

## ➤ Creating and Managing Positional Representations

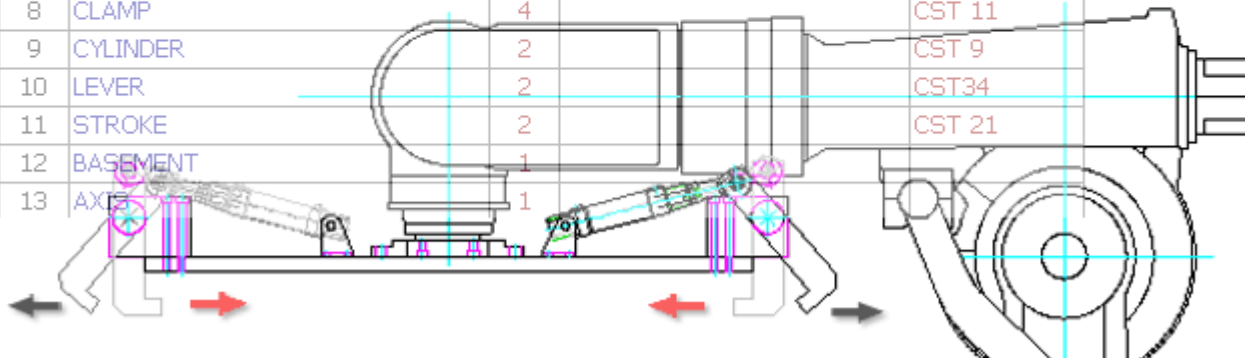
### In This Exercise

Positional representation captures moving states in an assembly. You can evaluate how your design works by simulating the positions of assembly views.

This Skill Builder demonstrates how to use mechanical structure to easily create and manage multiple positional representations. With the inclusion of positional views, AutoCAD Mechanical ensures accurate part lists and BOMs contain the correct part information, and update automatically in your design.

### Translating Ideas into Action and Motion

Item	Name	Qty	Standard	Material
1	TRAY	1		
2	GRIPPER PLATE	1		
3	JOINT	4		CST 211
4	GRIPPER ASSEMBLY NEW	1		
5	ROBOT	1	Type 100/3000	
6	GRIPPER SHAFT	2		
7	Rolling Bearing - ISO 15 - 8 68 - 20	4	ISO 15 - 8 68 - 20 x 32 x 22	
8	CLAMP	4		CST 11
9	CYLINDER	2		CST 9
10	LEVER	2		CST34
11	STROKE	2		CST 21
12	BASEMENT	1		
13	AXIS	1		



This illustration displays the motion of a robot gripper at the open and close position to pick and place plastic trays from one location to another.

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**NOTE** You can find the exercise files in the \Sample\Mechanical Structure subfolder where AutoCAD Mechanical is installed.

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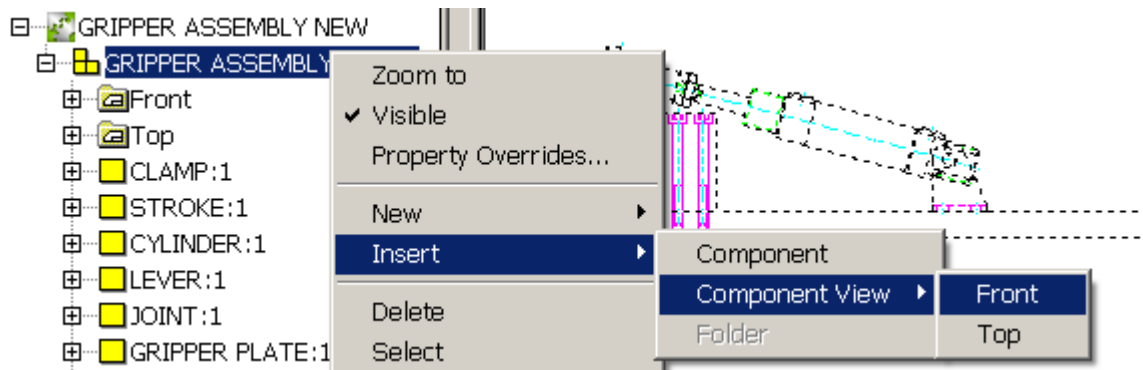
## This Skill Builder demonstrates how to:

- Create a positional view - Open position for gripper
- Create multiple positional views - Close position for gripper
- Generate a part list
- Modify master view to update all positional views
- Visibility control on positional views

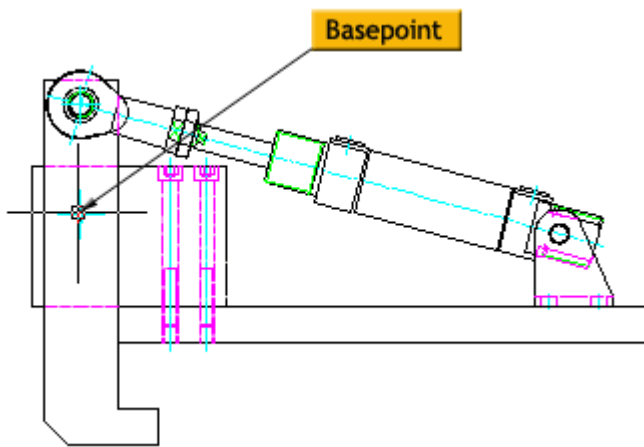
## Create a positional view - Open position for gripper

In this exercise, you create both the “open position” and “close position” views from the robot gripper. To create an assembly of similar parts as the gripper assembly, insert a new assembly view from the master view. In this case, the front view is the master view. Master view is the default position.

