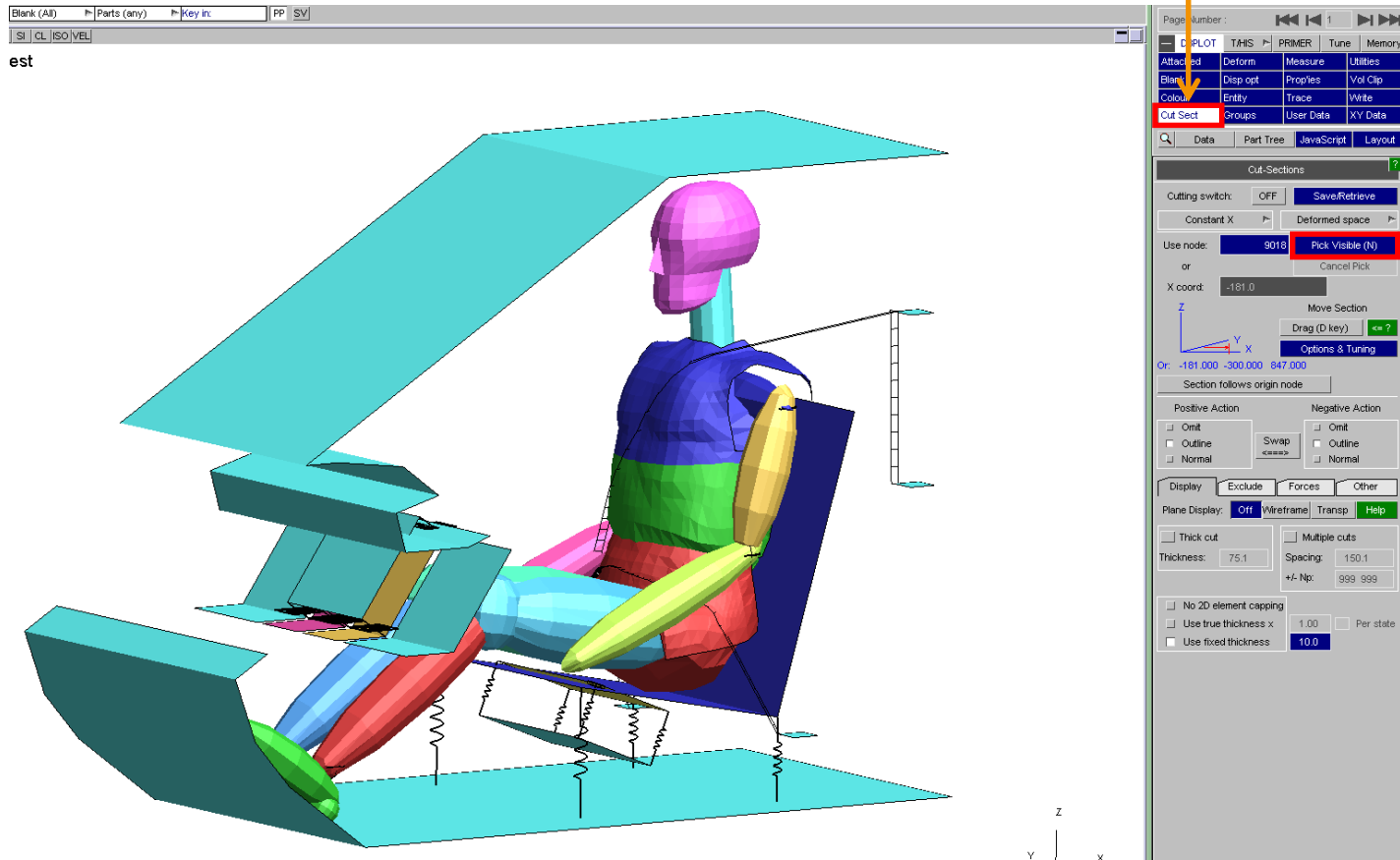


Cut Sections

Creating a Cut Section

The Cut Sect menu can be accessed by either clicking the 'Cut Sect' button within the D3PLOT menu or pressing the 'X' button on a keyboard.



