached element is in the front side of the main part (Figure 33 plates A, E)
Rear (entirely)	The center of the attached element is on the rear side of the main part (Figure 33 plate A)

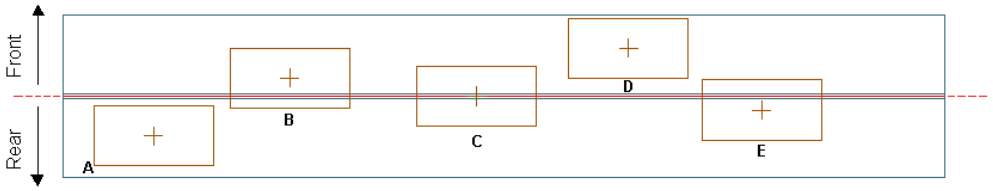


Figure 33: Plates at different depth positions

Setting the presentation rule

The presentation rule contains settings for color and line type used for each object representation in the detail.

1. In the “Presentation rule” area, select a presentation rule from the list.
2. Click **Set** to view the definition of the selected presentation rule.

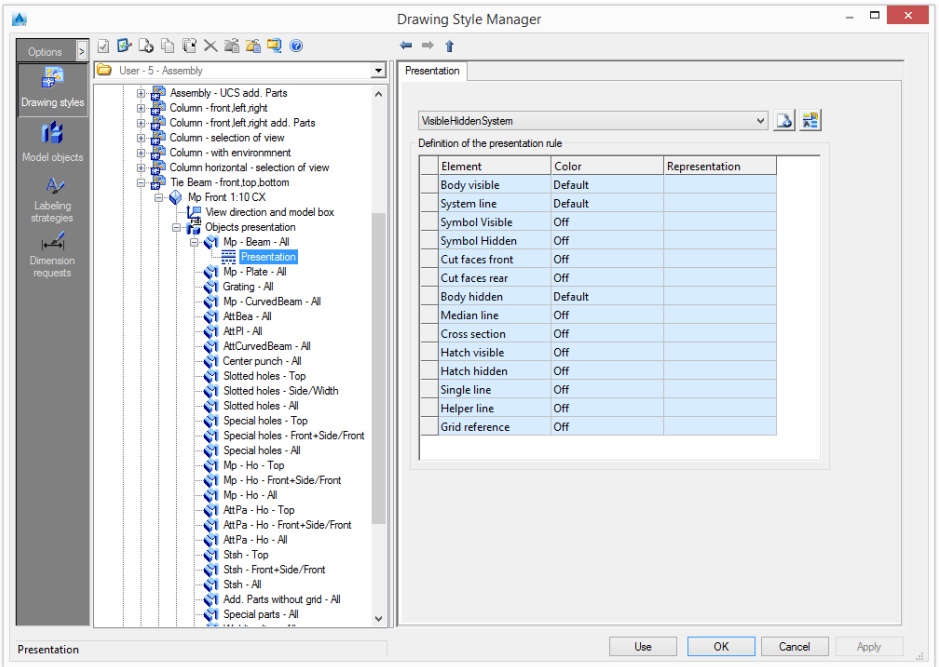


Figure 34: Presentation rule definition

Element	Representation
Body visible	Visible solid lines
Axis	Only the axes are visible
Symbols	Symbols
Cut faces	Sections plane of solids with model box

Element	Representation
Body hidden	Hidden lines
Median line	Median (center) line of the object
Cross section	The cross section of the object
Hatch	The holes are hatched
Simplified line	The beams are shown only with a simplified line

In the case of a simplified line, the **line type** and the **gap** are taken into account.

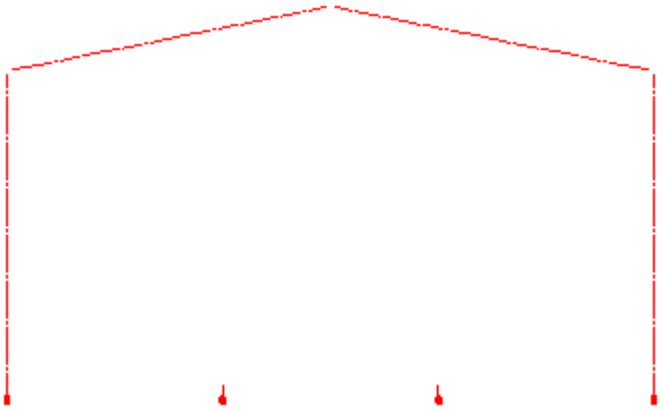
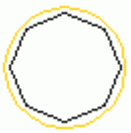
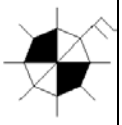
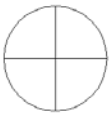
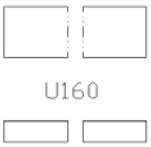
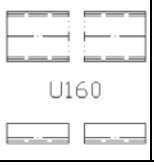
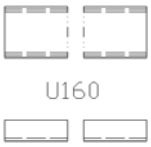


Figure 35: Single Line representation, with gap

***Examples**:*

Objects	Body visible	Axis	Symbols	Body hidden
Bolts				
Holes				
Beams				

Setting the labeling rule

The labeling rule contains settings for content, layout and arrangement of a label.

1. In the “Labeling rule” area, select a labeling rule from the list.

2. Click **Set** to modify the selected rule. The **labeling rules** can be shared by different styles and can be managed separately as described in the **Labeling Strategies** chapter.

Setting the View Dimension Style

A view dimension style contains the dimension types created by the selected view. Each view can be dimensioned differently.

The list of dimension types is on the **View dimension** tab and can be accessed by two methods:

1. On the tree panel, select the **View dimension** branch

or

2. On the **View definition** tab, in the “View dimension” area, click **Set** .

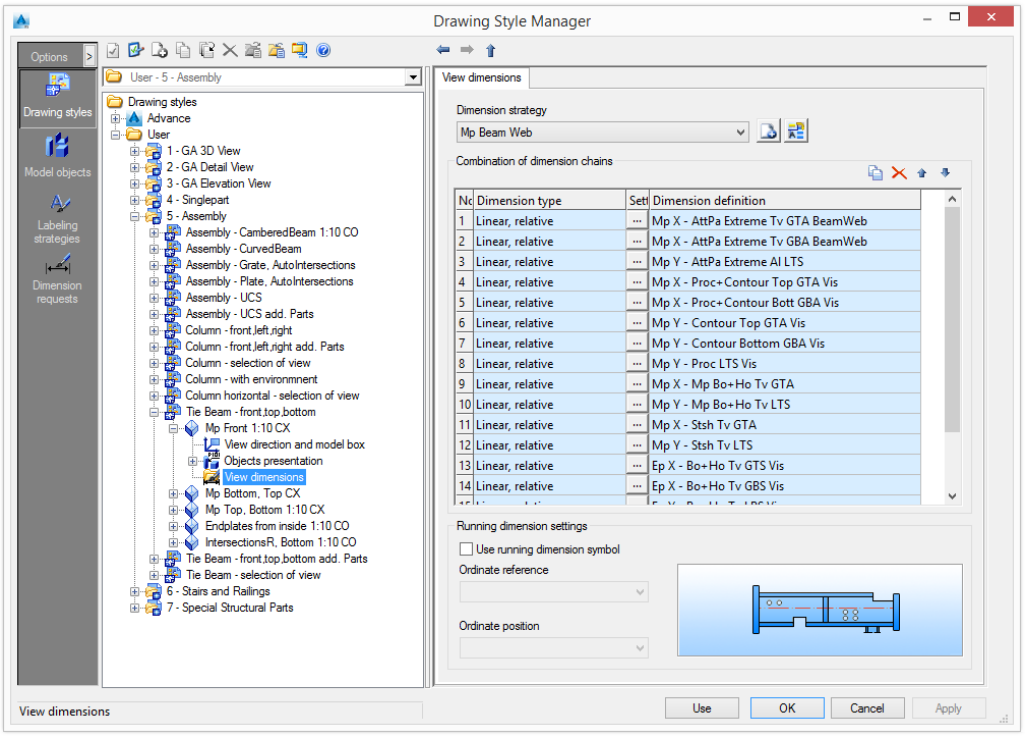


Figure 36: List of dimension chains

All dimension chains that are created by the selected view are listed in the table. Running dimension settings can be customized along with the settings for the dimension chains.

The properties of each dimension chain definition can be configured in the **Dimension request** tab.

There are two methods to access it:

- double-click in the list

or

- on the tree panel, select the dimension definition

⚠ *All views containing modified dimension chain definitions are also changed.*

Setting a dimension strategy

*A **dimension strategy** is a combination of dimension chains for a detail view.*

- Select a predefined dimension strategy from the list. The existing strategies can be renamed and further definitions can be added.

Button	Function
	Define a new dimension strategy. A copy of the current settings is created and a new item appears in the drop-down list.
	Rename a dimension strategy. The current settings are saved under a different name.

Modifying a dimension strategy

The set of dimension chains is modified using the four buttons on the right side of the “Combination of dimension chains” area.

Button	Function
	Add a new dimension chain
	Delete a dimension chain

All the views containing the modified dimension strategy are also changed.

Adding a new dimension chain

A new dimension chain is created from an existing dimension chain

1. Select a dimension chain to use as a template.
2. Click **Add** .

The new dimension chain is added to the list and can be modified.

Deleting a dimension chain

1. Select a dimension chain to delete.
2. Click **Delete** to delete the dimension chain from the table.

***Note**: The first entry in the table cannot be deleted. To delete an item in the first row of the table, it must be moved down the list.*

Changing the order of the list

The order of the dimension chain list can be modified with the two arrow buttons, and .

Modifying a dimension chain

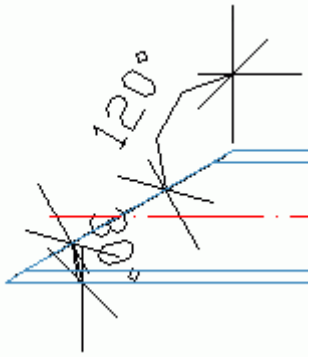
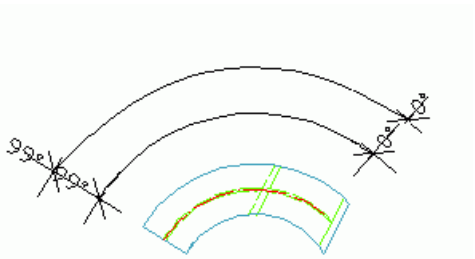
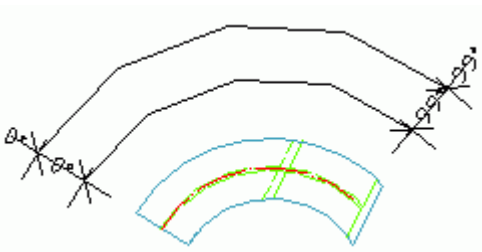
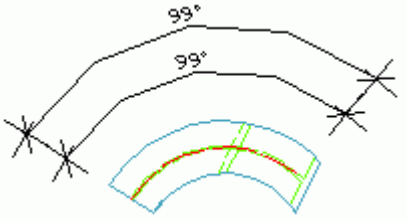
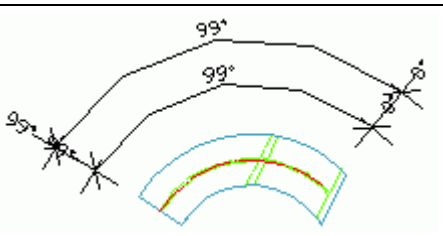
The “Combination of dimension chains” area displays all the dimensions chains created by the selected view.

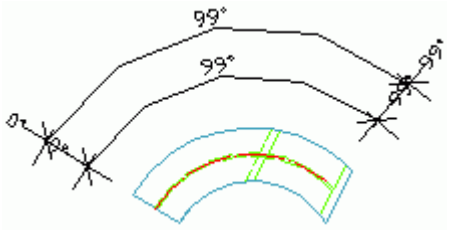
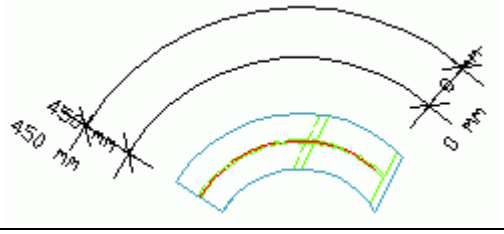
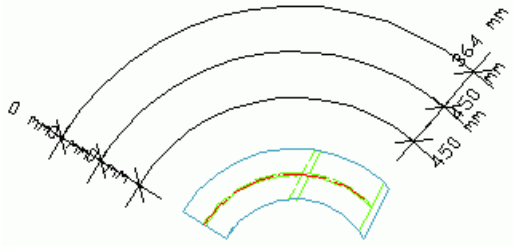
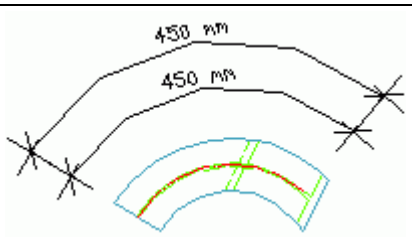
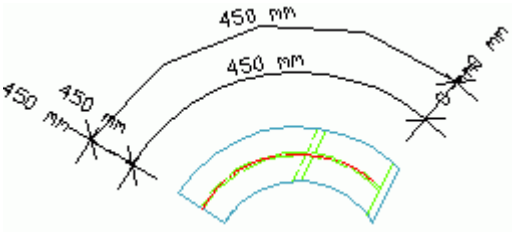
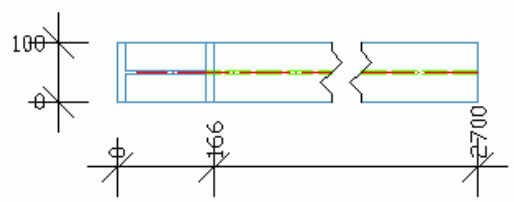
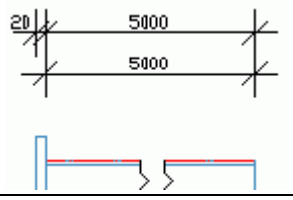
A dimension chain is modified directly in the table by selecting the **dimension type** and the **dimension definition** from the list.