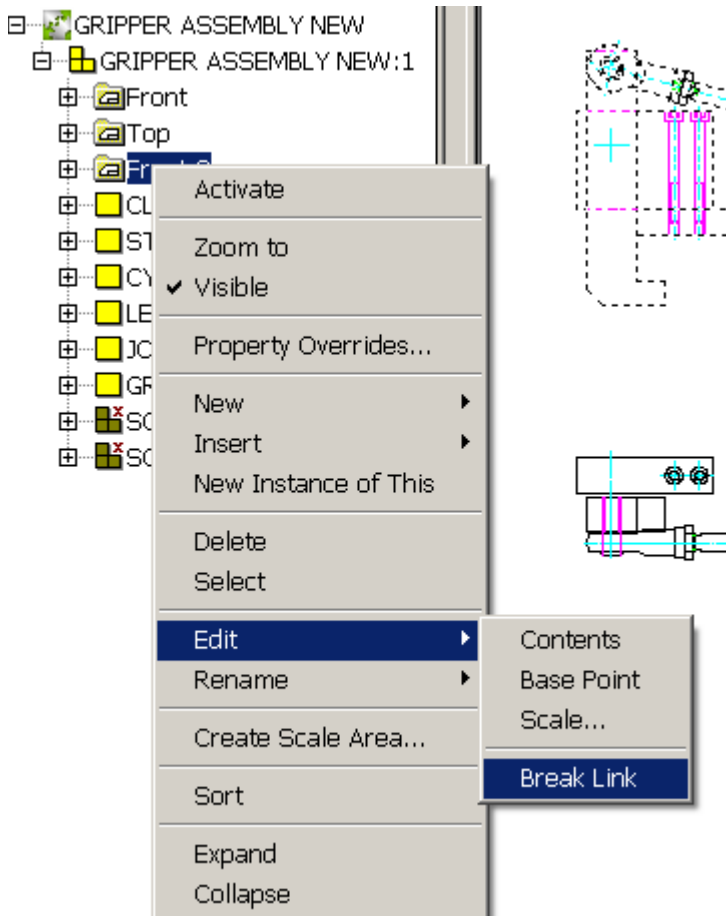
1. Right-click the assembly node, and then click > Insert > Component View > Front view (master view).



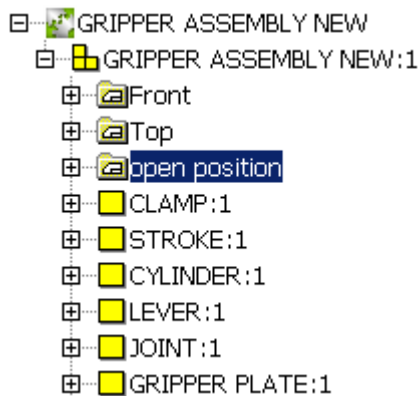
2. Overlay the assembly instances (positional view) on the master view. The base points for both positional and master views should be at the same location or coordinate.



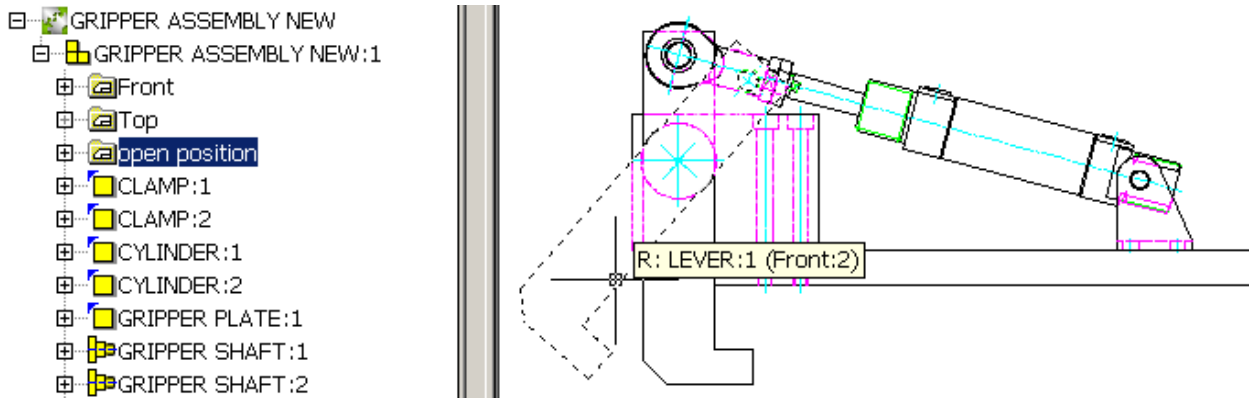
3. Break the link with master view for newly created positional view (Front:2) to change position without effecting the original position of the master view, while associativity remains for the individual parts of the assembly.



