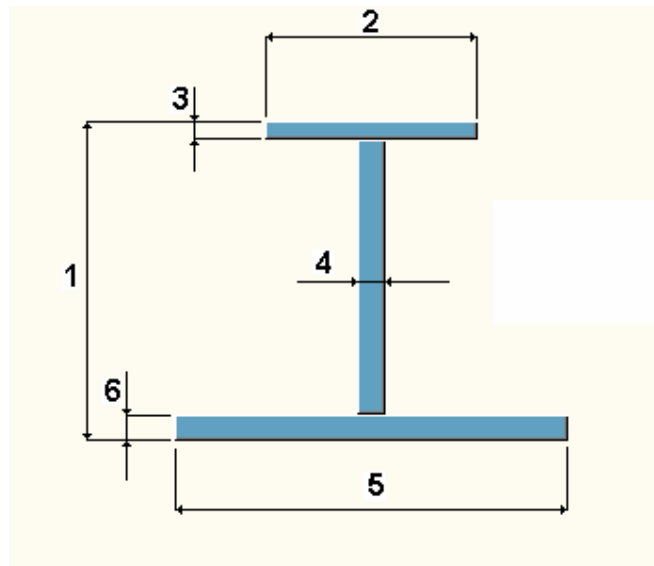


Add Intelligence to a Custom Part

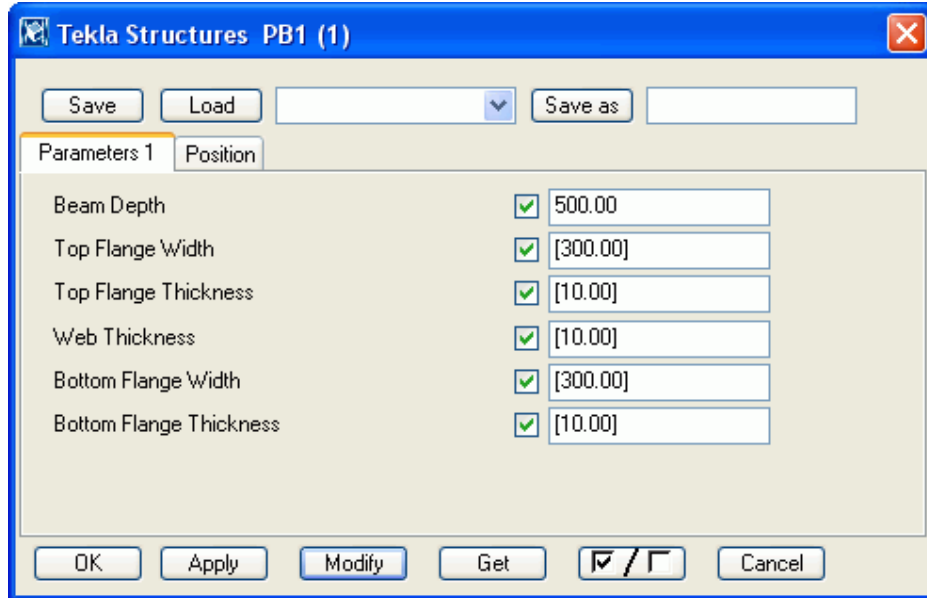
The first step in adding intelligence to a custom defined component is to decide which parameters you would like to be able to input in the finished Part interface.

In this example we will input the following parameters:



- | |
|--|
| <ul style="list-style-type: none">1 = Beam Depth2 = Top Flange width3 = Top Flange Thickness4 = Web Thickness5 = Bottom Flange Width6 = Bottom Flange Thickness |
|--|

Once all parameters have been defined the finished dialog should look like the dialog below:



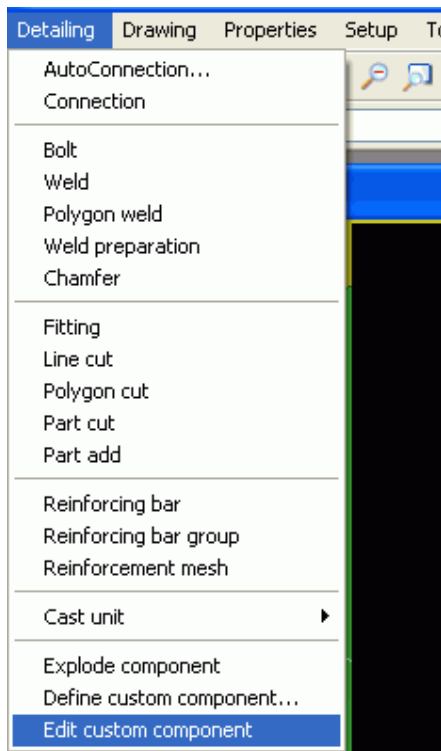
Parameter	Value
Beam Depth	500.00
Top Flange Width	[300.00]
Top Flange Thickness	[10.00]
Web Thickness	[10.00]
Bottom Flange Width	[300.00]
Bottom Flange Thickness	[10.00]