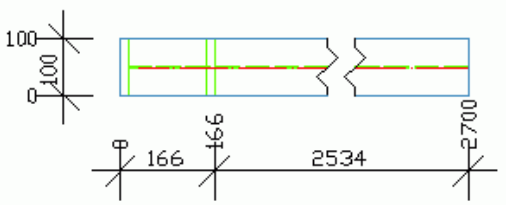
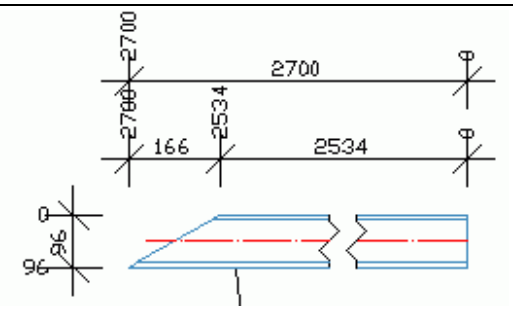
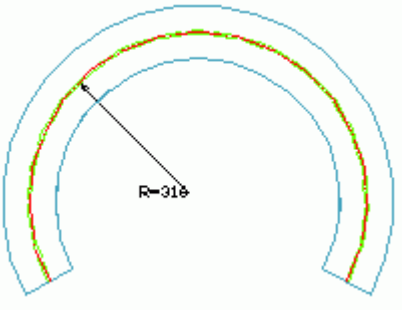
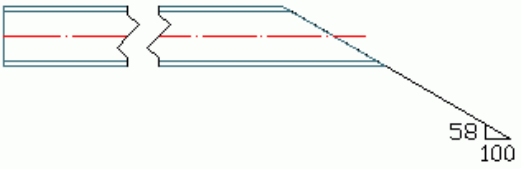
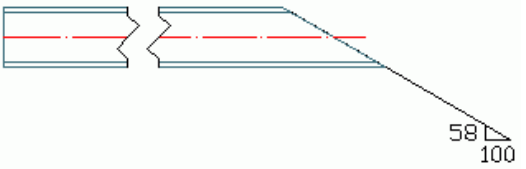
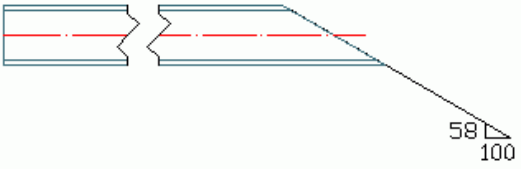
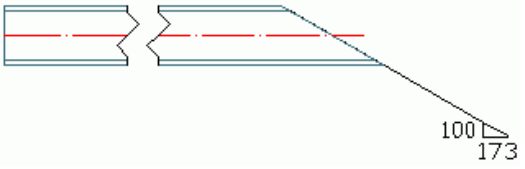
Only definitions that have been created by Advance in the **Dimension request** category can be selected. The dimension definition settings are accessible by double-clicking a row in the table. Their properties are configured as described in the **Dimension request** chapter.

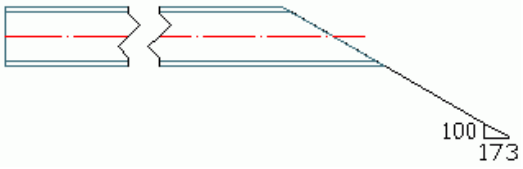
All the views containing the modified dimension chain are also changed.

For **dimension type**, the following options are available:

Dimension type	Example
Angle	
Arc angle, absolute	
Arc angle, absolute from end	
Arc angle, relative	
Arc angle, relative and absolute	

Dimension type	Example
Arc angle, relative and absolute from end	
Arc length, absolute	
Arc length, absolute from end	
Arc length, relative	
Arc length, relative and absolute	
Arc length, relative and absolute from	
Linear, absolute	
Linear, absolute from end	
Linear, relative	

Dimension type	Example
Linear, relative and absolute	
Linear, relative and absolute from end	
Radial	
Slope triangle	
Slope triangle, horizontal	 Displays the slope relative to the X direction
Slope triangle, longest edge	 Displays the slope relative to the longest side of the triangle
Slope triangle, smallest edge	 Displays the slope relative to the smallest side of the triangle

Dimension type	Example
Slope triangle, vertical	 Displays the slope versus Y direction

For a linear dimension type, additional settings are made in the **Settings** column.

- Click ....

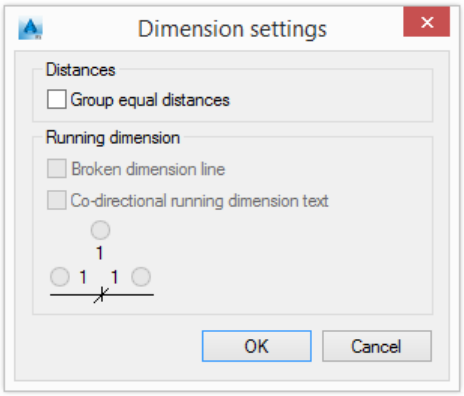
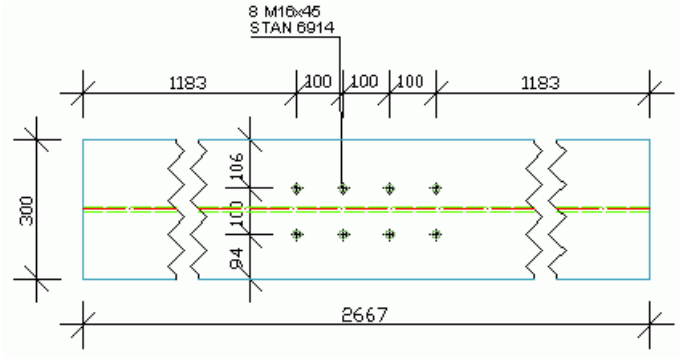


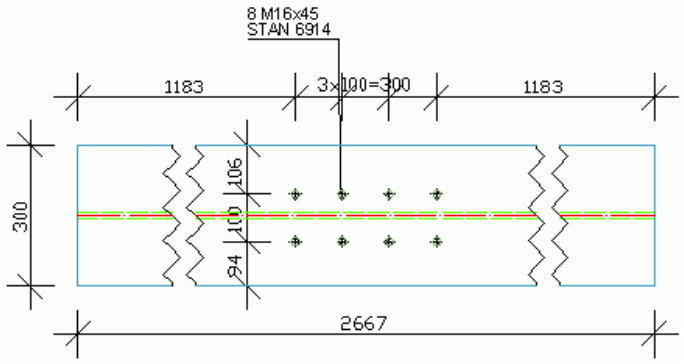
Figure 37: “Dimension settings” dialog box

- Combine equal distances using **Group equal distances**.

Equal distances not grouped



Equal distances grouped



For a **linear absolute** dimension type, two more options are available:

- Broken dimension line - this option is not available for any "relative" dimension type.

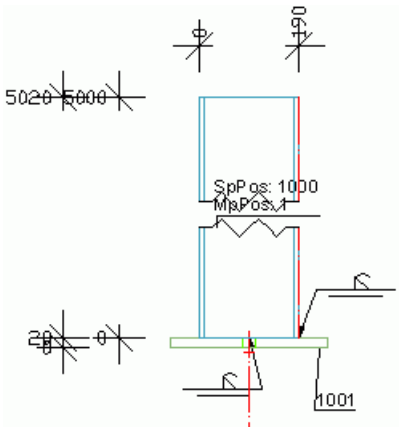
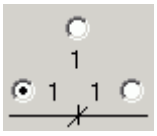
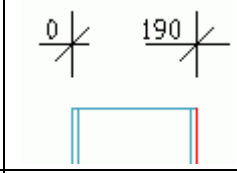
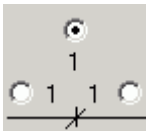
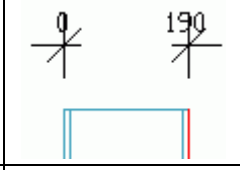
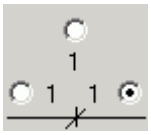
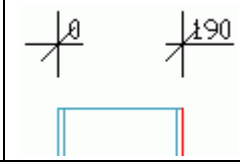


Figure 38: Example of broken dimension line

- Co-directional running dimension text - allows setting the position of the dimension text.

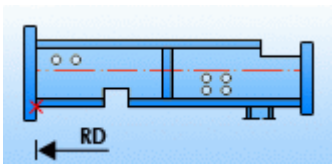
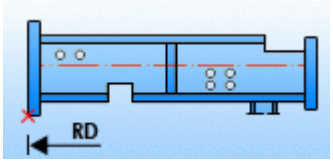
Option	Result
	
	
	

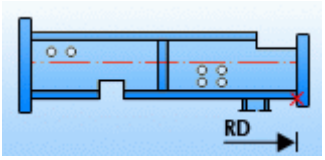
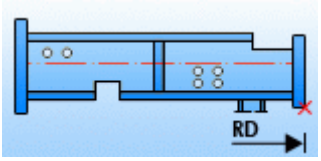
Customizing the running dimension settings

Running dimension settings can be customized along with the settings for the dimension chains.

- Check **Use running dimension symbol**.

Setting the ordinate reference and position defines the symbol placement.

Ordinate reference	
Left side of the main assembly	
Left side of the total assembly	

Ordinate reference	
Right side of the main assembly	
Right side of the total assembly	

Ordinate position	Description
Above	The symbol is placed above
Below	The symbol is placed below

Additional View Properties

In the **View properties** tab, there is a selection of several other common properties for the view.

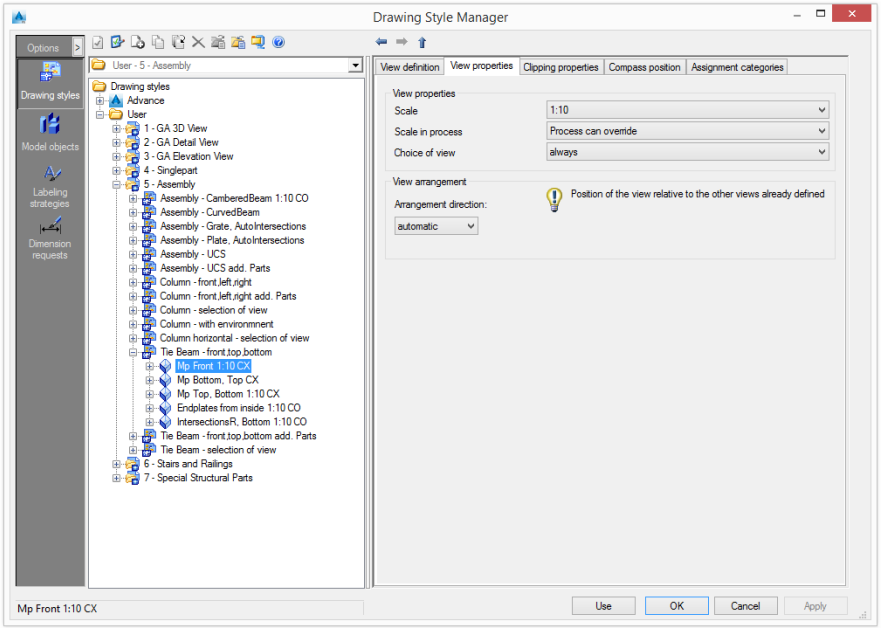


Figure 39: Drawing Style Manager – View Properties

View properties

Setting the view scale

Scale

From the list, select a default scale for the selected view.

Scale in process

Currently each view has a fixed scale. If a scale list is assigned to a process, the process can override the scales for the views. Normally the process assigns the same scale to all views. The scale is dependent on the main view.

If a process uses the current style, it is possible to define the view scale for each view. Three options are available:

Scale in process	Description
Fixed	The process cannot override the view scale; the view scale is always used.
Process can override	The process can override the view scale
Depend on main view	This option is useful for cut views and sections views (if the view scales should be different than the main view scale). The view scale depends on the main view scale (first view).

Choice of view

The choice of view defines whether the view is **always** created or created on **interactive** request. Using interactive request, a green frame, that can be selected, appears on the model.

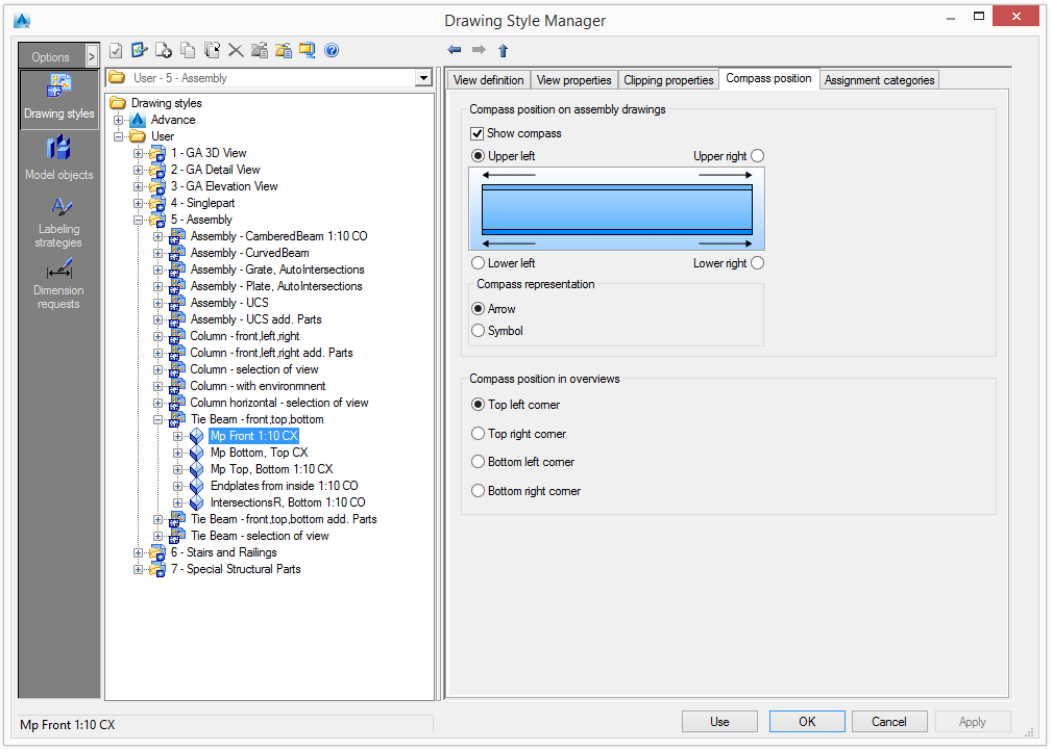
View arrangement

The **view arrangement** is important for defining the layout of the detail.

The position of the view can be set relative to the position of the previously created views. The first view must always be set automatically because it is the reference for subsequent views.

Show compass

To display the compass in the drawings, check **Show compass** in the “View location” area.



Select where to place the compass: upper left, upper right, lower left or lower right corner.

The compass can be displayed as an arrow or as a symbol. Check the desired option in the “Compass representation” area.

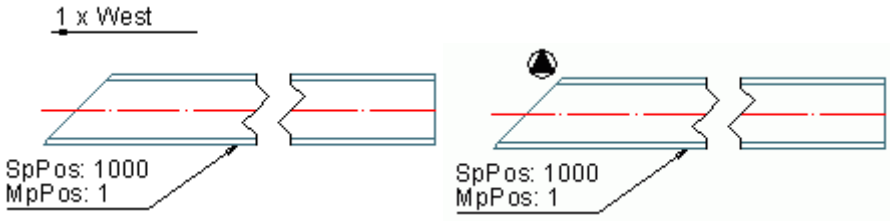


Figure 40: Compass on drawing

Clipping Properties

The clipping options are on the **Clipping properties** tab.