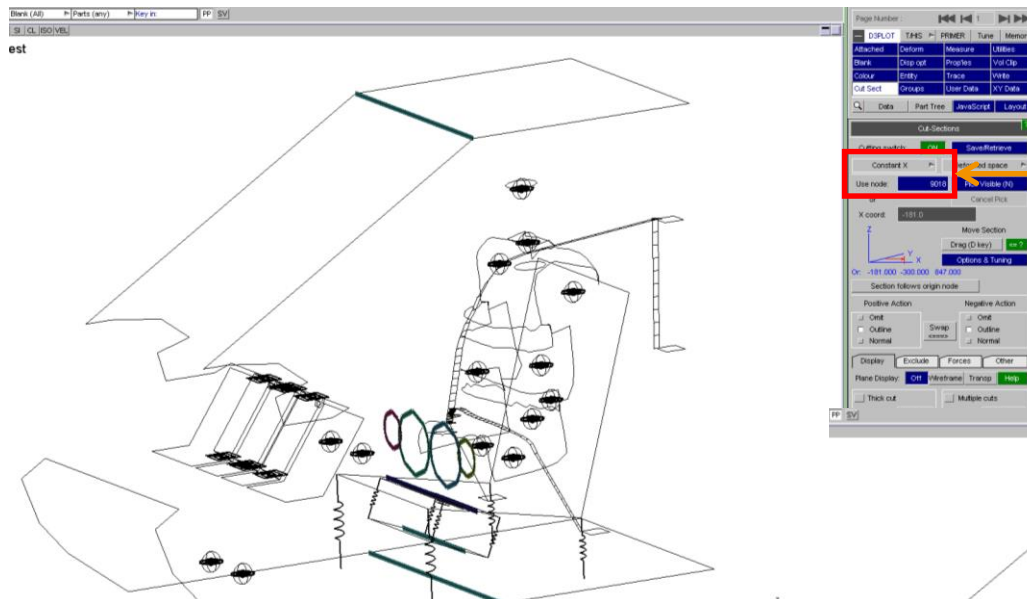
To create a cut section, either click the 'Pick Visible' button in the Cut Sections menu or press the 'N' button on a keyboard.

Then pick a node on the model...

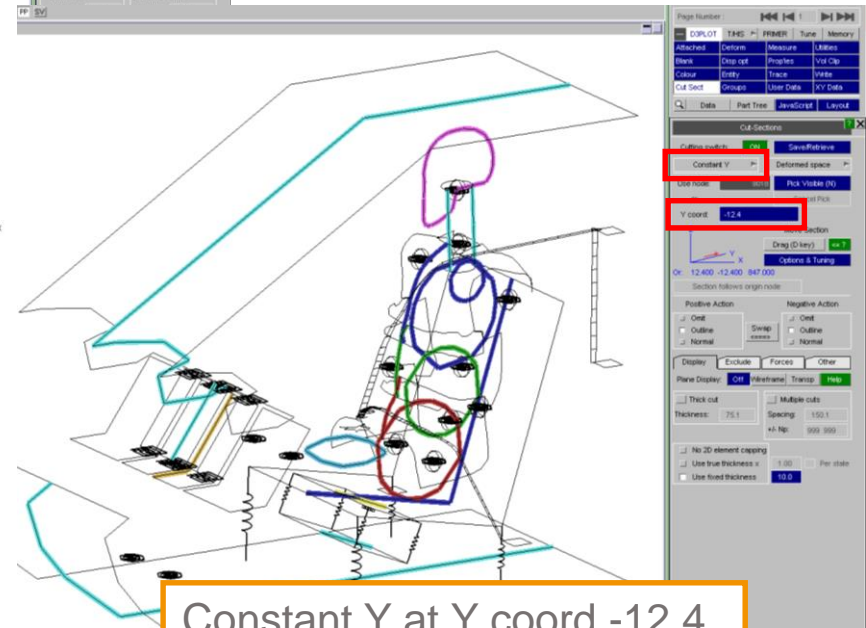
Creating a Cut Section

The location of the cut plane can be chosen.

e.g. Constant X generates the cut plane normal to the X-axis.