1. Edit Custom Part

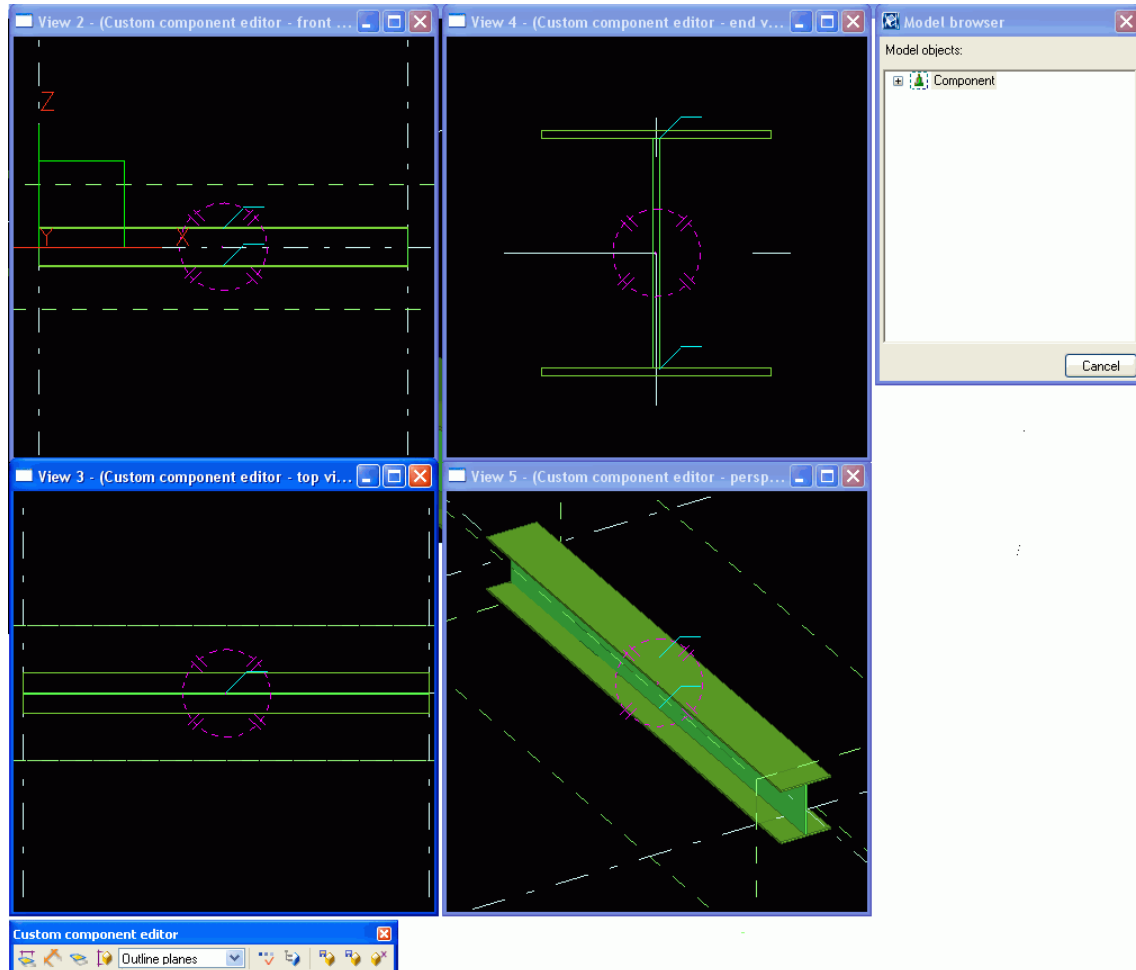
The part has now been created but has no intelligence or input values. In order to do this we have to edit the “Custom Component”.

First select the Custom Component (part)

Select the “Edit custom Component” from the “Detailing” pull down menu, or select from the Right Button menu.



This will then open the “Custom component editor”



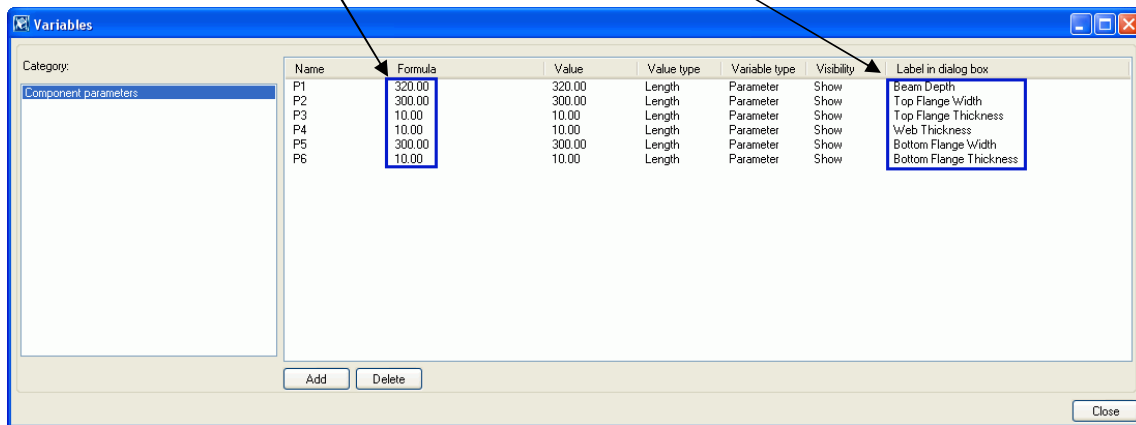
We now have to first decide which objects to define as intelligent and also which values relating to those objects we would like to input.