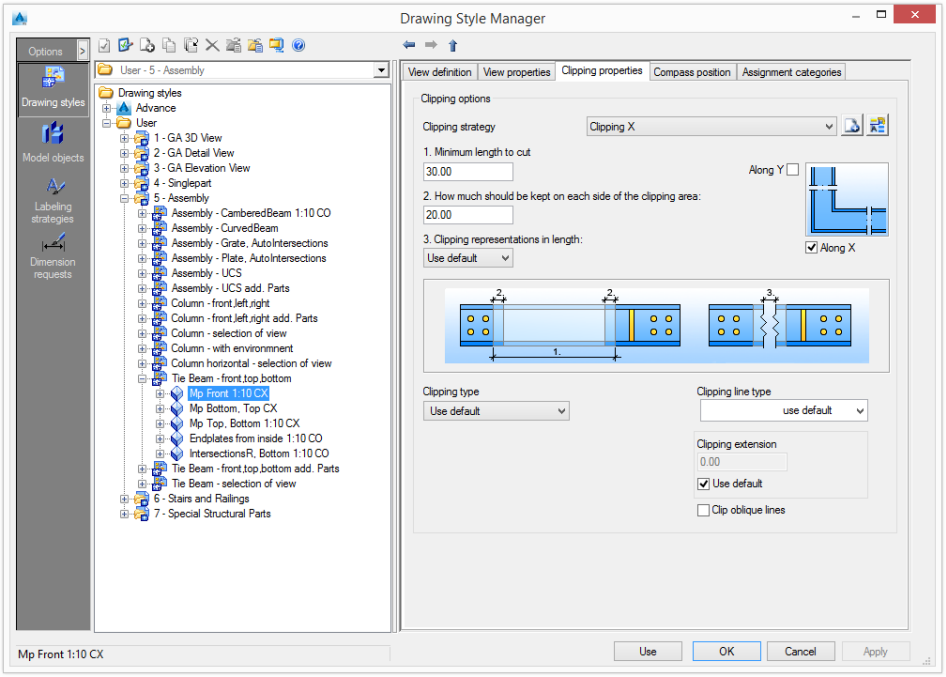


Figure 41: Drawing Style Manager – Clipping Properties

Clipping options

The use of clipping in the current view is set using the clipping options.

Clipping strategy

The clipping strategy always refers to the coordinate system of the reference object and not the position in the drawing. The following options are available:

Clipping X	Clipping along the X axis of the reference object
Clipping Y	Clipping along the Y axis of the reference object
Clipping XY	Clipping along both X and Y axes of the reference object
Clipping off	No clipping

The list of clipping strategies can be modified. New strategies can be added or the existing ones can be re-named.

Button	Function
	Define a new clipping strategy. A new item is inserted into the list.
	Rename a strategy. The current settings are saved under a different name.

The clipping strategies are modified using the following controls.

Minimum length to cut:

Defines the size of the clipping; the smaller the intervals, the bigger the clipping

How much should be kept on each side of the clipping area:

Defines the length of the area kept from the excluded region

Clipping representations in length

Defines the distance in millimeters (or inches) on the drawing

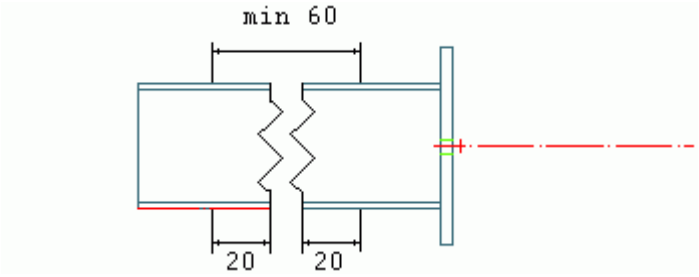
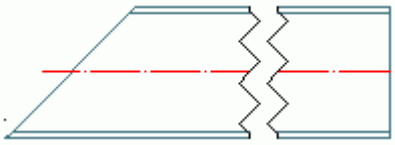
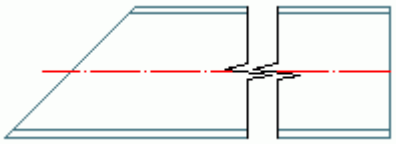


Figure 42: Clipping example using a minimum length to cut of 60mm with 20mm kept on each side

Clipping type

Select a representation for the clipping line.

Button	Function
Normal clipping:	Clipping with a selected line type  The clipping line type is selected from the “clipping line type“ list: ZIGZAG dotted, dashed, etc.

Button	Function
No line clipping	Clipping with small gap and no clipping line
Custom clipping	Clipping with a custom line type 

Optionally, the clipping can be represented with extension lines (clipping line oversteps the element). The line **extension size** can be set.

Check **Clip oblique lines** to use clipping for oblique lines.

Assigning a View to Categories

The **Assignment category** tab lists all the existing categories. A view can be assigned to several categories. When an existing view is added to a drawing style from the “View selection” dialog box, the category assignment is useful for visualization purposes.

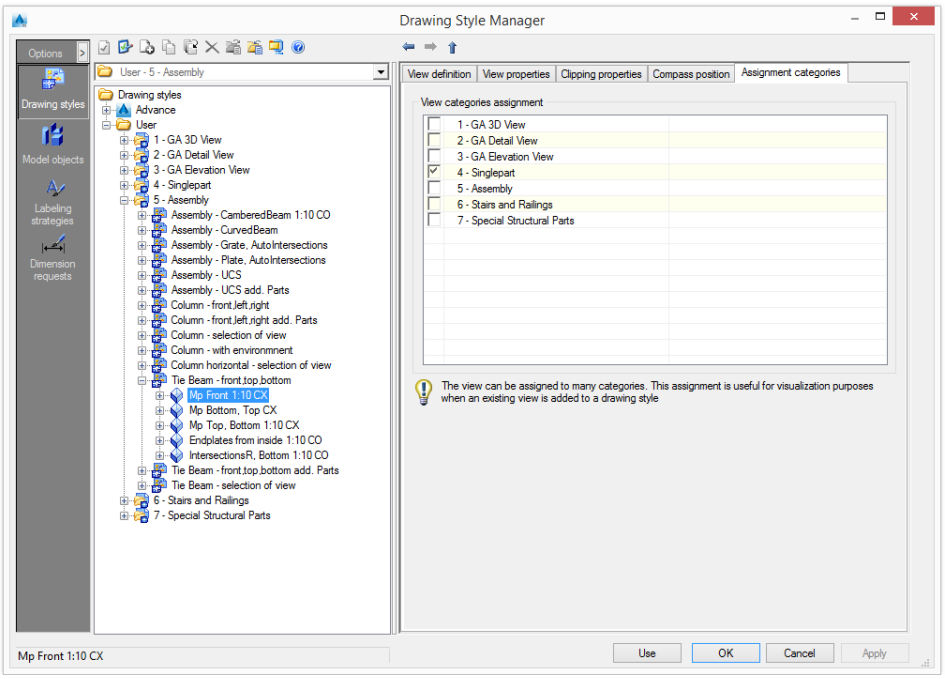


Figure 43: Drawing Style Manager – Assignment Categories

Chapter 4
Model Objects

In this chapter:

- *Model Objects Management*
- *Model Object Properties*

In Advance, functions are assigned to the model objects either by applying construction rules or interactively. In the drawing creation, these functions are used to explicitly differentiate individual object groups.

The functions **cover plate**, **end plate** and **butt plate** automatically create a front plate view in a main part. If no other elements, such as shear or gusset plates, are welded at this spot, no further cut is offered by Advance.

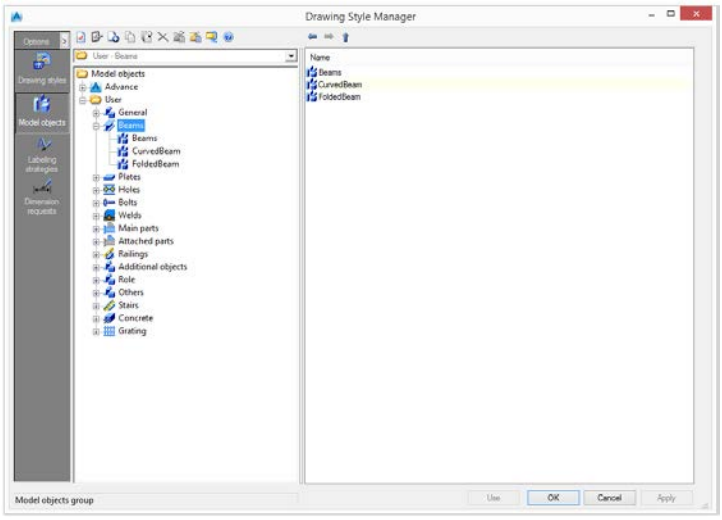


Figure 44: Drawing Style Manager - Model Objects

Model Objects Management

In the component panel, select **Model objects**. The tree panel displays all the model objects grouped by Advance object: *Bolts*, *Beams*, *Welds*, etc. A small image depicts the content of the group. All the management functions refer now to the model objects.

Creating a new group

1. Click **New** .

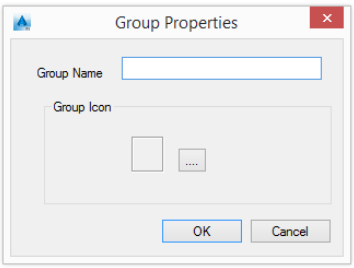


Figure 45: “Group properties” dialog box

2. Enter the name for the group.
3. Click .
4. Select the .**bmp** file that contains the icon for the new group.

Modifying group properties

1. Select a group.
2. Click **Properties** .
3. Change the name of the group.
4. Click .
5. Select the .**bmp** file that contains the new icon for the selected group.

Copying a model object

1. Click **Copy** .

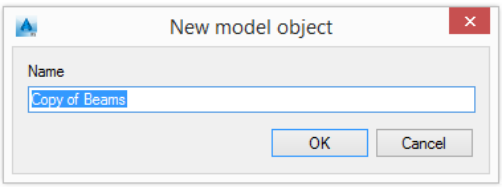


Figure 46: “New model object” dialog box

2. Enter the name for the new model object.

   The new model object can be moved to another group.

***Note**: The associated sub-styles are not copied with the model object.*

Deep copying a model object

The deep copy function copies the selected model object and all associated sub-styles. The new model object can then be modified at any level, without changing the original.

1. Select the model object to use as template.
2. Click **Deep copy** .

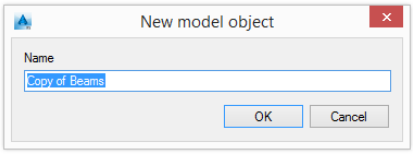


Figure 47: “New model object” dialog box

3. Enter the name for the model object.

   The new model object can be moved to another group.

Deleting a model object

1. On the tree panel, select a model object to delete.
2. Click **Delete** .
3. In the warning box, click **Yes** to delete the model object.

***Note**: A model object referenced by at least one drawing style can only be deleted after the links are removed.*

Model Object Properties

Model objects act as **filters** for objects from the **3D model**. A model object is defined by the Advance object type (e.g., *Beam*), model role (e.g., *Column*) and an additional filter (e.g., *with holes*).

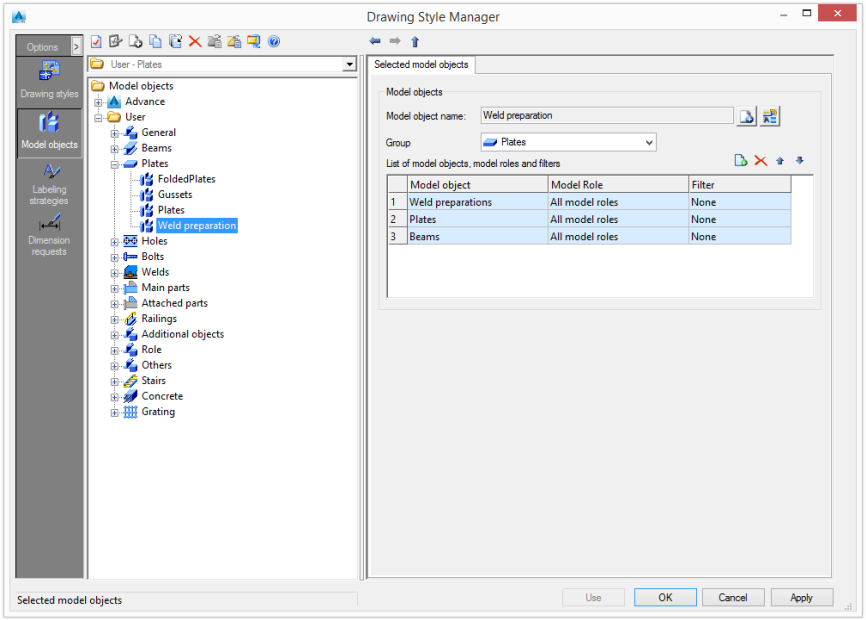


Figure 48: Model object properties

Adding/renaming model objects

The list of model objects, roles and filters can be modified. New strategies can be added or existing strategies can be renamed.

Button	Function
	Define a new model object. A copy of the current settings is created. It can be moved to another group using the **Group** drop-down list. A new item appears in the tree panel under the specified group.
	Rename the model object. The current settings are saved under a different name.

Managing the list of model objects

The toolbar contains all the necessary management functions:

Button	Function
	Add a model object
	Delete the selected model object
	Move the selected model object up the list
	Move the selected model object down the list

Chapter 5
Labeling Strategies

An essential part of the automatic drawing design is the labeling of model objects in detail views. A labeling rule contains settings for the content, the layout and the label arrangement. Labeling strategies can be shared by different styles and can be managed separately.

In this chapter:

- *Labeling Strategies Management*
- *Labeling Strategy Properties*

Labeling Strategies Management

In the component panel, select **Labeling strategies**. The tree panel displays all the labeling strategies grouped by the associated type of Advance object: *Bolts*, *Beams*, *Welds*, etc. A small image depicts the content of the group. All the management functions refer now to the labeling strategies.

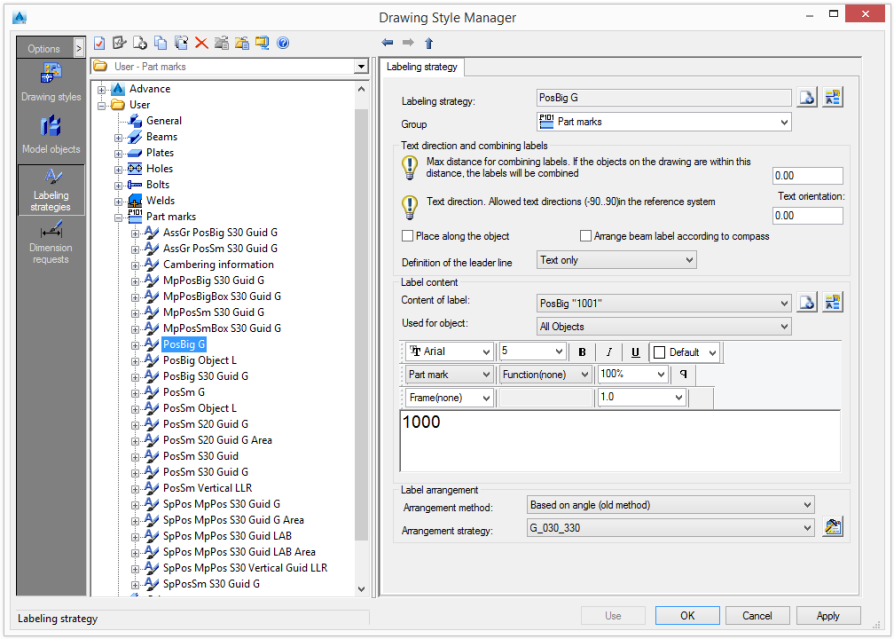


Figure 49: Drawing Style Manager - Labeling strategies

Creating a new group

1. Click **New** .

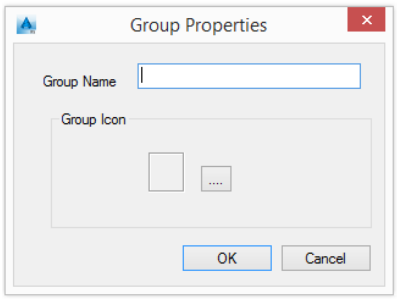


Figure 50: “Group properties” dialog box

2. Enter the name for the group.
3. Click .
4. Select the .**bmp** file that contains the icon for the new group.

Modifying group properties

1. Select a group.
2. Click **Properties** .
3. Change the name of the group.

4. Click ... .
5. Select the .**bmp** file that contains the new icon for the selected group.

Copying a labeling strategy

1. Select the labeling strategy to be used as template.
2. Click **Copy** .

Figure 51: “New labeling strategy” dialog box

3. Enter the name for the new labeling strategy.

   The new labeling strategy can be moved to another group.