Constant X at node 9018

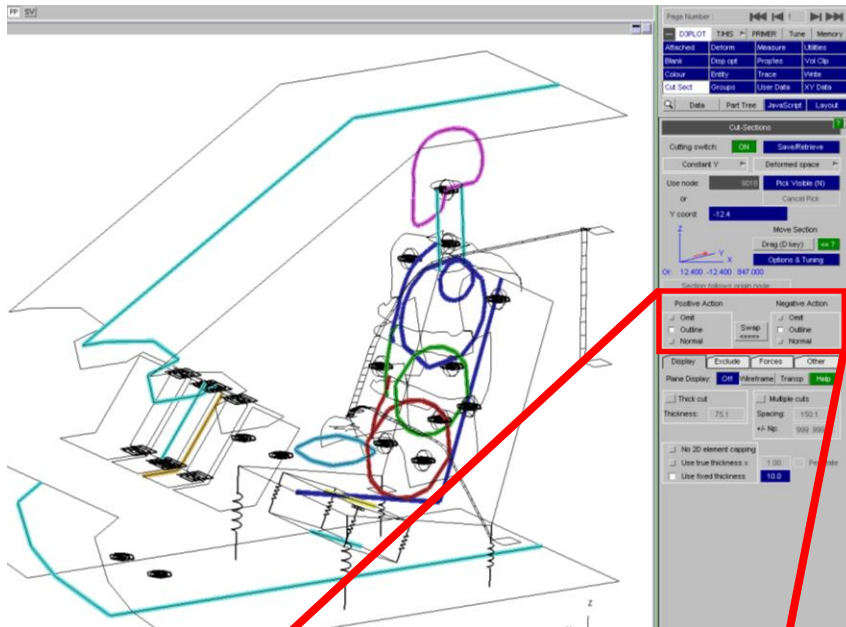


Constant Y at Y coord -12.4

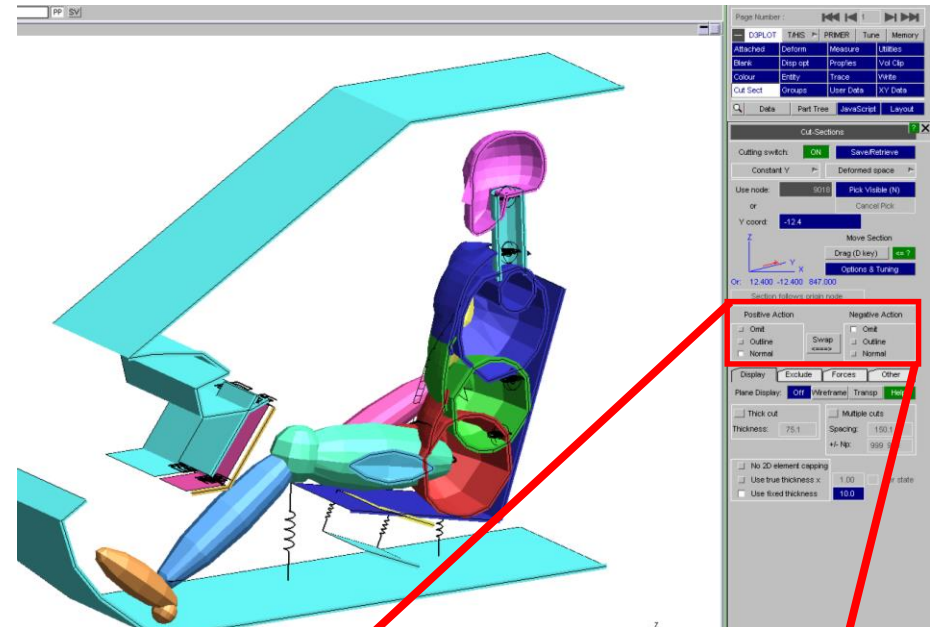
Display Options

You can choose the drawing style on either side of the cut plane ('Positive Action' and 'Negative Action').