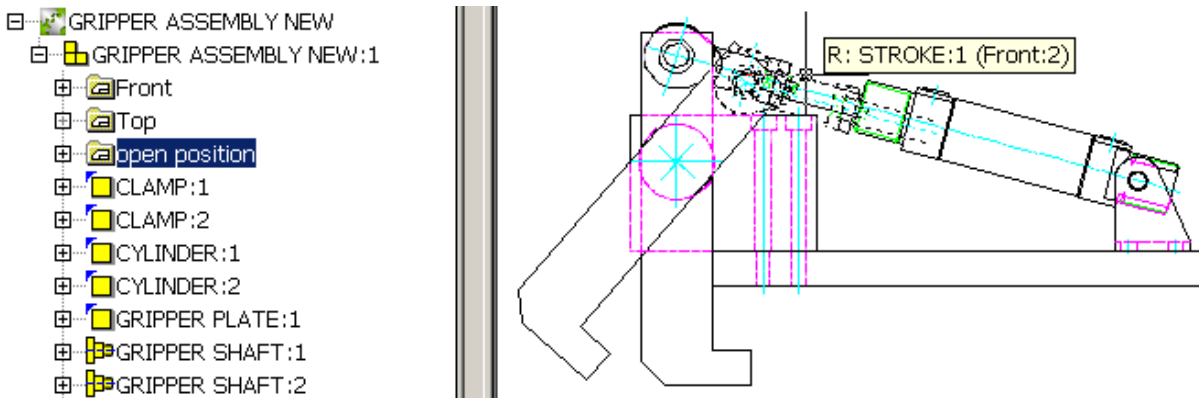
4. Specify new component view name <Copy of Front>: **open position**.



5. Rotate the LEVER:1 to an angle of 41 degrees as shown below.

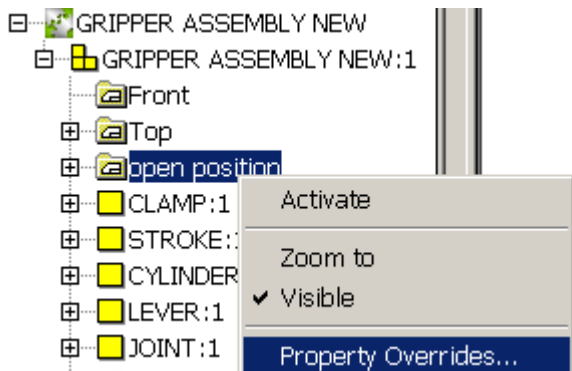


6. Move STROKE:1 to remain intact with the LEVER:1.

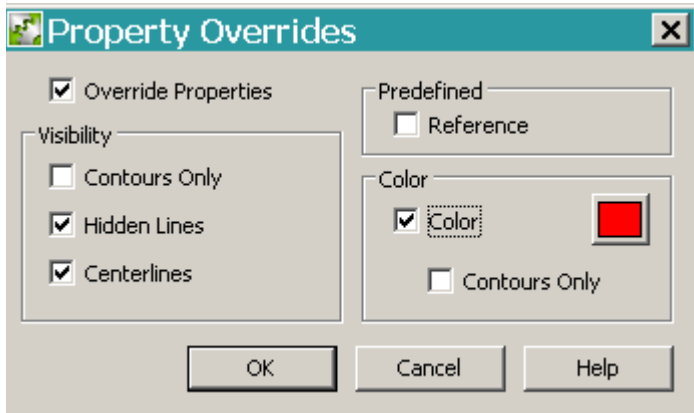


**TIP** You can select the LEVER and STROKE quickly in the “TOP-DN” or “BTM-UP” selection order. Switch on the “TOP-DN” tab at the bottom of the screen, and click twice on the LEVER/STROKE to cycle from the gripper subassembly to the component LEVER/STROKE.

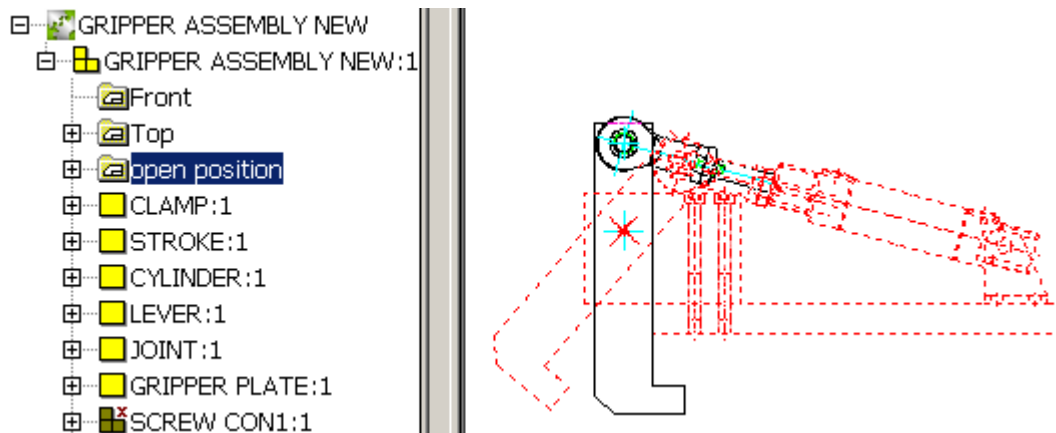
7. Change the color of positional view to red / gray for better visualization. Right-click “open position” at browser to select Property Overrides.



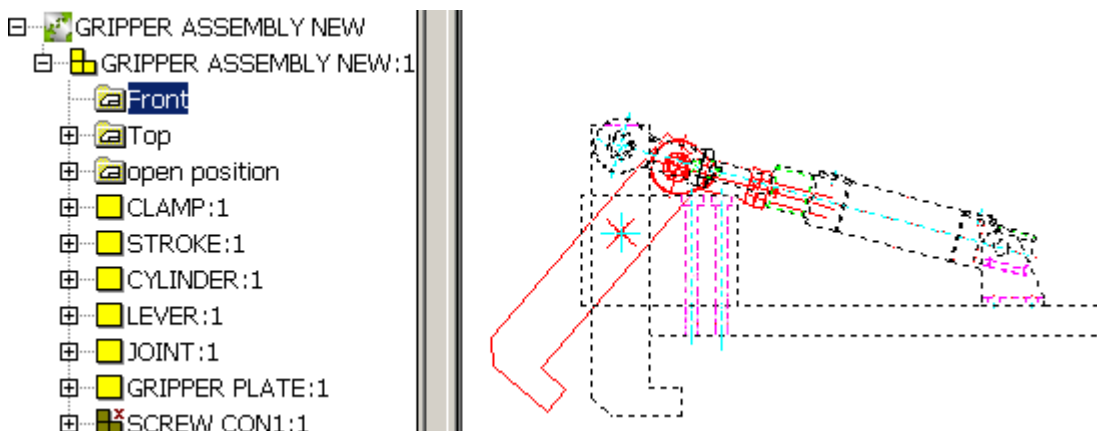
8. Click Overrides Properties and Color to change the open position gripper to red.