1. Add Input Parameters

From the Custom component editor choose “Display Variables”



Add 6 new parameters, change the formula and edit the labels to suit



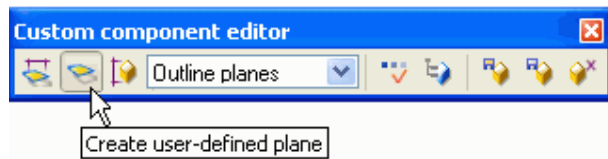
These will be our input parameters

2. Define Automatic Beam Length

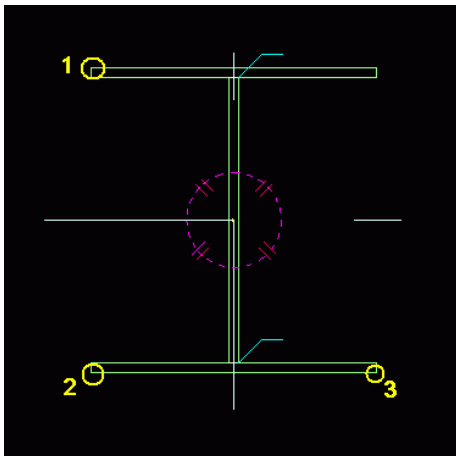
The first step will be to bond the ends of the beam to the component planes so the length will adjust automatically to the input points.

We will use Magnetic user planes to define the beam length

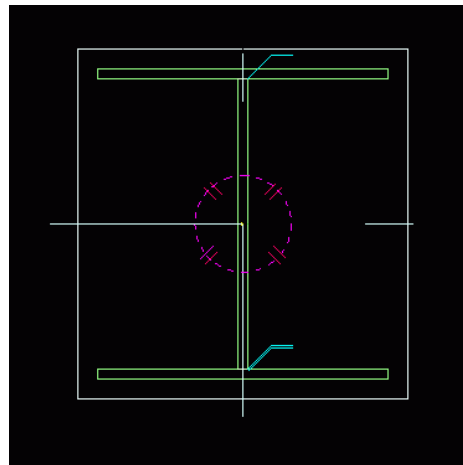
From the Custom component toolbar select “Create user-defined plane”



Select 3 points; press the middle mouse button to finish

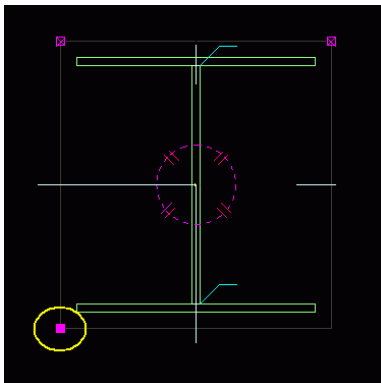


A user plane is then created

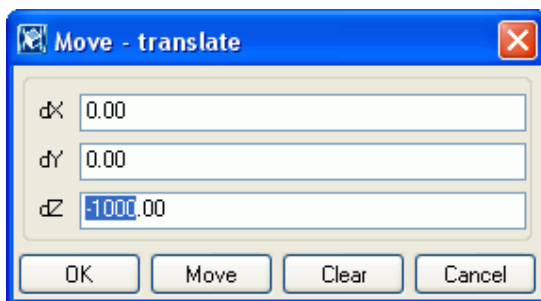
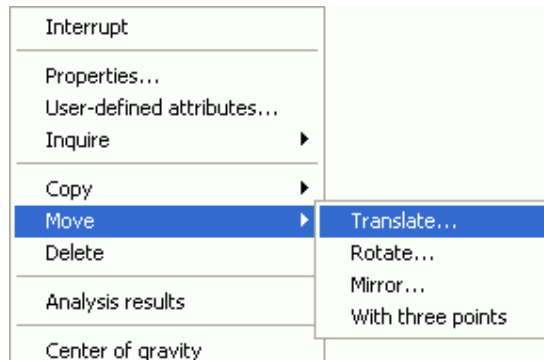


Resize the user plane by moving the handles, so it will be large enough to cover the largest beam size