***Note**: The associated sub-styles are not copied with the labeling strategy, therefore modifying a sub-style affects all the drawing styles that are using it.*

Deep copying a labeling strategy

The deep copy function copies the selected labeling strategy and all associated sub-styles. The new labeling strategy can be modified at any level, without changing the original strategy.

1. Select the labeling strategy to be used as template.
2. Click **Deep copy** .

Figure 52: “New labeling strategy” dialog box

3. Enter the name for the labeling strategy.

   The new labeling strategy can be moved to another category.

Deleting a labeling strategy

1. On the tree panel, select a labeling strategy to delete.
2. Click **Delete** .
3. In the warning box, click **Yes** to delete the labeling strategy.

Labeling Strategy Properties

A labeling strategy contains settings for the content, the layout and the arrangement of a label.

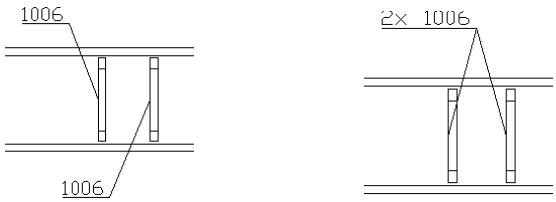
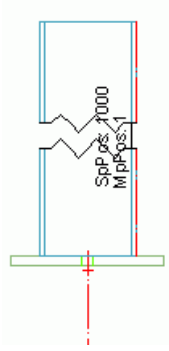
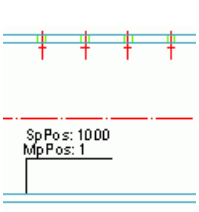
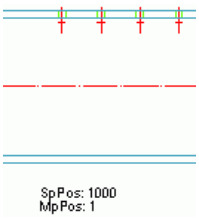
Adding/renaming the labeling strategy

The list of labeling strategies can be modified. New strategies can be added or existing strategies can be renamed.

Button	Function
	Define a new labeling strategy. A new item is inserted into the list and changes can be made to it from the controls.
	Rename a labeling strategy. The current settings are saved under a different name.

Setting the label position

The label position is set using the options in the “Text direction and combining labels” area.

Parameter	Description
Max distance	– Combines labels such that the distance does not go beyond MaxDistance in millimeters (or inch) on the drawing. 
Text direction	– Sets the text orientation in the reference system. Orientations can be between –90° and 90°.
Place along the object	– When checked, the label is placed along the object. 
Arrange beam label according to compass	– Configures the labels to show the members orientation by arranging the label to point on the beam end (based on the shop drawing orientation)
Definition of the leader line	– Sets the underline options. Two options are available:  Underscored  Text only

Setting the label content

The label content can be defined using the label designer in the “Label content” area. Options for the format definition (font, frames, colors etc.) are also available.

Setting the label type

The label type is selected from the **Label content** drop-down list. The list of label types can be modified. New types can be added or existing types can be renamed.

Button	Function
	Define a new label type. A new item is inserted into the list and changes can be made to it from the controls.
	Rename a label type. The current settings are saved under a different name.

Used for objects

The **Used for objects** option states for which model objects to apply the definition. This setting influences the selection of the label style on the tree panel after opening a drawing style.

***Example**:*

For bolts, the **Used for object** option lists **Bolt** or **All objects**.

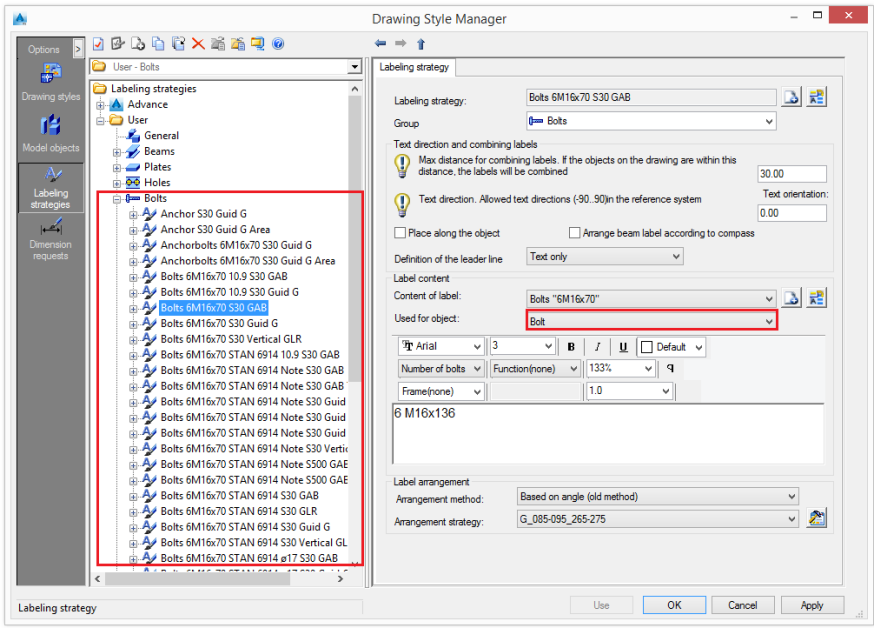


Figure 53: Labeling Strategy – Label content “Used for object” option

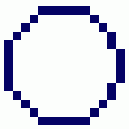
Setting the label format

Select a font type, size and color. Optionally a boundary around the text may be used:

- Select the tokens in the preview area.

Figure 54: Tokens in preview area

- Select a boundary. Four boundary types are available:

Option	Boundary	Example
Rectangular		
Rectangular with fillets		
Hexagonal		
Circular		

- Set the boundary distance from the text.

  In the preview area, the text is displayed, as it will appear on the drawing. The preview area only displays the text and not the formatting.

  A label contains a combination of individual variables and additional texts.

  Click **Variable** to set the label content as variable.

Meaning	Model objects	Variable
Section name	Beams	%ProfName
Number of members	Beams	%RodCount
Material	Title, Beams, Plates, Bolts, Shear Studs, Special Parts	%Material
Coating	Title, Beams, Plates, Bolts, Shear Studs, Special Parts	%Coating
Name (Denotation)	Title, Beams, Plates, Bolts, Shear Studs, Special Parts	%Denotation
Part mark	Title, Beams, Plates, Special Parts, NC	%PosNum
Length	Title, Beams, Plates, Bolts, Holes, Shear Studs	%Length
Width	Plates	%Width
Thickness	Plates	%Thickness
Bolt standard	Bolts, Shears Studs	%Norm
Bolt diameter	Bolts, Holes, Shears Studs	%Diameter
Hole diameter	Bolts	%HoleDiameter
Number of bolts	Bolt, Holes	%BoltCount
Assembly group	Beam, Plates, Special Parts, NC	%Assembly
Commodity	Beam, Plates, Bolts, Shear Studs, Special Parts	%ItemNumber
Vertical depth	Holes	%SunkDepth
Others	Title, Beams, Plates, Bolts, Special Parts	%Note
Single part mark	Title, Beams, Plates, Special Parts, NC	%SinglePartPosNum
Main part mark	Title, Beams, Plates, Special Parts	%MainPartPosNum
Hole type	Holes	%Role

Meaning	Model objects	Variable
Thread (left-hand / right-hand)	Holes	%Tapping
Bolt assembly	Bolts	%Set
Head diameter	Holes	%HeadDiameter
Countersinking angle	Holes	%Alpha_e
External name 1	Beam, Plates, Bolts, Special Parts	%ExtName1
External name 2	Beam, Plates, Bolts, Special Parts	%ExtName2
External name 3	Beam, Plates, Bolts, Special Parts	%ExtName3
External name 4	Beam, Plates, Bolts, Special Parts	%ExtName4
Quantity	Title, Beams, Plates, Special Parts	%Quantity
Name	Title, Beams, Plates, Bolts, Shear Studs, Special Parts	%Name
Position	Title, Beams, Plates, Special Parts	%Position
Quantity in main part	Title, Beams, Plates, Special Parts	%MainPartQuantity
Scale	Title	%Scale
Date	Title	%Date
USDate	Title	%USDate
Time	Title	%Time
Day	Title	%Day
Month	Title	%Month
Year	Title	%Year
Hour	Title	%Hour
Minute	Title	%Minute
Sign ø	Title	%%c
Sign %	Title	%%%
Sign °	Title	%%d
Sign ±	Title	%%p
User Attribute 1	Beams, Plates, Special Parts	%UserAttr1
User Attribute 2	Beams, Plates, Special Parts	%UserAttr2
User Attribute 3	Beams, Plates, Special Parts	%UserAttr3
User Attribute 4	Beams, Plates, Special Parts	%UserAttr4
User Attribute 5	Beams, Plates, Special Parts	%UserAttr5
User Attribute 6	Beams, Plates, Special Parts	%UserAttr6
User Attribute 7	Beams, Plates, Special Parts	%UserAttr7
User Attribute 8	Beams, Plates, Special Parts	%UserAttr8
User Attribute 9	Beams, Plates, Special Parts	%UserAttr9
User Attribute 10	Beams, Plates, Special Parts	%UserAttr10
Model role	Beam, Plates, Bolts, Special Parts	%Role
Assembly Length	Title, Beams, Plates, Special Parts	%AssemblyLength
Flange Thickness	Title, Beams, Plates, Special Parts	%FlangeThickness
Web Thickness	Title, Beams, Plates, Special Parts	%WebThickness
Axis Length	Title, Beams	%AxisLength

Special symbols can be inserted using ASCII codes. To insert a symbol, a number combination must be entered with the ALT-key being pressed.

Symbol	¢	µ	½	±	¼
Code	155	230	171	241	172

These codes apply only if the standard font is used. If using another font via the formatting #Font, the same codes result in different symbols. This also applies for other special symbols.

The available symbols are found in the Windows Character Map accessible from the Windows start menu (Start – Programs – Accessories – System Tools – Character Map).

Setting the label arrangement

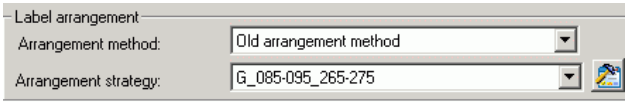
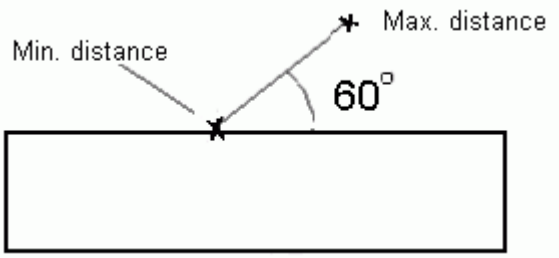
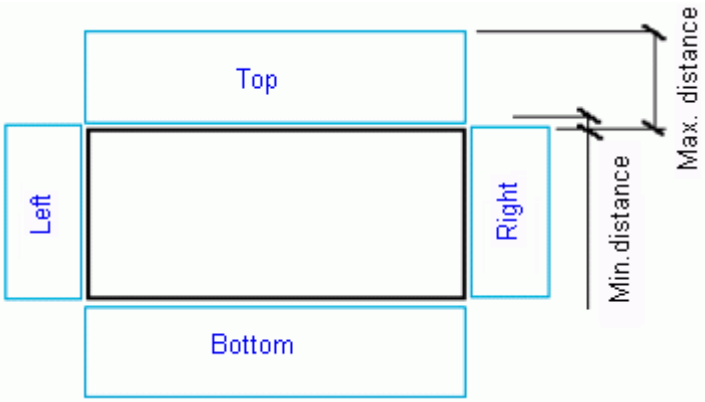


Figure 55: Labeling Strategy – Label arrangement area

- Select an arrangement method. Two options are available:

Arrangement method	Description
Based on angles	
Based on areas	

- Select an arrangement strategy from the list. To configure an arrangement strategy click **Set** .

Modifying an arrangement strategy

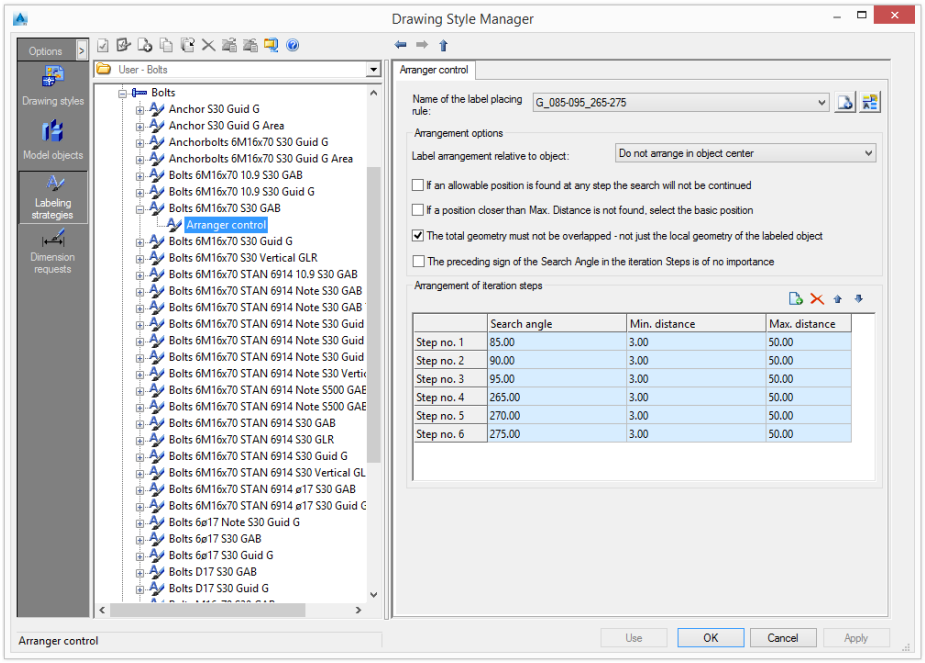


Figure 56: Label arrangement

Select a label-placing rule from the list. The existing rules can be renamed and new rules can be added.

The names of the rules contain the searched angle range.

Button	Function
	Define a new label type
	Rename a label type

Arrangement options

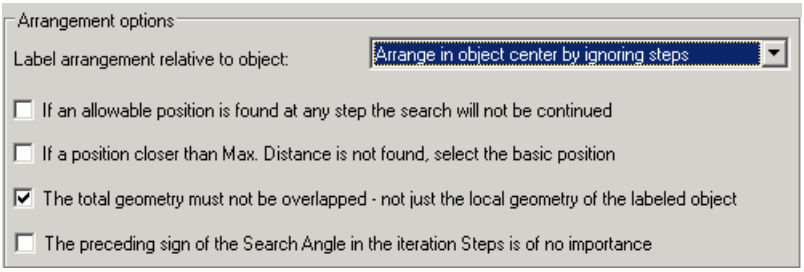


Figure 57: Arrangement options

1. If, in the iterative steps, an accepted position is found, the following steps will not be checked. This may save time but it does not always give an optimum position.
2. If, in the range between *MinDistance* and *MaxDistance,* no position can be found, the basis position will be selected (usually the object center).
3. View the complete detail view (global) for the position search or view only the local object to be labeled.
4. The preceding sign of the moving direction is not being considered therefore less iterative steps are necessary.