9. Notice the visibility of the newly created view as you click the open position of the positional view.

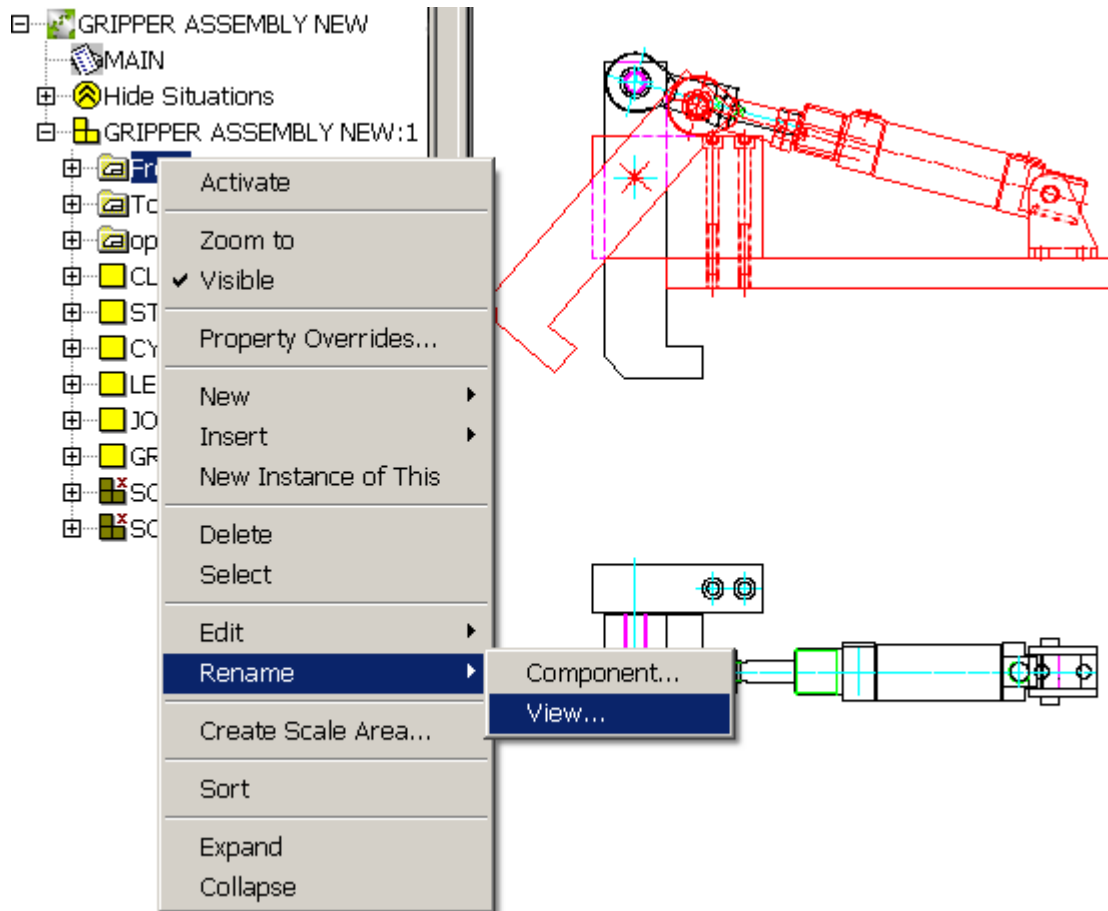


10. Click Front view in the browser to display the front view of the gripper.

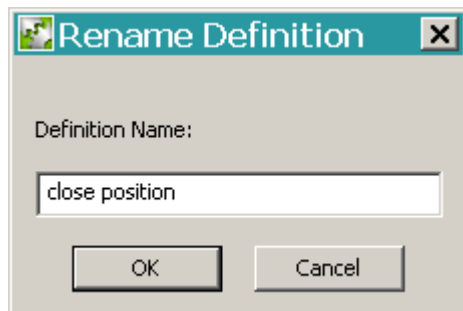


# Create multiple positional views - Close position for the gripper

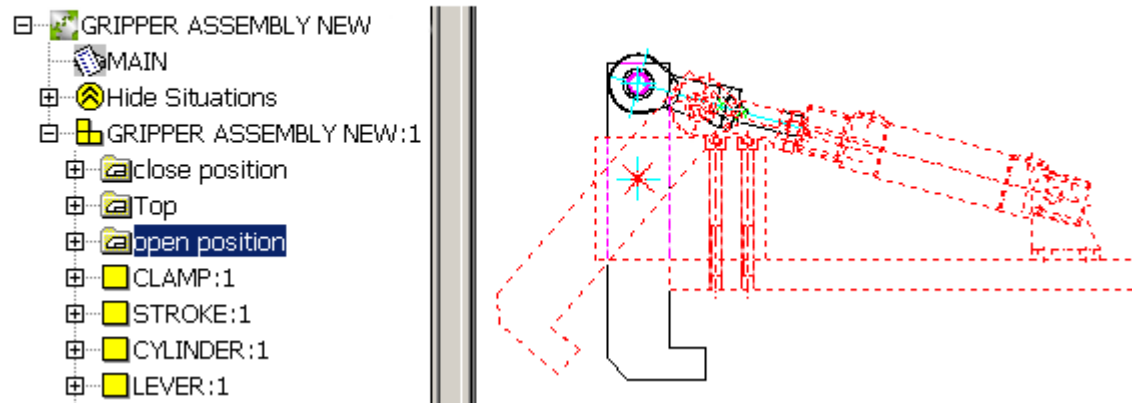
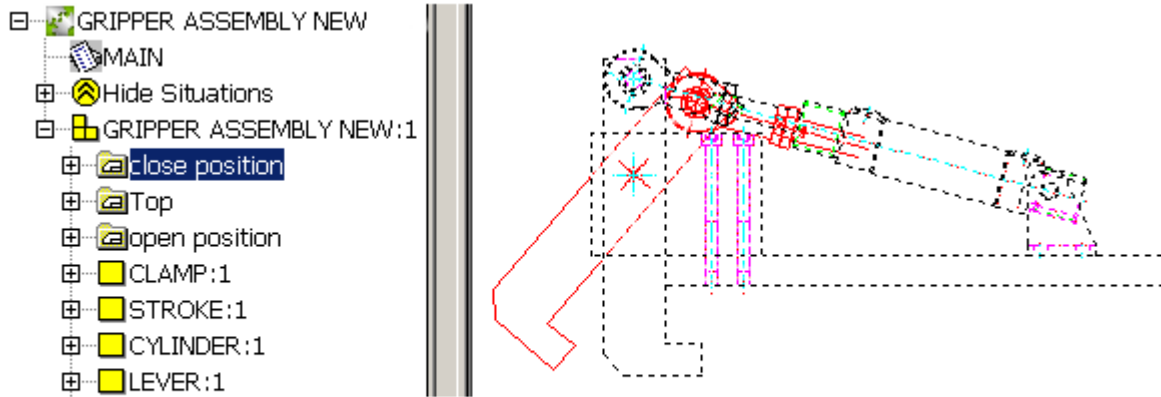
1. As the master view (Front) is at closed position, you can rename the Front view to Close positional view for the gripper.