Select a handle

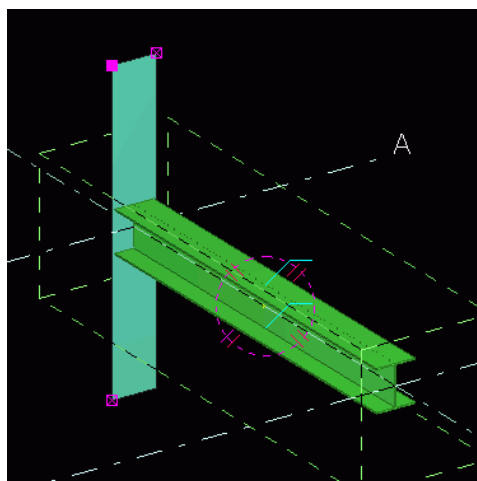


Right click, move, translate

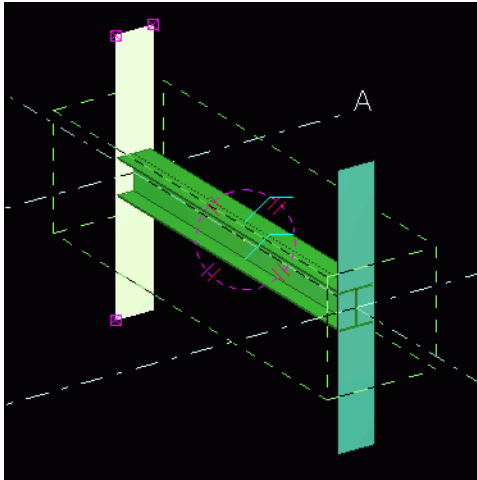


Click “Move” when ready

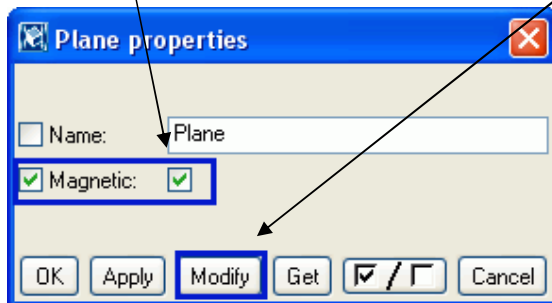
Repeat for the top Handle



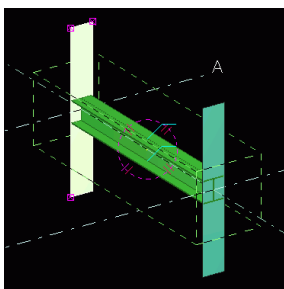
Copy this user plane to the opposite end.



We now need to make these user planes magnetic. Select both user planes, double click on one to open the properties dialog.
Add a "Tick" to the "Magnetic" box and click modify

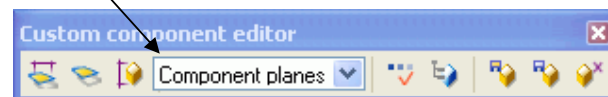


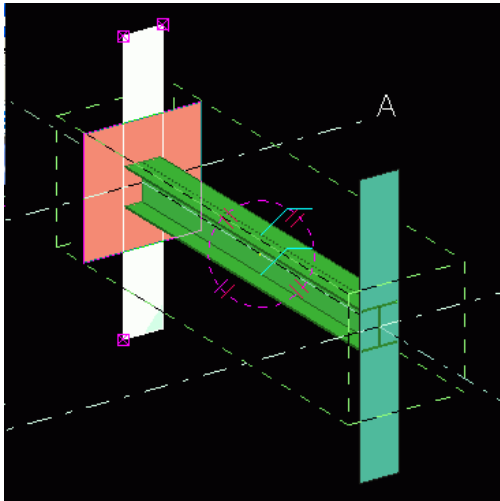
We can now bind these planes, select the first plane.



Right click and "Bind to plane"

From the Custom component editor choose "Component planes"

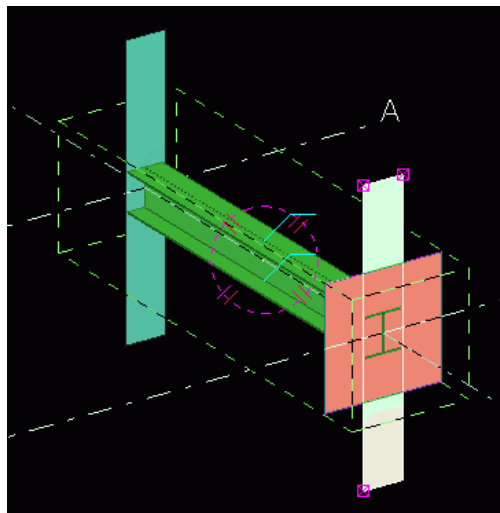




Select the vertical component plane at the same end

Repeat for the second end

Select the user plane, Right click and “Bind to plane”