Label arrangement relative to object

Three options are available:

Button	Function
Arrange in the center of the object by ignoring steps	– The label is centered and the iteration steps are ignored
Arrange in the center of the object using steps	– The label is centered using the iteration steps
Do not arrange in the center of the object	– The label is placed using the iteration steps

Managing the iteration steps

The toolbar contains all the necessary management functions:

Button	Function
	Add an iteration step
	Delete the selected iteration step
	Move the selected iteration step up
	Move the selected iteration step down

Set the search angle and the minimum and maximum distance for each iteration step.

Search angle

This option defines the search direction (angle) for a free position. This option is dependent on the system settings in AutoCAD® (Menu format – Units – Direction). By default, 0° is in the East and it is measured anticlockwise.

Min distance

This option defines the smallest distance from the object that is allowed.

Max distance

This option defines the largest distance from the object that is allowed.

Chapter 6
Dimension Request

A dimension request defines the dimensioned objects in a dimension chain. Each entry in this category represents a dimension chain on the drawing.

The existing dimension definitions can be shared by different styles. Modifying a dimension definition affects all the drawing styles that are using it. Dimension definitions can be managed separately.

In this chapter:

- *Dimension Definition Management*
- *Dimension Definition Properties*

Dimension Definition Management

Select **Dimension request** on the component panel. The tree panel displays the dimension definitions grouped by the type of Advance object (Beams, Plates, etc.). All the management functions are applied to the dimension definitions.

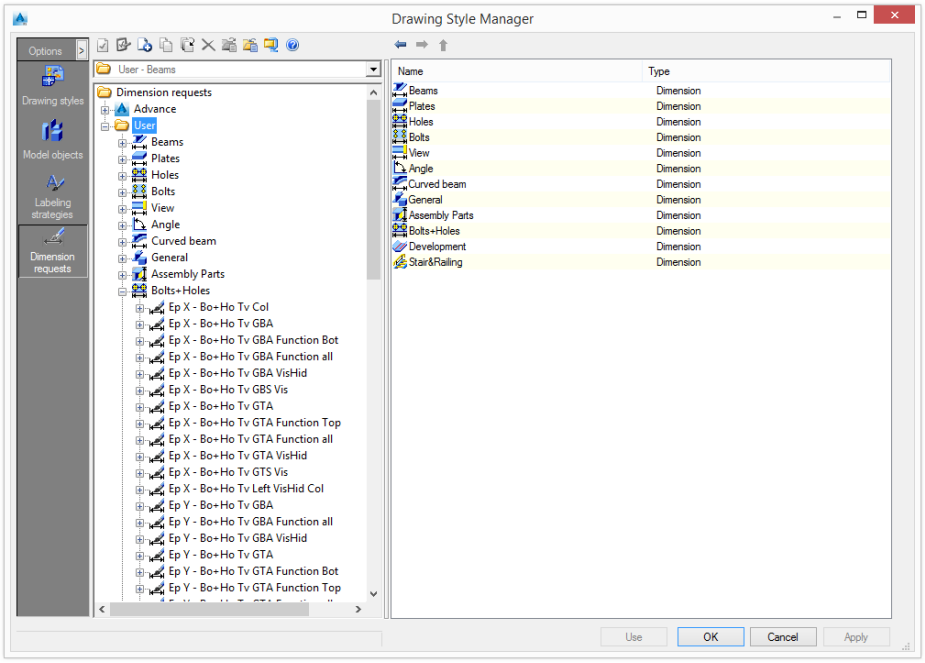


Figure 58: Drawing Style Manager - Dimension requests

Creating a new group

1. Click **New** .

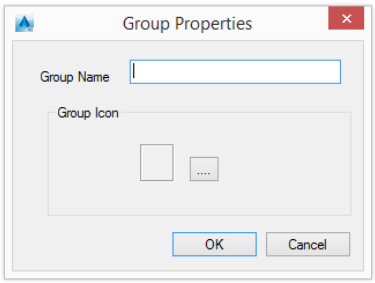


Figure 59: “Group properties” dialog box

2. Enter the name for the group.
3. Click .
4. Select the .**bmp** file that contains the icon for the new group.

Modifying group properties

1. Select a group.
2. Click **Properties** .

3. Change the name of the group.
4. Click ... .
5. Select the .**bmp** file that contains the new icon for the selected group.

Copying a dimension strategy

1. Select the dimension strategy to use as template.
2. Click **Copy** .

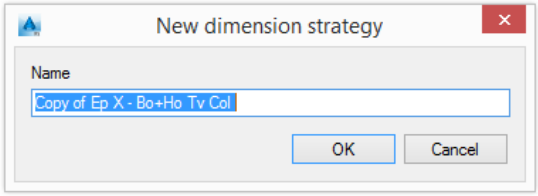


Figure 60: “New dimension strategy” dialog box

3. Enter the name for the new dimension strategy.

The new dimension strategy can be moved to another group.

***Note**:* *The associated sub-styles are not copied with the dimension strategy therefore modifying a sub-style affects all the dimension strategies that are using it.*

Deep copying a dimension strategy

The deep copy function copies the selected dimension strategy and all associated sub-styles. The new dimension strategy can be modified at any level, without changing the original strategy.

1. Select the dimension strategy to use as template.
2. Click **Deep copy** .

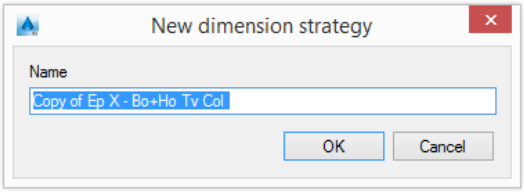


Figure 61: “New dimension strategy” dialog box

3. Enter the name for the dimension strategy.

The new dimension strategy can be moved to another category.

Deleting a dimension strategy

1. On the tree panel, select a dimension strategy to delete.
2. Click **Delete** .
3. In the warning box, click **Yes** to delete the dimension strategy.

Dimension Definition Properties

A dimension definition contains the following settings:

- Dimension direction – defines the dimension chain direction relative to the applied object type.
- Selection of dimension points - A list of sub-styles is available for point selection. The sub-styles specify which points from what objects will be dimensioned.
- Dimension chain position - Several options are available for better positioning relative to the object presentation.

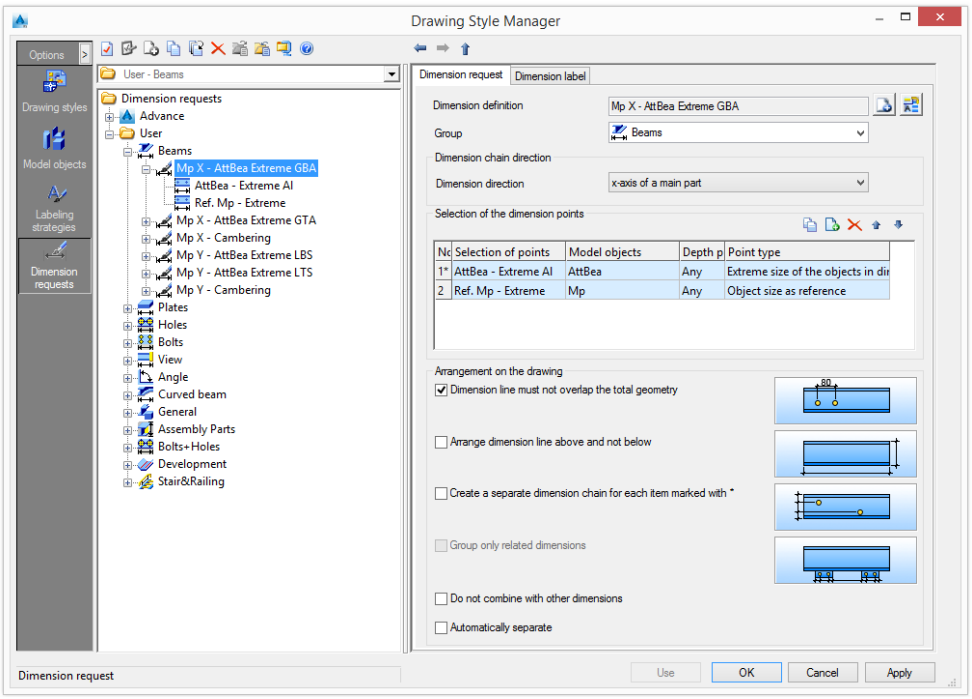


Figure 62: Drawing Style Manager - Dimension definition properties

The existing dimension definitions can be renamed and new definitions can be added.

Button	Function
	Define a new dimension definition. A copy of the current settings is created that can be moved to another group using the **Group** drop-down list. A new item appears in the tree panel under the specified group.
	Rename a dimension definition. The current settings are saved under a different name.

Setting the direction of the dimension chain

The direction of the dimension chain refers to the detail view on the drawing or to an object in the model. The following options are available:

Dimension chain direction
Internal bolt/hole direction X
Internal bolt/hole direction Y
Internal direction angle
Internal direction linear
Negative x-axis of a main part

Dimension chain direction
Negative x-axis of an object
Negative x-orientation of the view
Negative y-axis of a main part
Negative y-axis of an object
Negative y-orientation of the view
X-axis Bent Beam inner
X-axis Bent Beam outer
X-axis Bent Beam system
X-axis of a main part
X-axis of an object
X-orientation of the view
Y-axis Bent Beam
Y-axis of a main part
Y-axis of an object
Y-orientation of the view

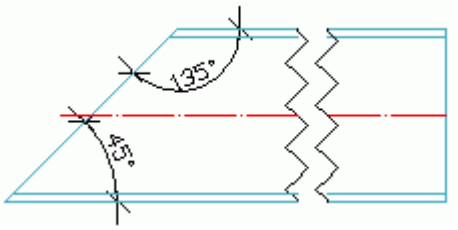


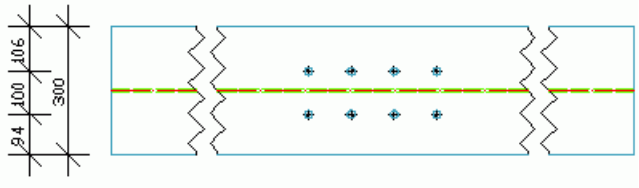
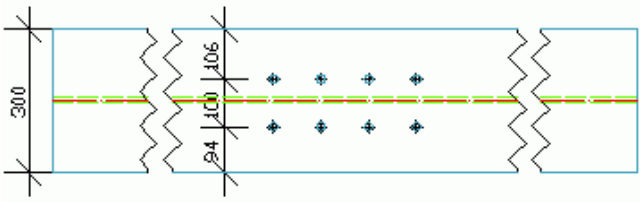
Figure 68: Example of using internal direction angle for the dimension chain direction

Dimension arrangement on the drawing

There are three options available in the “Arrangement on the drawing” area for better positioning relative to the objects presentation.

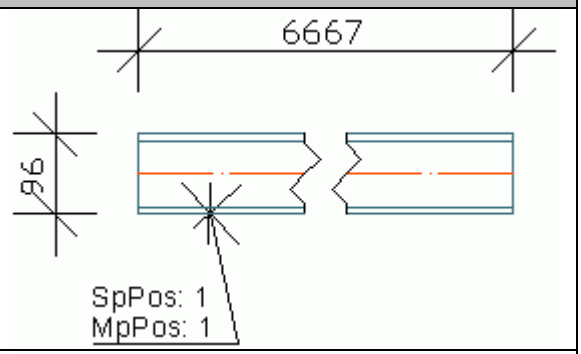
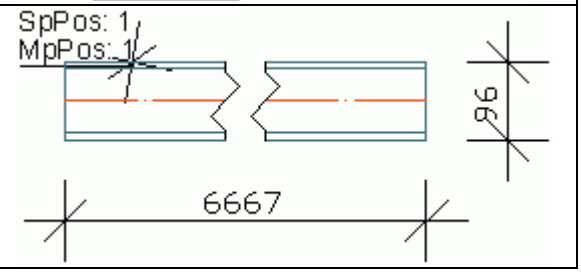
Dimension line must not overlap the total geometry

Select whether the dimension chain should be free of intersections with the dimensioned local geometry or with the total geometry of the detail.

Option	Example
Abbreviation: **G** (Global) ☐ Dimension line must not overlap the total geometry	
Abbreviation: **L** (Local) ☑ Dimension line must not overlap the total geometry	

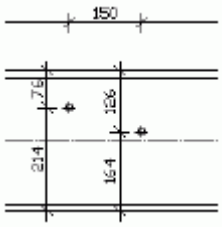
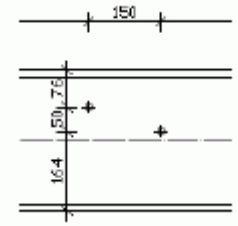
Arrange dimension line above and not below

This option defines whether the dimension chain is placed above or below a detail view. In the vertical detail views above is left and below is right.

Option	Example
Abbreviation: **T** (Top) ☑ Arrange dimension line above and not below	
Abbreviation: **B** (Bottom) ☐ Arrange dimension line above and not below	

*Create a separate dimension chain for each item marked with**

If this option is checked, for each single object detected in the model (e.g. bolt pattern) a dimension chain is created. If this option is not checked, all the detected objects are dimensioned in one dimension chain.

Option	Result
Abbreviation: **S** (Single) ☑ Create a separate dimension chain for each item marked with *	
Abbreviation: **A** (All) ☐ Create a separate dimension chain for each item marked with *	

A bolt pattern creates only one dimension chain because it is just one object.

***Note**: The name of the dimension definition contains the settings mentioned above using their abbreviation.*

***Example**:*

Mp X - Extreme GTA - a dimension chain with the maximum dimensions of a main part.