2. Type **close position** for the new definition name.

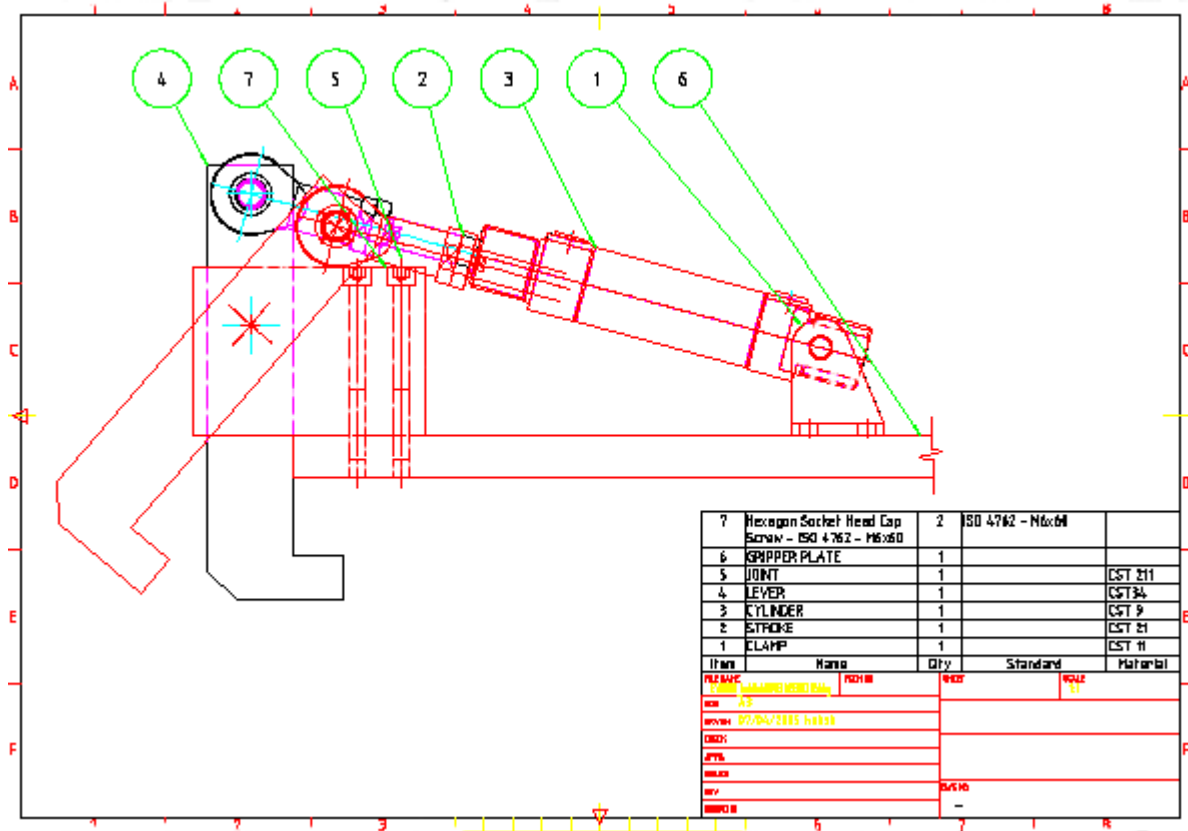


3. You can view both close and open positions of the gripper by clicking the positional views in the browser.



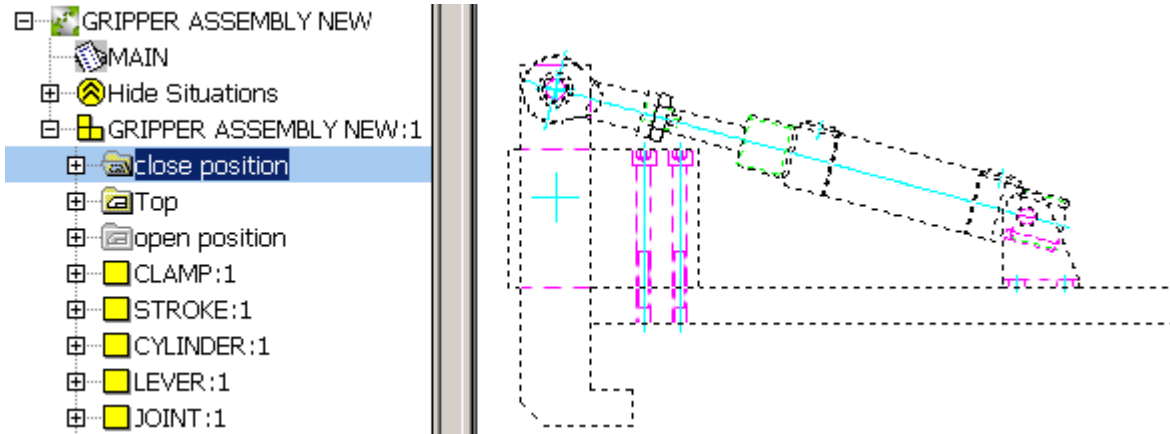
# Generate a part list

Create a 2D detail drawing for the partial gripper assembly. Notice the additional positional views do not affect the number of quantity count in the