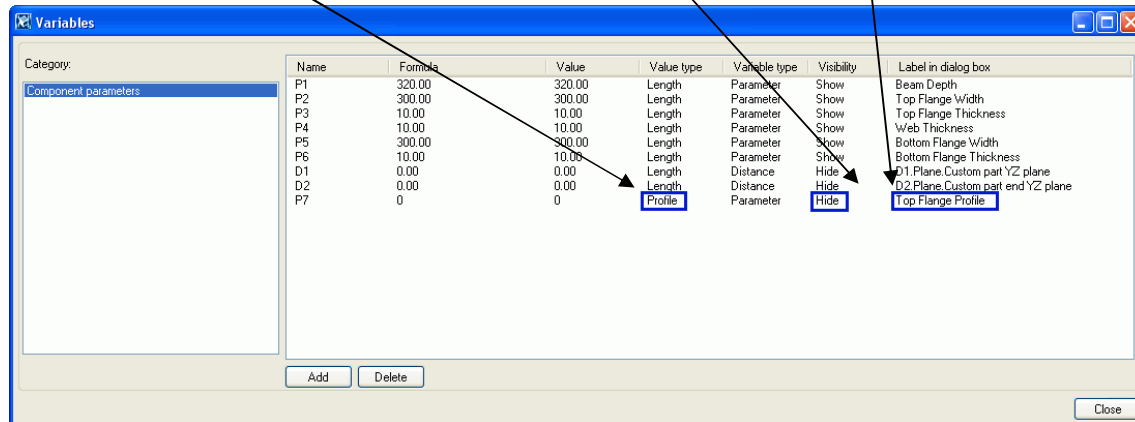


Select the vertical component plane at the same end

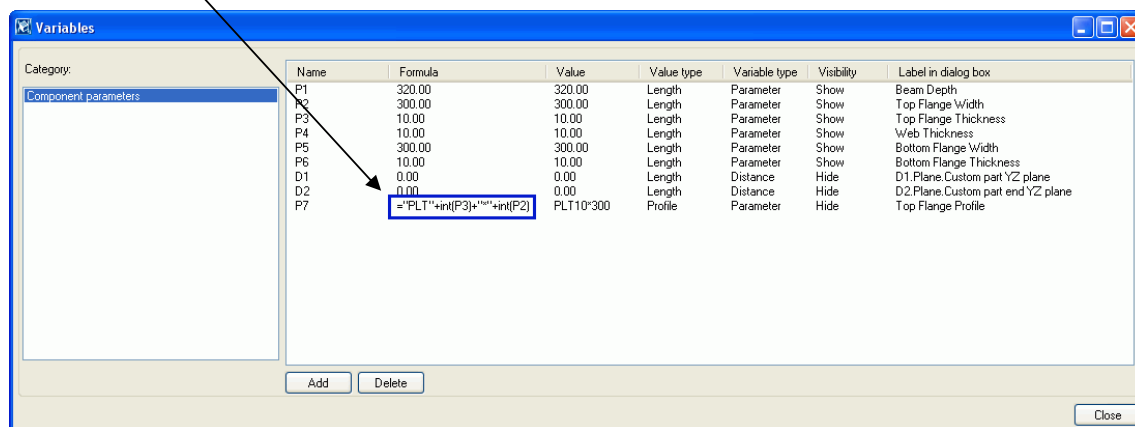
The ends of the beam will now follow the input points

3. Define Top and Bottom Flange Profile

Add a new parameter to the variables dialog, Visibility to “Hide”, change the label to suit
And type to “Profile”

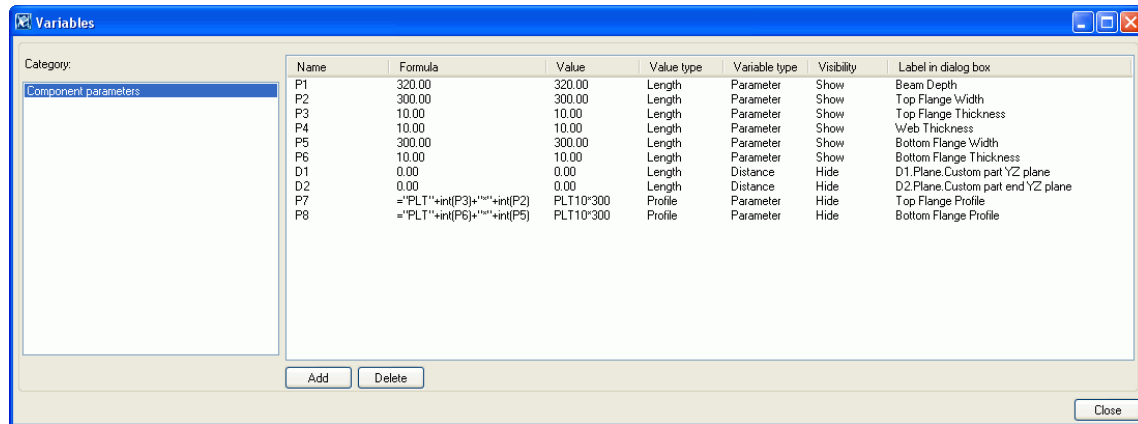


Add “PLT”+int(P3)+”*”+int(P2) to the formula

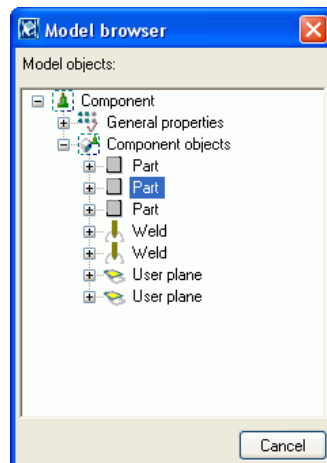
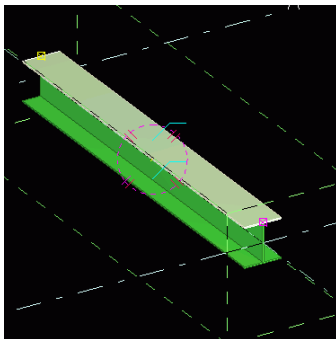