G - no intersection with the total geometry

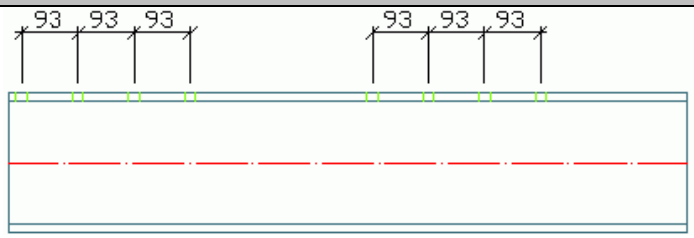
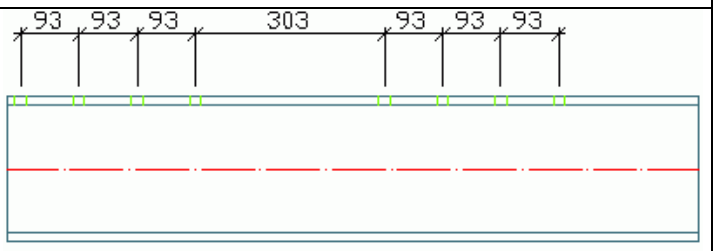
T - the dimensions are placed above the detail

A - all detected elements are dimensioned in one single dimension chain

Group only related dimensions

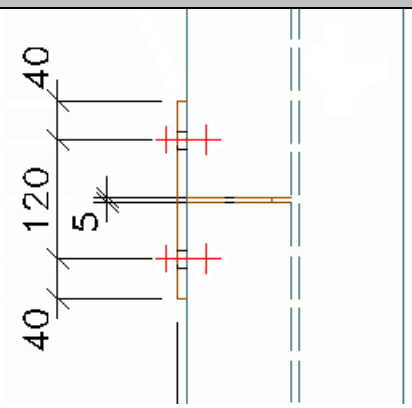
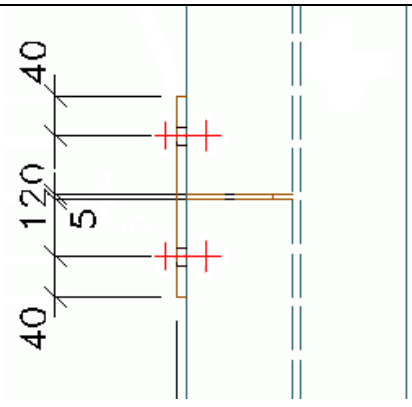
Optionally, dimensions for bolts and holes groups on secondary parts can be grouped. This option creates a dimension line for each group and dimensions the objects in the group.

The drawing style can be configured to automatically get the desired result.

Option	Result
☑ Group only related dimensions	
☐ Group only related dimensions	

Do not combine with other dimensions

This option prevents a dimension from combining with others. This increases the drawing quality when two similar dimensions must remain separate even if they have dimension points from the same line, or show the same values.

Option	Result
☑ Do not combine with other dimensions	
☐ Do not combine with other dimensions	

Selection of dimension points

A list of point selection rules is available. The rules are also displayed on the tree panel.

The toolbar contains all the necessary management functions:

Button	Function
	Create a new point selection rule.
	Add an existing point selection rule
	Delete the selected point selection rule
	Move the selected rule up the list
	Move the selected rule down the list

Creating a new point selection rule

A new rule is created by copying a point selection rule from the list.

1. Select a rule to use as a template for the new point selection rule.
2. Click **Create** .

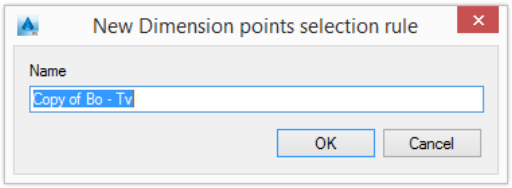


Figure 63: “New dimension points selection rule” dialog box

3. Enter the name for the new rule.

A new row appears in the table with the new point selection rule.

Changes can be made directly to the list. Only previously defined rules can be selected. Double-click an item in the list or select a rule in the tree panel for detailed configuration. For more information, refer to the **Modifying a point selection rule** section.

Adding an existing point selection rule

1. Click **Add** .

   In the **Dimension points selection** dialog, the point selection rules are grouped by **model objects**.

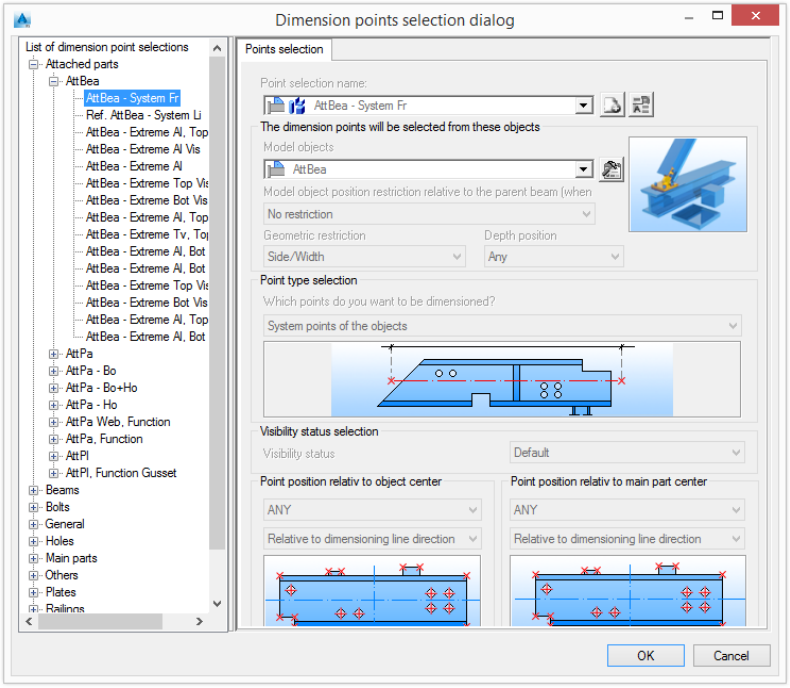


Figure 64: “Dimension points selection” dialog box

2. Select a point selection rule from the tree panel and click **OK**.

A new row appears in the table with the new point selection rule.

Deleting a point selection rule

1. Select a rule to delete.
2. Click **Delete** .

Changing the order of the list

The order of the **Selection of the dimension points** is modified using the two arrow buttons, and .

Modifying a point selection rule

A dimension point selection rule contains the following settings:

- Model objects and geometric restriction - a filter for defining the objects used for selection of dimension points.
- Point type - the properties of the objects geometry used in the points selection process (e.g. objects contour, object features, holes, etc.).
- Position on object or on main part - the object points used for dimensioning (e.g., only the left or only the bottom of the object).

The **Points selection rules** can be shared by different dimension strategies. Consequently, modifications affect all the dimension strategies that use the modified points selection rule.

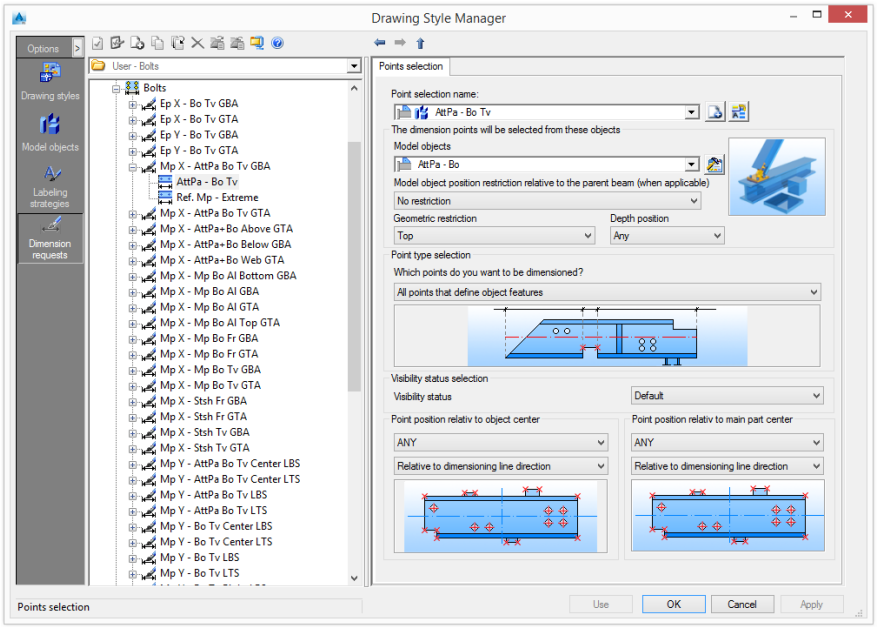


Figure 65: Drawing Style Manager - Points selection

Select a predefined point selection rule from the list. The existing rules can be renamed and new rules can be added.

Button	Function
	Define a new point selection rule. A copy of the current settings is created and a new item appears in the drop-down list.
	Rename a point selection rule. The current settings are saved under a different name.

Selecting the model objects to be dimensioned

Select **model objects** and the geometric restrictions for defining the objects used in the selection of dimension points. Click **Set** to configure the model objects. For more information, refer to the **Model Objects** chapter.

Defining the points to be dimensioned

Select the properties of the objects geometry used in the points selection process (e.g. objects contour, object features, holes etc) in the “Point type selection” area. Furthermore, points can be used as reference.

The following table lists the sub-styles for specifying which points from what objects will be dimensioned.

Option
All as reference
All attaching parts as reference
All holes as reference
All points defining object processing as sub-objects
All points that are to be dimensioned of the object
All points that define object features
All points that define the object contour (without features)
Attaching parts at the objects
Bended beam inside as reference
Bended beam outside as reference
Bended beams inside
Bended beams outside
Center point as reference
Center point of the objects
Development lines
Extreme size of the objects in dimension direction
Holes in the objects
Main part Collision Dimensions
Main part Collision Dimensions as reference
Object contour as reference
Object features as reference
Object size as reference
Stencil point as sub objects (grouped together)
System as reference
System points of the objects
Template reference point as reference
Templates reference point

It is possible to distinguish between three categories of point types:

1. **As reference** –This option provides dimension points only when there are other dimension points; otherwise, those points will not be used. This point selection type is useful when no dimensions are necessary.

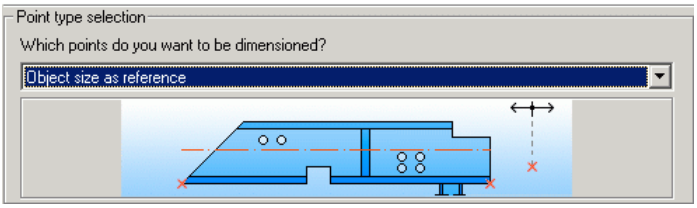
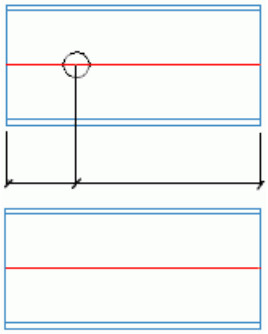


Figure 66: Point type selection using “as reference”

***Example**:*

A dimension line if there is a hole, and if there is no hole in the main part, no dimension chain is created.

Points selection rule	Result
Holes - All features Main Part - Extreme as reference	

2. **Features** and **Contour**

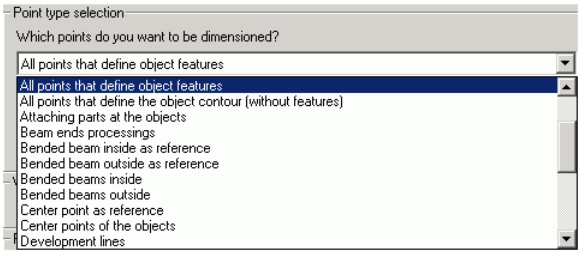


Figure 67: Point type selection using *features* and *contour*

There is a difference between *feature* and *contour* dimension points.

In Advance, there are two main types of feature processing:

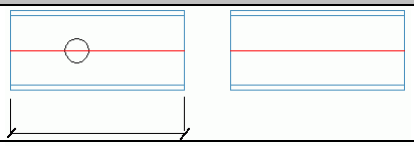
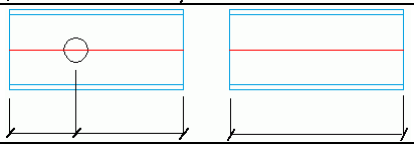
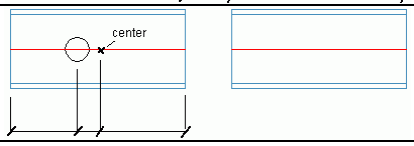
- Finite processing (e.g., *rectangular contour* feature)
- Infinite processing (e.g., *shortening* and *notch* features)

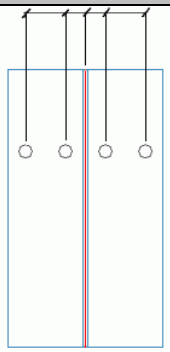
For dimension, the object *features* points means the points created by the finite processing.

The **object contour (without features)** points means the points of the elements contour, including the points created by the “infinite” features.

3. **Beam end processing** – Provides the dimension for the beam end contour points, including the points created by the finite processing that affect the beam end contour.

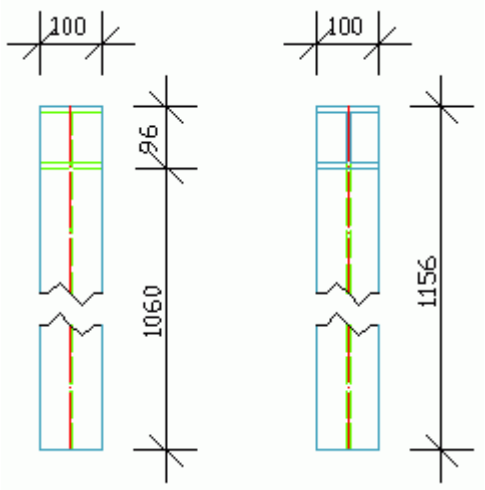
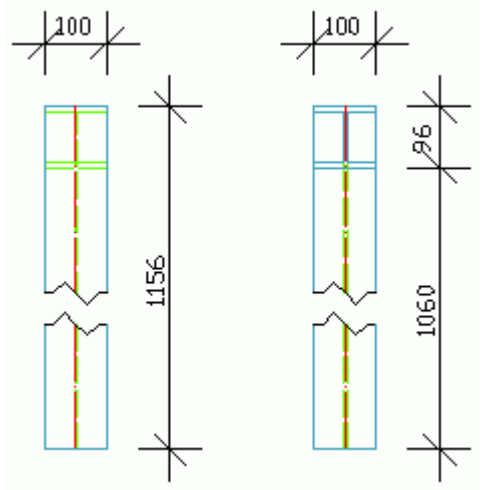
***Examples**:*

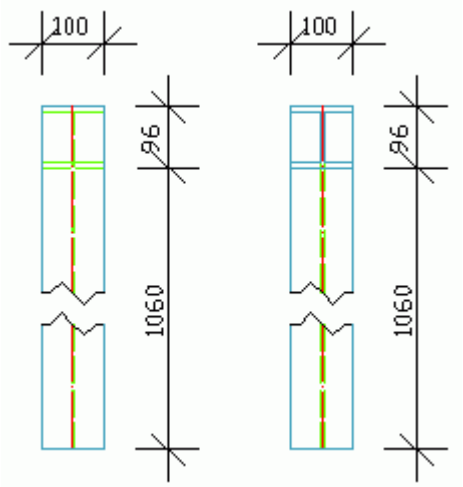
Points selection rule	Result
Holes – All Beam – Extreme as reference	
Beam – Extreme Holes – Beam	
Holes – All Beam – Extreme as reference Center points as reference	

Points selection rule	Result
Holes – All Beam – System as reference	

Visibility status selection

Visible and hidden dimension points for each dimension definition and dimensioned element are selected using the **Visibility status**.

Option	Description
Default	The default option will be used
Hidden	Only the hidden objects will be dimensioned 
Visible	Only the visible objects will be dimensioned 

Option	Description
Visible and hidden	Visible and hidden objects will be dimensioned 

Point position on object

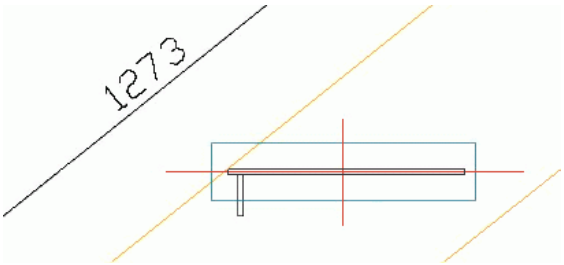
Set geometrical restriction of the selected points in the “Point position on object” area. Two options are available:

- Point position on object – used to filter the points depending on their position on the attached parts
- Point position on main part – used to filter the points depending on their position on the main part.