part list. In Mechanical Structure, part lists are associated to all components and dynamically updated as components are added or deleted. See the following illustration.

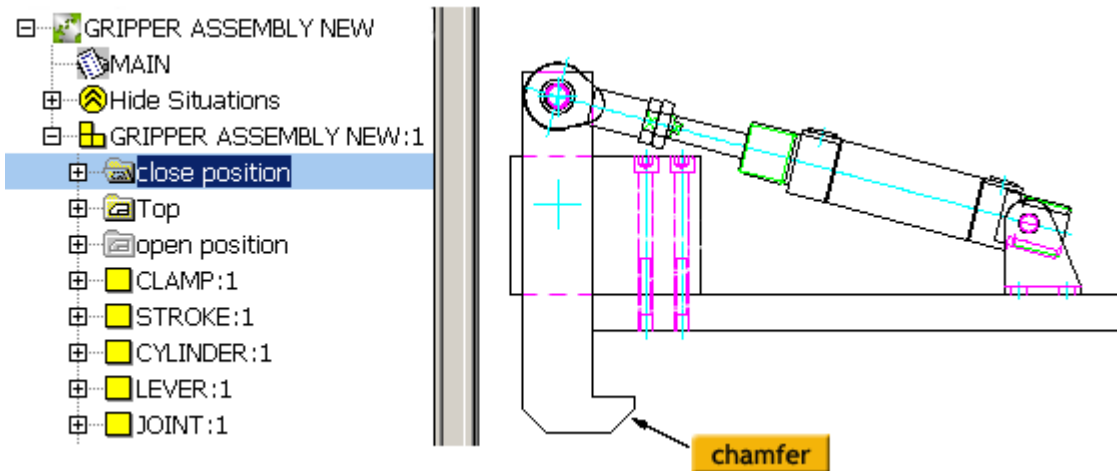


# Modify master view to update all positional views

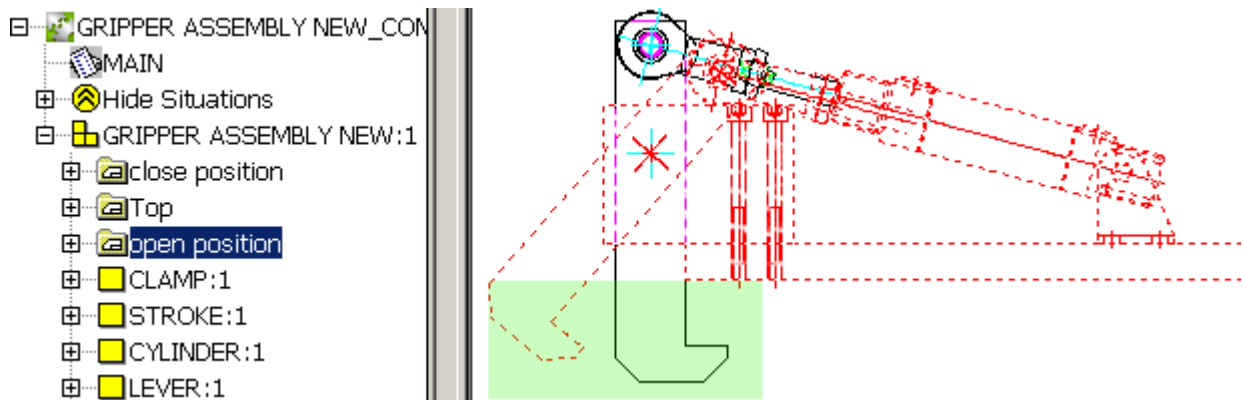
1. Double-click the Close position (master view) to activate it. Switch off the visibility for open positional view.