Repeat for the bottom flange profile

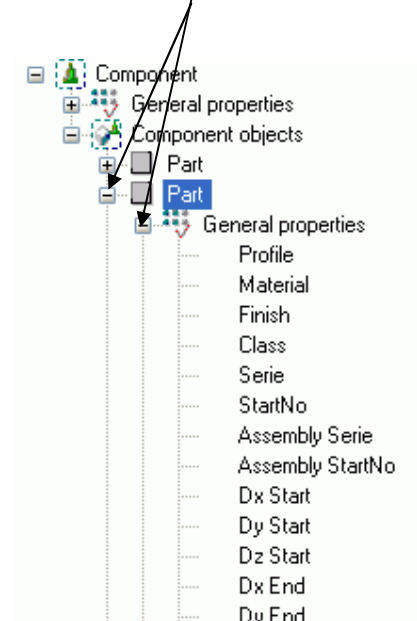
Add a new parameter to the variables dialog, Visibility to “Hide”, change the label to suit
And type to “Profile”, and add $=\text{PLT} + \text{int}(\text{P6}) + "*" + \text{int}(\text{P5})$ to the formula



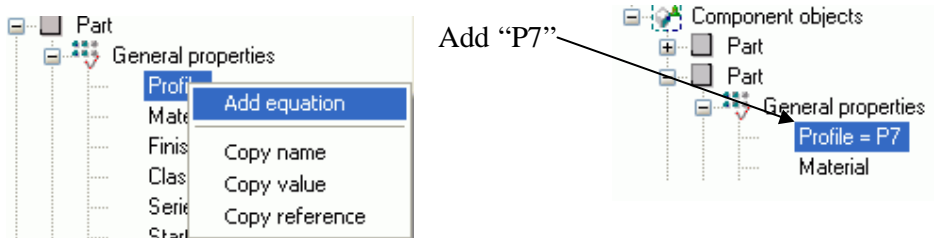
In the model select the top flange, this will highlight the appropriate part in the model browser



Click the “+” icon

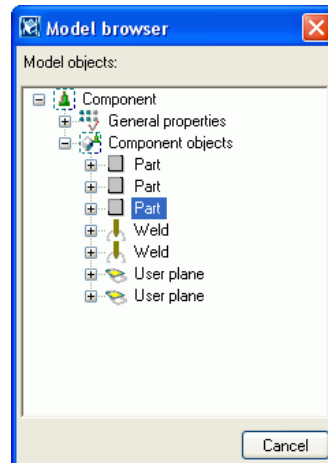
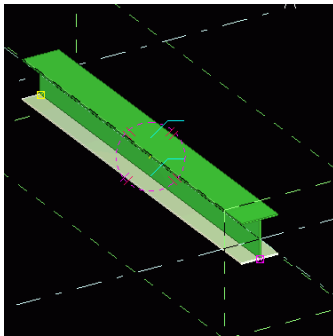


In the Model browser right click on the profile and select “Add equation”

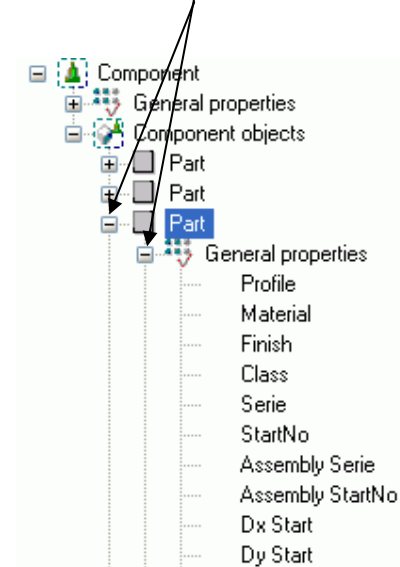


The top flange profile is now tied to our input parameters

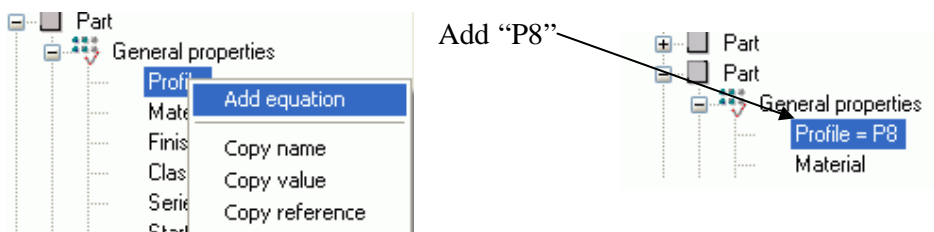
In the model select the Bottom flange, this will highlight the appropriate part in the model browser