The following restrictions are available:

Option	Description
Any	All object points
Bottommost	The most bottom point is used
Bottom	The bottom points
BottomLeft	The points on the bottom-left side
BottomRight	The points on the bottom-right side
Left	The points on the left side
Left & Right Extremes	The points on the left side and the right extreme points
Leftmost	
Right	The points on the right side
Rightmost	
Top	The points on the top side
Top & Bottom Extremes	The points on the top side and the bottom extremes
TopLeft	The points on the top-left side
Topmost	
TopRight	The points on the top-right side

The restriction refers to the *dimension line direction* or to the *object direction*. Only some of the object points can be dimensioned (e.g., only the left or only the bottom of the objects).

Option	Description
Relative to dimension line direction	– The axis is based on the dimension line direction
Relative to object direction	– The axis is based on the object direction. This option is useful when the dimension direction is not perpendicular to the object. **Example**: The steps of a stair 

***Examples**: Point position on object and on main part*

The following example illustrates the behavior of setting **Point position** on the object and on the main part for a beam with holes and two attached plates in the front view of a beam.

- The behavior of the setting Point position on object:

  Use the **Left** restriction relative to the object for the attached plates and the holes.

Figure 68: Point position on object settings

Both attached plates and all groups of holes from the main part are dimensioned as shown in Figure 69.

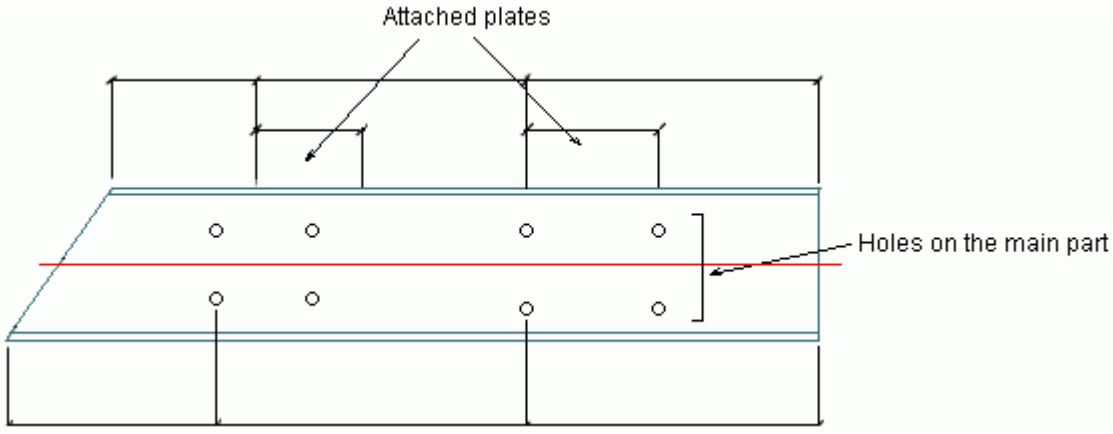


Figure 69: Example of point position on object

- The behavior of the setting Point position on main part:

Figure 70: Point position on main part settings

Only the attached plate and the holes placed in the left side of the main part are dimensioned as shown in Figure 71.

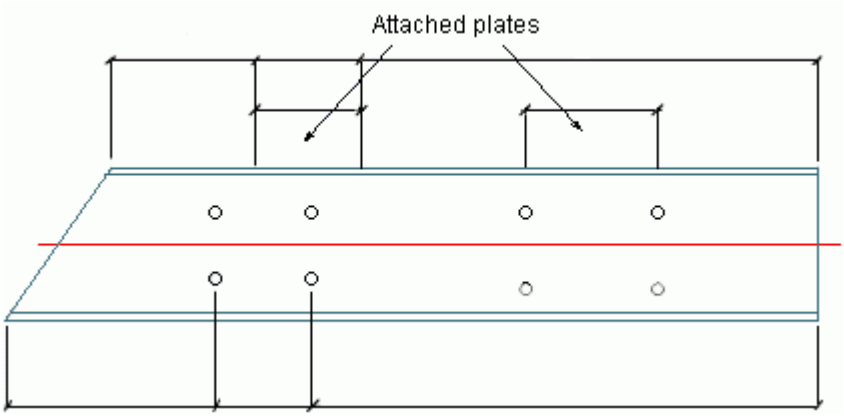


Figure 71: Example of point position on main part

Chapter 7
Processes

In addition to the drawing styles, Advance includes **Processes**, which automatically create the drawings (using appropriate drawing styles) and arrange the created details within a drawing (DWG) or across several drawings.

Advance drawing processes are used to accelerate the drawing creation by automatically assigning drawing styles and layouts for the selected parts.

A process includes a number of other processes:

- Selection of parts
- Sorting
- Used drawing styles
- Rules for detail arrangement on the sheet
- Rules for attaching new sheets

Using the **Drawing Process Manager**, new drawing processes can be created and existing processes can be modified.

In this chapter:

- *Accessing the Drawing Process Manager*
- *Drawing Process Manager User Interface*
- *Using a Drawing Process*
- *Process Definition Properties*

Accessing the Drawing Process Manager

_AstM5DetailProcessExplorer

- Click “Drawing Process Manager” on the **Output** ribbon, the **Document Manager** category.

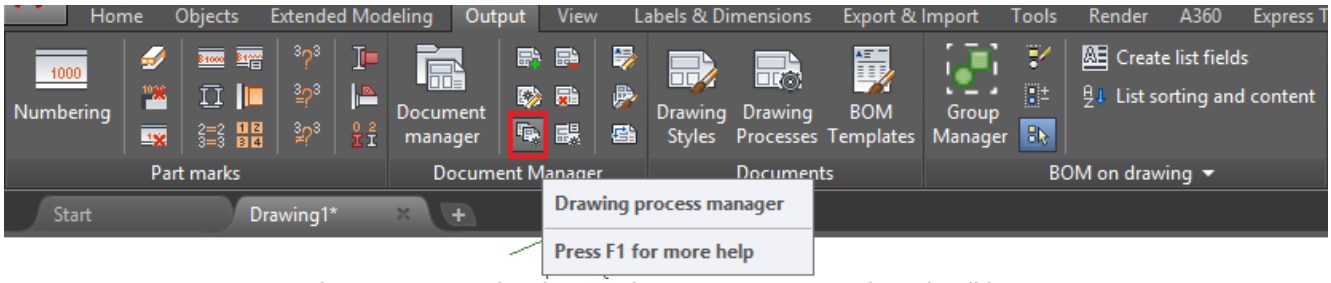


Figure 72: Accessing the Drawing Process Manager from the ribbon

Drawing Process Manager User Interface

The **Drawing Process Manager** is used to create new processes and manage, modify, or delete the existing processes.

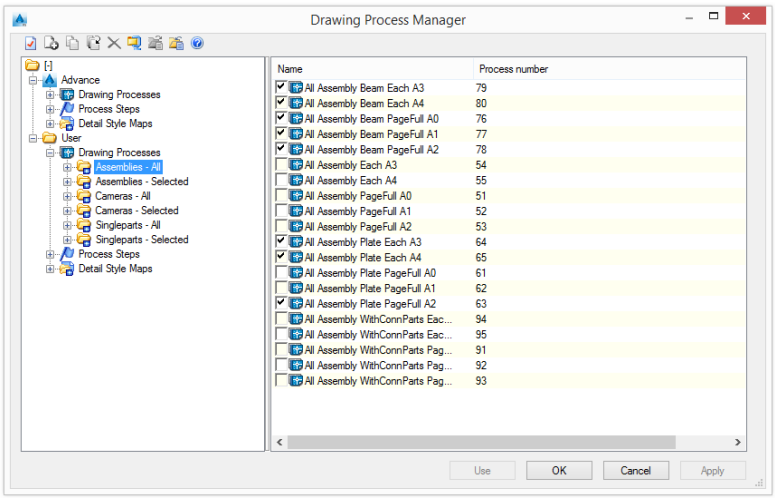


Figure 73: Drawing Process Manager

The main dialog box of the Drawing Process Manager displays the prototypes from the **Standard**, **Country AddIn** and **User** categories in a tree structure.

For a selected category, the content is displayed on the right side of the dialog box and on the tree panel.

If a process is selected, the definition of the process is displayed. Modifications can only be made to processes from the **User** category.

The **process steps** category enables quick access to the steps definition and configuration. If a process step is selected in the Drawing Process Manager tree, the step definition is displayed on the right side of the window.

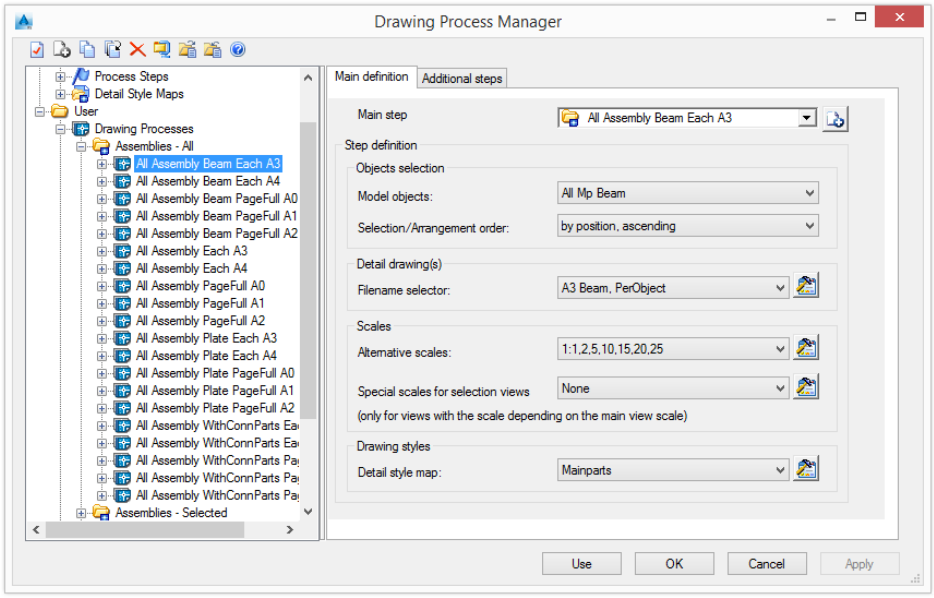


Figure 74: Drawing Process Manager - Step definition

Assignment of an appropriate drawing style for the process to the elements of the 3D model is made using the **Detail style map** option. This assignment determines the presentation of the model elements on the drawing.

The **Detail style map** category groups all the detail maps for quick access to the definition and configuration. If a style map is selected in the Drawing Process Manager tree, the definition is displayed on the right side of the window.

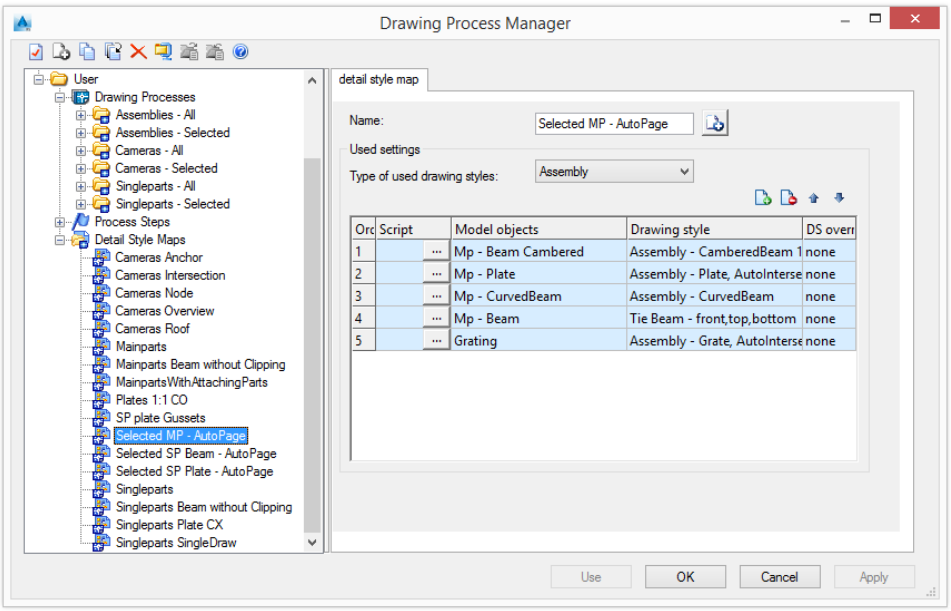


Figure 75: Drawing Process Manager - Detail style map definition

Using a Drawing Process

The default processes are accessible from the **Output** ribbon, in the **Document Manager** panel, the **Drawing Processes** category.

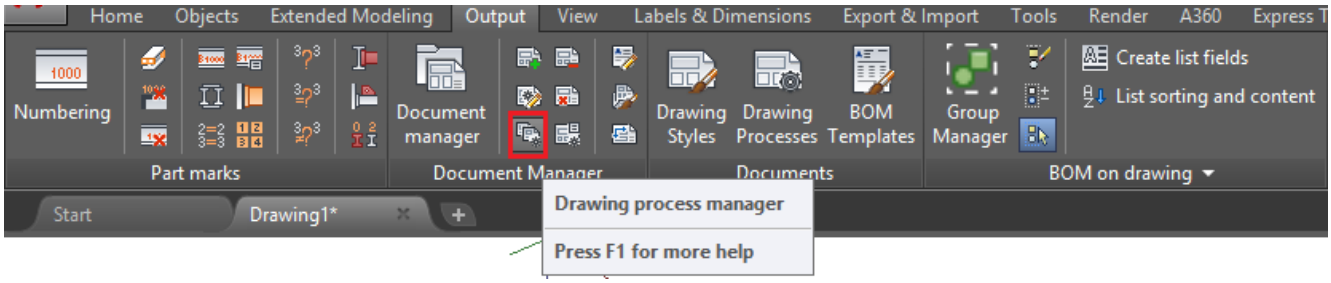


Figure 76: Default processes on the **Output** ribbon**, Document** panel

The drawing processes can be also used from the Drawing Processes Palette, accessible from the Documents category

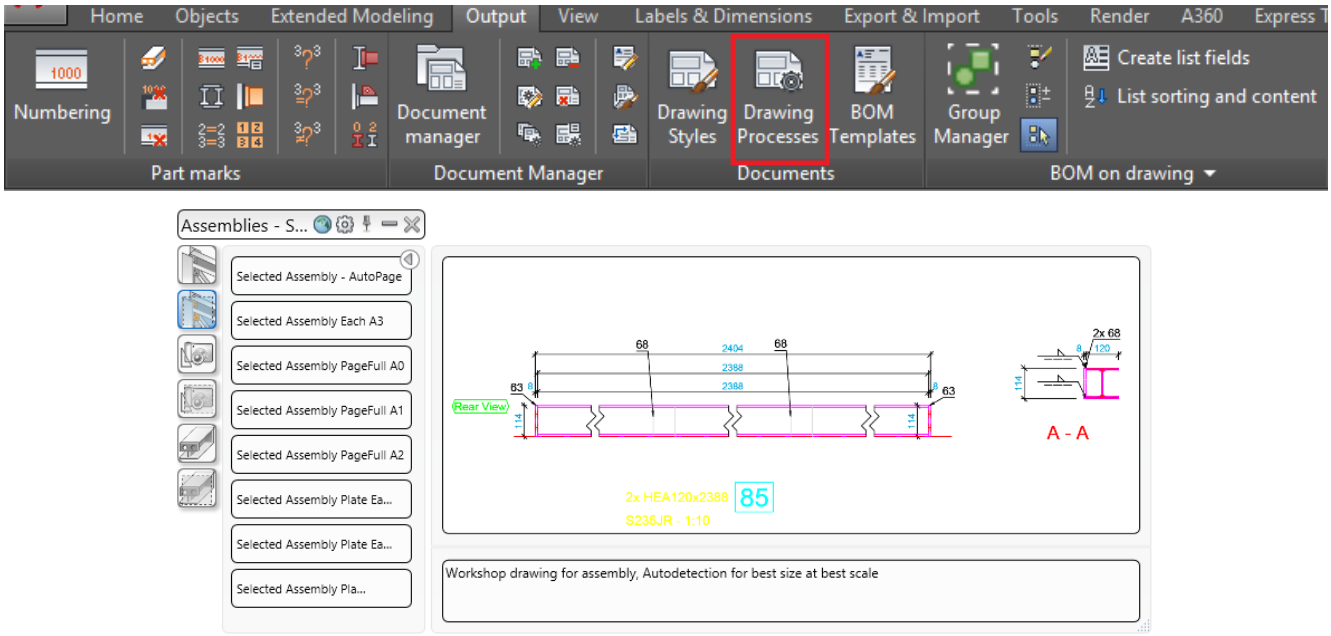


Figure 77: Drawing Processes Palette

The processes can also be called manually using the *_AstM4CommDetailingProc User* command and the process number. The **Process number** column displays the number associated to each process.