2. Add a chamfer at the bottom of the gripper as shown.



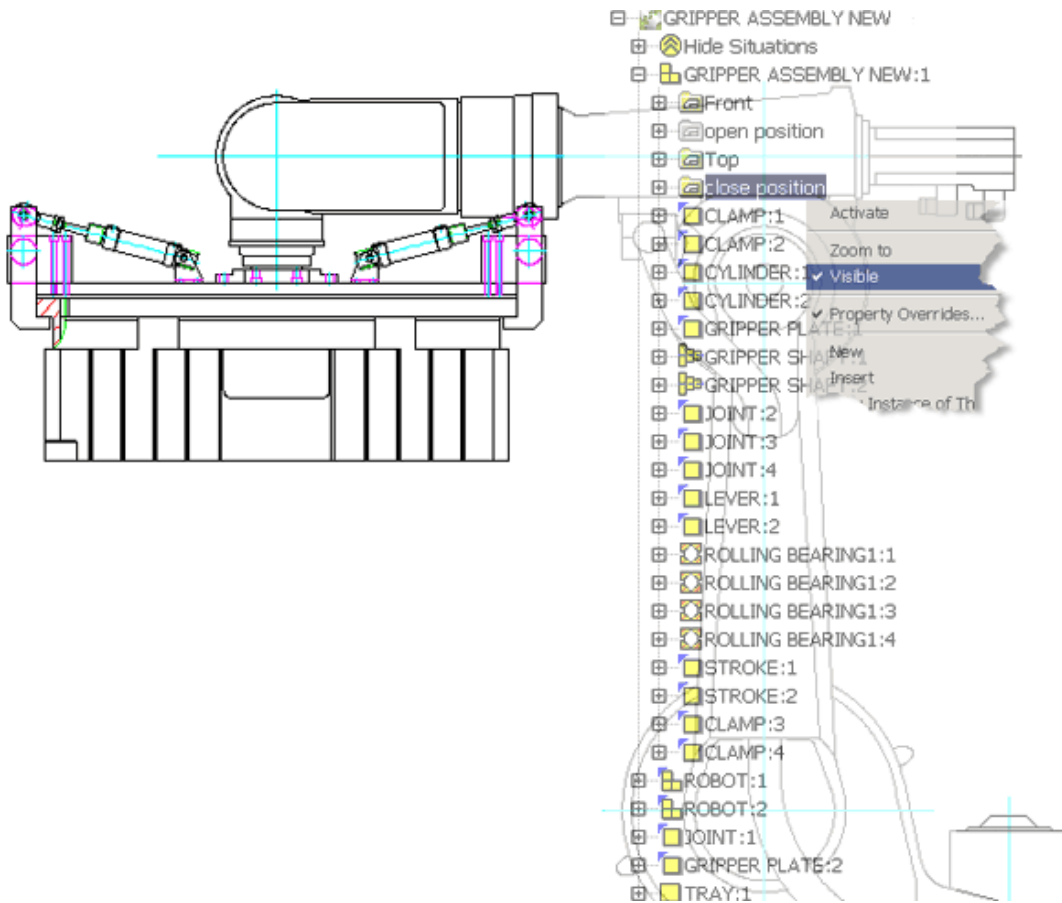
3. Switch ON the visibility for open positional view. Notice it automatically updates according to the associated master view. This showed the associativity remains for the individual components after you break the link at component view for the assembly.



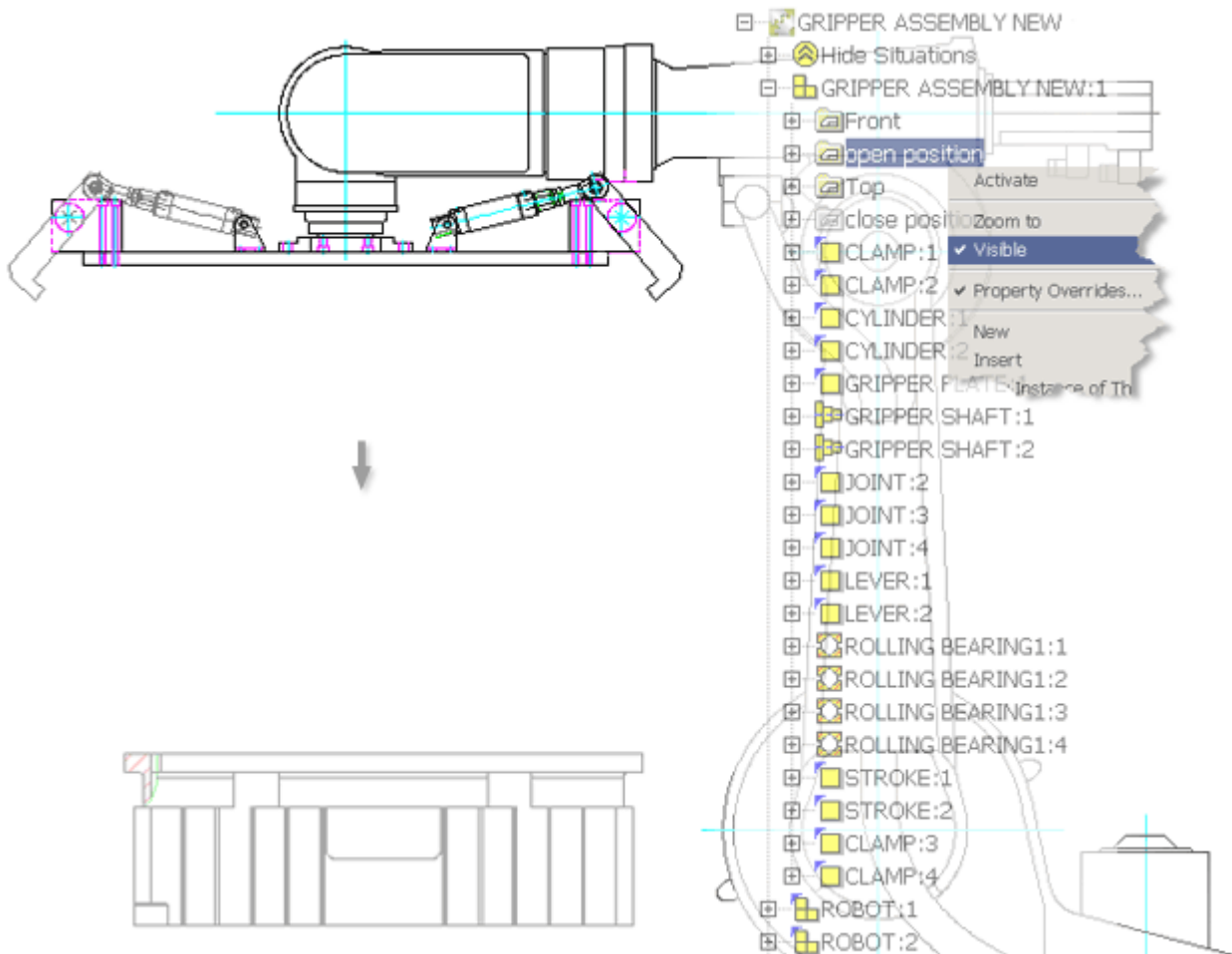
# Visibility control on positional views