Click the “+” icon



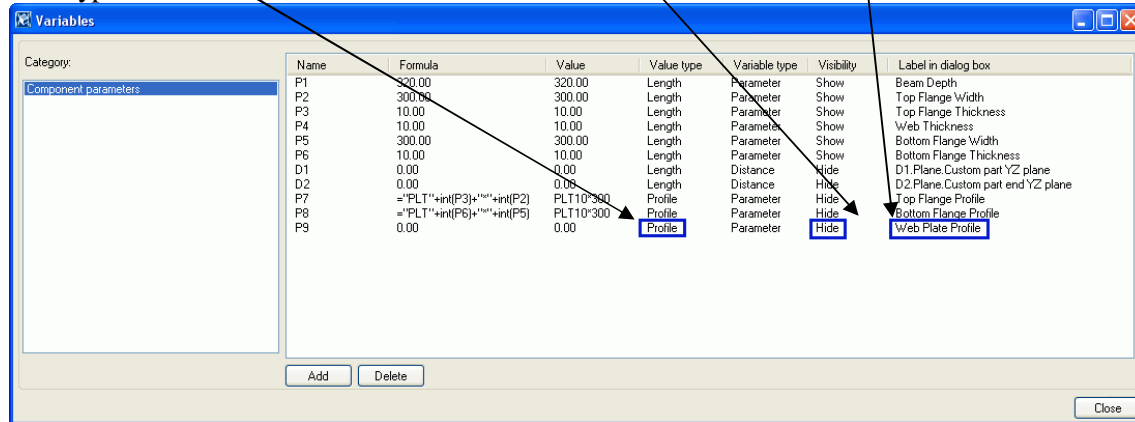
In the Model browser right click on the profile and select “Add equation”



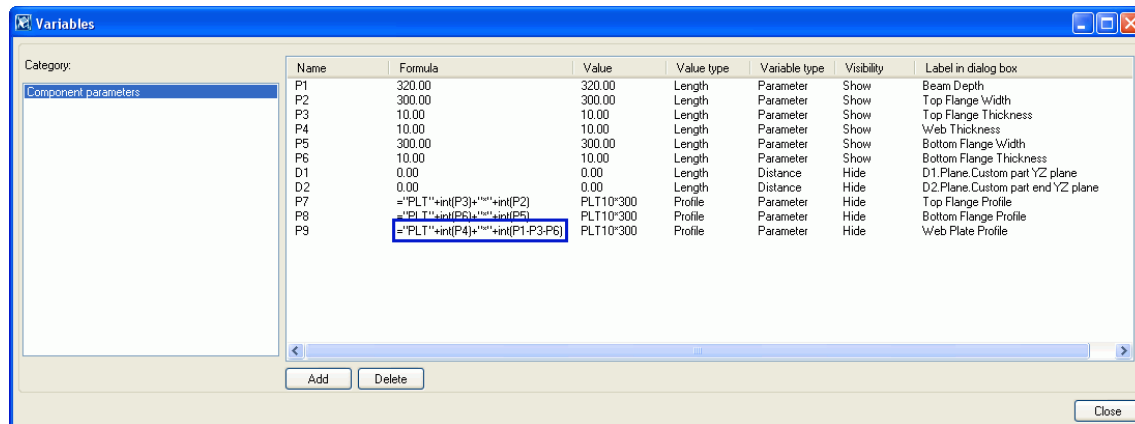
The bottom flange profile is now tied to our input parameters

4. Define Web Plate Profile

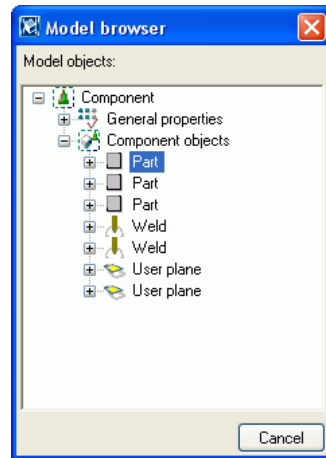
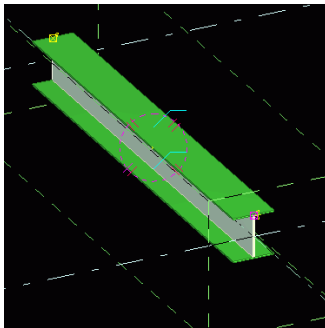
Add a new parameter to the variables dialog, Visibility to “Hide”, change the label to suit
And type to “Profile”



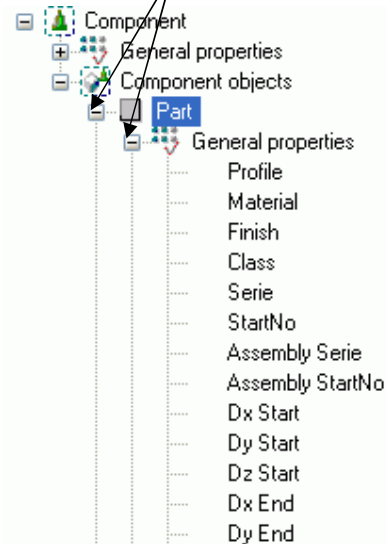
Add = "PLT"+int(P4)+ "*" +int(P1-P3-P6) to the formula