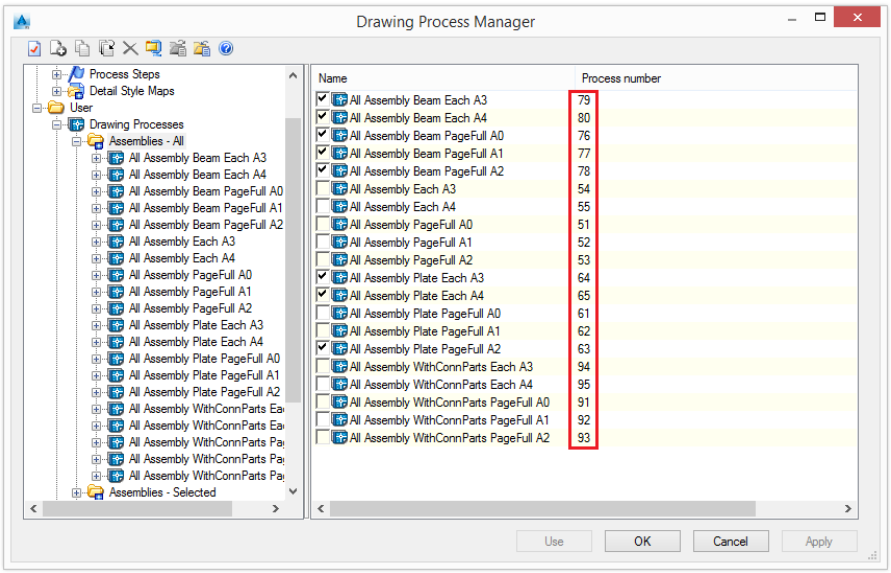


Figure 78: Drawing Process Manager - Process numbers

***Example**:*

_AstM4CommDetailingProc User 52 calls the drawing process All Assembly PageFull A1

Process Definition Properties

Two tabs display the process definition properties: **Main definition** and **Additional steps**.

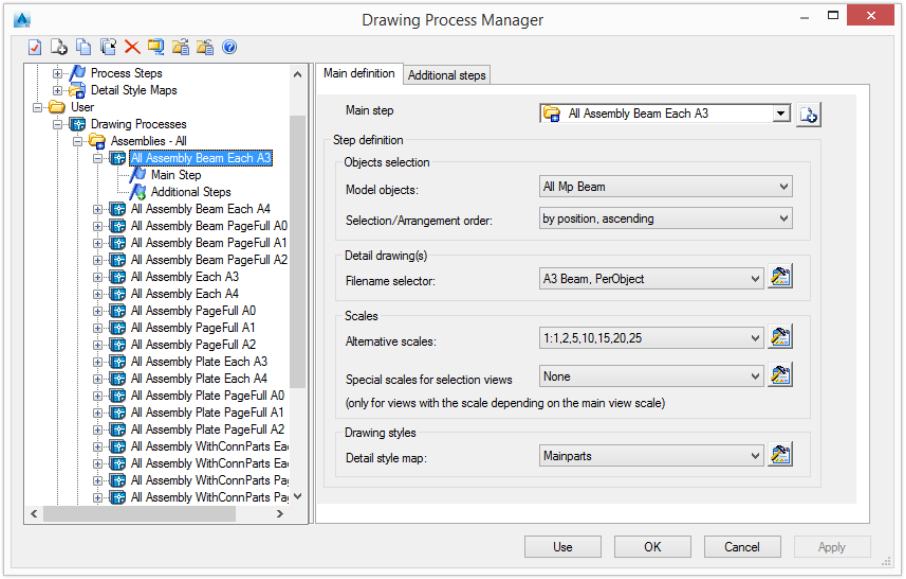


Figure 79: Drawing Process manager - Definition properties

A process can have more than one step.

The first step of a process - the **main step** - determines the process behavior and configuration. If the main step cannot fit a detail in a prototype, additional steps are used.

***Note**:* *It is recommended to not make changes to options in the additional steps as they can be used as a Main Step in other processes.*

Selecting the main step

Select a main step from the list. The list of steps can be modified.

Adding a new step

1. Click **Add** .

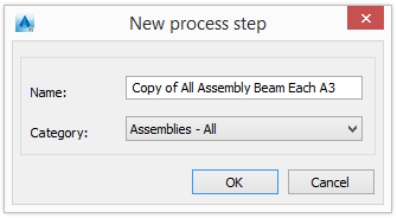


Figure 80: “New process step” dialog box

2. Enter the new process name.
3. Select a category.

   A new step is added to the list with the current step definition.

Selecting model objects

In the “Objects selection” area, select a model object to be detailed by the selected process and the arrangement option.

The drawing name is created based on the **filename selector** rule.

Filename selector

Select a filename selector from the list. Click **Properties** .

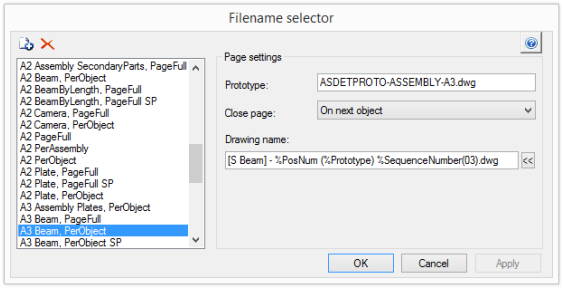


Figure 81: “Filename selector” dialog box

The list of filename selectors can be modified.

Button	Function
	Add a new file selector
	Delete a file selector

Prototype

Enter the name of the prototype file.

Close page

Select a close page option. Three options are available.

Option	Description
On next object	The next object is displayed on a new page
On next main part	The next main part is displayed on a new page
On page full	Displayed on the full page

Name of the detail drawing

- Click and select the information to add in the drawing name from the options in the displayed list.

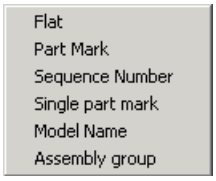


Figure 82: Drawing name options

Option	Description
Flat	- The drawing number
PosNum	- The position number of the main object in the detail
SequenceNumber	- Increment details with similar file names
SinglePartPosNum	- The single part position number of the main object in the detail
ModelName	- The name of the model
Assembly	- The lot/phase to which the assembly is assigned

***Example**:*

A4-Detail %Flat(03).dwg

Alternative scales

A process creates the detail with the drawing style scale used for the object. If the detail does not fit in the selected prototype, the process will try the alternative scales.

1. Select the alternative scales from the list.

2. Click **Properties** .

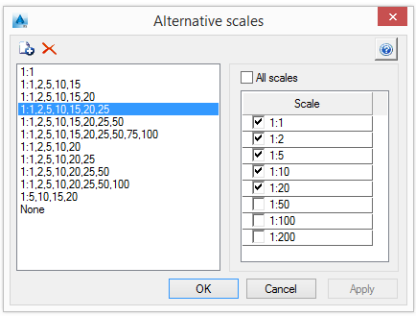


Figure 83: “Alternative scales” dialog box

The list of alternative scales can be modified.

Button	Function
	Add a new alternative scale. A copy of the selected scale is added to the list.
	Delete an alternative scale

Special scales for a view

Special scales can be selected for views with the scale depending on the main view scale.

- Select a special scales item from the list. Click **Properties** .

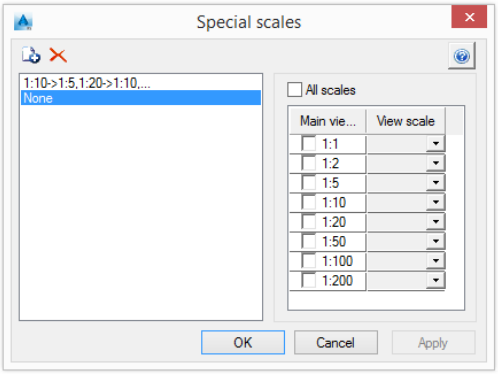


Figure 84: “Special scales” dialog box

Scales are managed in the same manner as alternative scales.

Detail styles

1. Select a detail style map from the list.
2. Click **Set** .

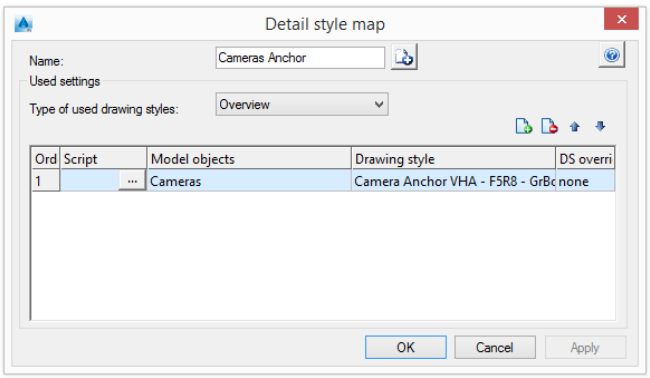


Figure 85: “Detail style map” dialog box

3. Select a type of used detail styles from the list.
4. In the table, an appropriate detail style for the process is assigned to the elements of the 3D model (Model objects). This assignment determines the presentation of the model elements on the drawing.

Additional steps

If the process cannot fit the detail with any scale, it will continue with the next step from the Additional steps of the process definition. If, after all the steps, the process still cannot fit the detail in the page, the detail is created with the last style and scale.

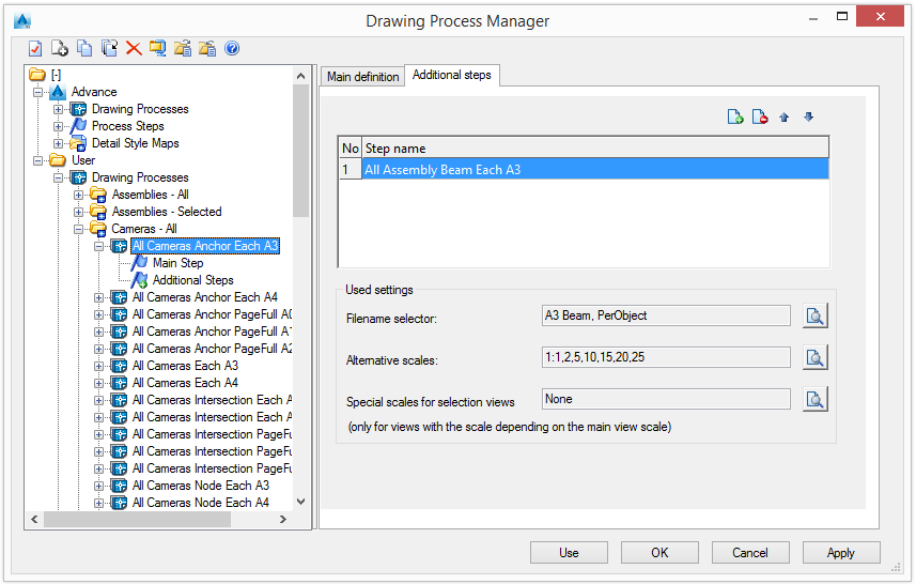


Figure 86: Drawing Process Manager - Additional steps

Add as many additional steps as necessary.

The configuration of the settings used for the additional steps is displayed in the “Used settings” area.

Appendix
Abbreviations

Abbreviation	Explanation
AB	**A**bove, **B**elow
Al	**Al**l
AssGr	**Ass**embly **Gr**oup
AttBea	**Att**ached **Bea**m
AttBentBea	**Att**ached **Bent Bea**m
AttPa	**Att**ached **Pa**rt
AttPl	**Att**ached **Pl**ate
Bb	**B**ase**b**oard
BentBea	**Bent Bea**m
Bp	**B**ase **p**late
CO	**C**lipping **O**ff
CX	**C**lipping in **X**-direction
CXY	**C**lipping in **XY**-direction
Den	**Den**otation
Eb	**E**ll**b**ow
End	**End** of railing
Ep	**E**nd **p**late
F, Fr	**F**ront, **Fr**ont
F8	**F**ront infinite
Fd	**F**illed Ro**d**
GTA	**G**lobal, **T**op, **A**ll
GBA	**G**lobal, **B**ottom, **A**ll
Gr	**Gr**id
Guid	With **Guid**eline
Ho	**Ho**les
Hr	**H**and **r**ailing
Kr	**K**nee **r**ailing
LTS	**L**ocal, **T**op, **S**ingle
LBS	**L**ocal, **B**ottom, **S**ingle
LR	**L**eft, **R**ight
Li	**Li**near
Mat	**Mat**erial
Max	Maximum
Mp	**M**ain**p**art
Nl	**N**ot **l**inear
NoDim	**No Dim**ension
NoLab	**No Lab**el
Object	Text orientation by **Object**
PosBig	Text height **Pos**ition number **Big** (Text height 5 mm)
PosSm	Text height **Pos**ition number **Small** (Default text height)

Abbreviation	Explanation
Pl	**Pl**ate
Proc	**Proc**essing
R	**R**ear
Rail	**Rail**ing
S30	**S**ummarize **30** mm (Object label)
Sp	**S**ingle **p**art
Stsh	**St**ud **sh**ear
Sy	**Sy**stem
Tv	**T**op **v**iew
V	**V**isible
VH	**V**isible **H**idden
VHA	**V**isible **H**idden **A**xis
VHC	**V**isible **H**idden **C**ut
VHAC	**V**isible **H**idden **A**xis **C**ut