You might need to do a quick presentation of your design. With the flexibility of structure, you can switch ON/OFF the visibility of positional views to show positional representation in making design decision.

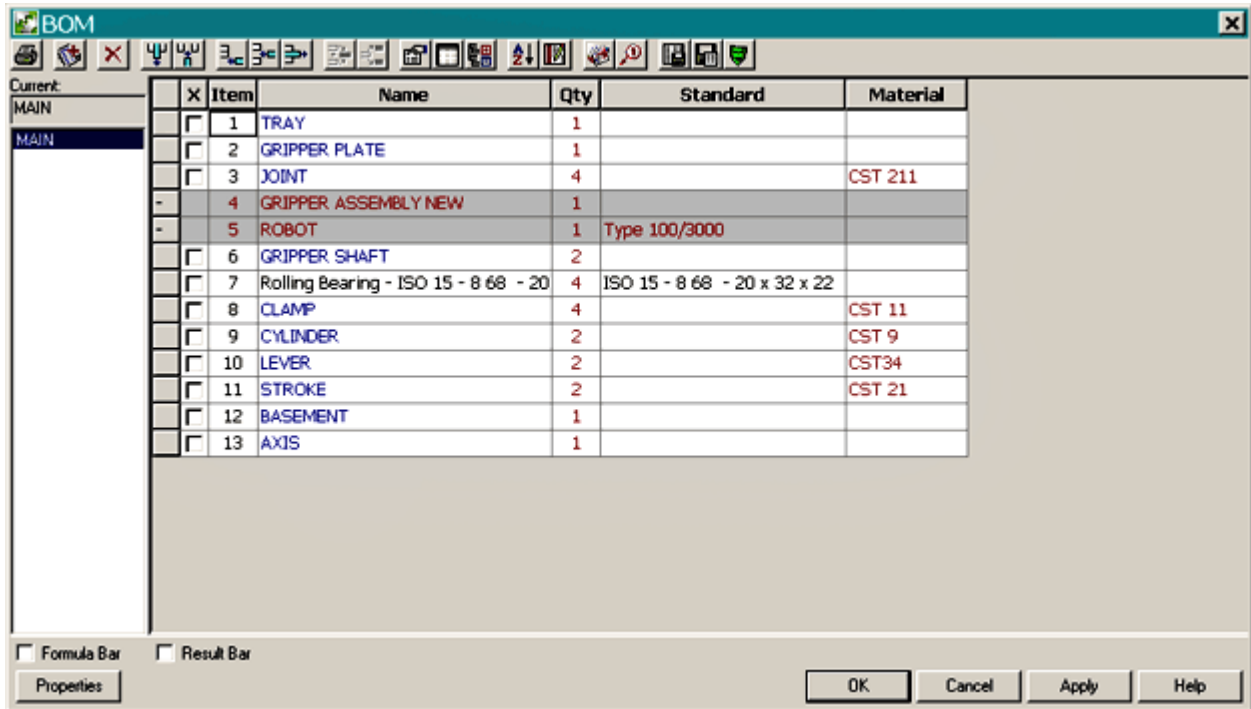
1. Right click the positional view - close position, and then click visible to switch it ON at the browser. You can also switch ON the sample - Tray. See the following illustration.



2. Next, right click the positional view - Close position and tray at browser, click visible to switch them OFF, and then click on the positional view - Open position to switch ON its visibility. See the following illustration.



3. Now, double-click the main BOM at browser. Notice the bill of material remains fully associative, updated and accurate with several different positional views for representation purpose.



You have learned the technique of using mechanical structure for positional representation. You can now use the same method in your designs. To learn more about Mechanical Structure, go to the animated structure tutorial included in AutoCAD Mechanical.