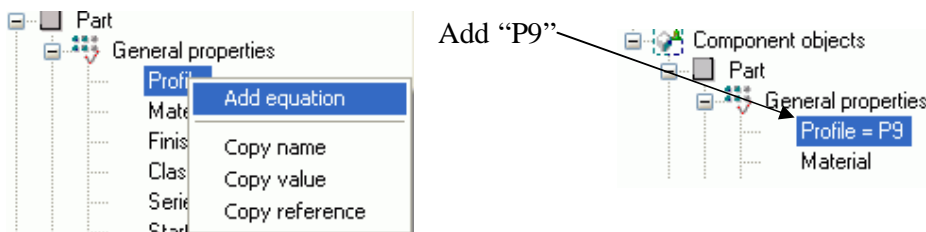
In the model select the Web Plate, this will highlight the appropriate part in the model browser



Click the “+” icon



In the Model browser right click on the profile and select “Add equation”

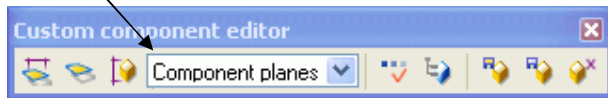


The web plate profile is now tied to our input parameters

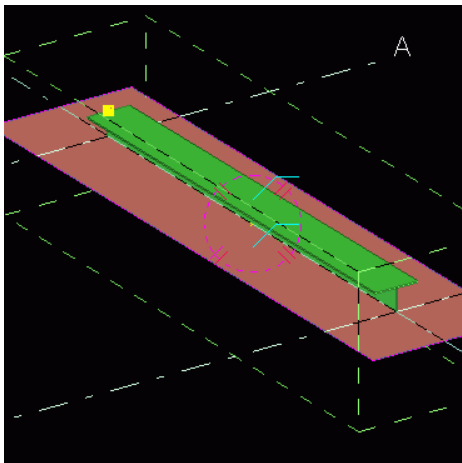
5. Define Beam Depth

Select the top flange, select the yellow handle

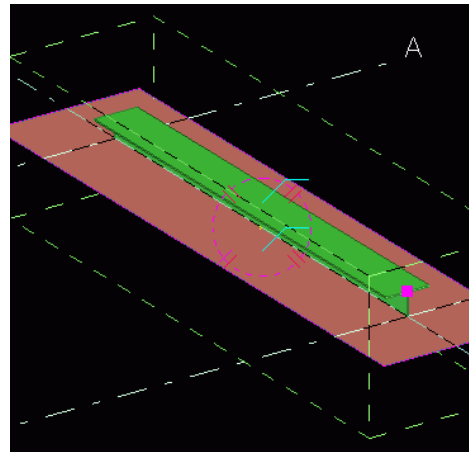
From the Custom component editor choose “Component planes”



Select the horizontal component plane

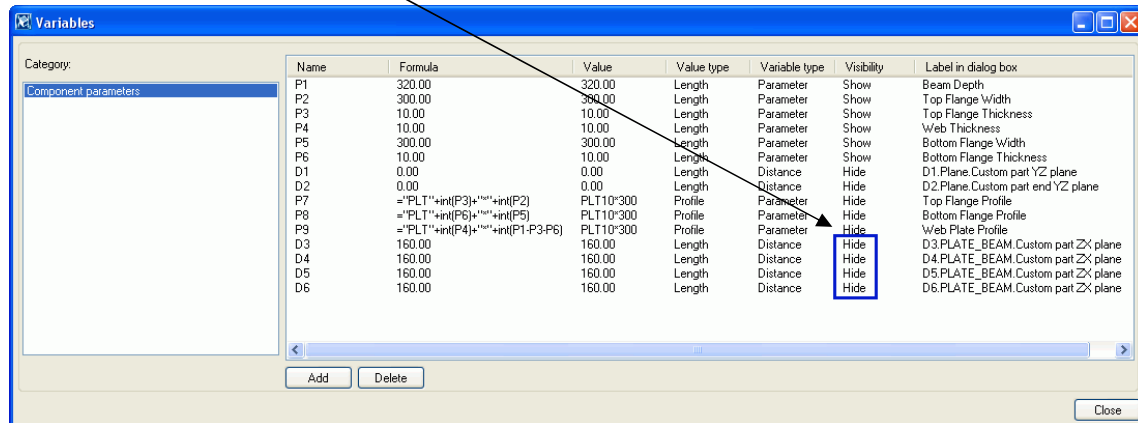


Repeat for the Magenta Handle

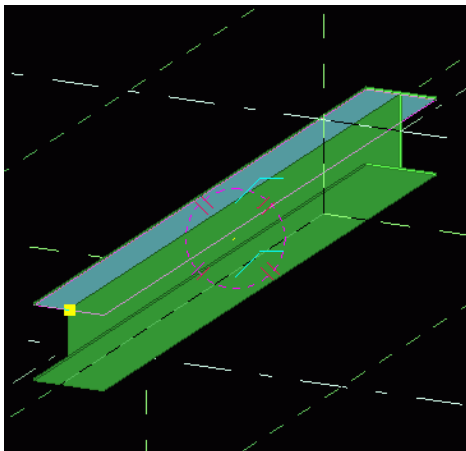


Repeat for the bottom flange handles

Change the visibility to “Hide” for the last 4 variables



Select the Web Plate and bind the handles to the underside face of the top flange



Using “Outline planes” bind both the yellow and magenta handles.

In the variables table change the formula to $=P1/2$