- Omit: The mesh is not drawn at all.
- Outline: The mesh is drawn in "line" mode. The cut-plane is coloured.
- Normal: The mesh is drawn normally, with contoured data if applicable.






Positive Action		Negative Action	
<input type="checkbox"/> Omit	Swap <====>	<input type="checkbox"/> Omit	
<input type="checkbox"/> Outline		<input type="checkbox"/> Outline	
<input type="checkbox"/> Normal		<input type="checkbox"/> Normal	



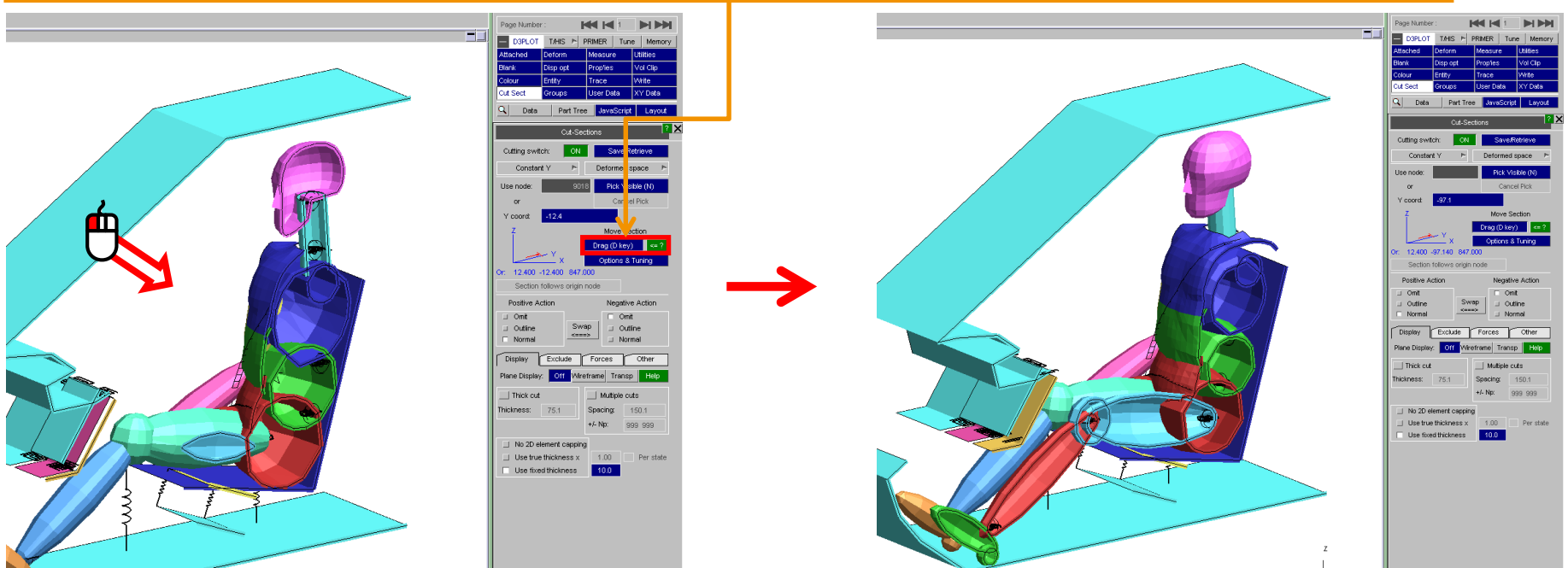
Positive Action		Negative Action	
<input type="checkbox"/> Omit	Swap <====>	<input type="checkbox"/> Omit	
<input type="checkbox"/> Outline		<input type="checkbox"/> Outline	
<input type="checkbox"/> Normal		<input type="checkbox"/> Normal	

Dragging

At any time, either click the 'Drag (D Key)' button or press the 'D' button on a keyboard. Then use the mouse to drag the cut section through the model.

-  translate
-  rotate about Y axis
-  rotate about Z axis

A new point can be chosen if needed by pressing the 'N' button on a keyboard, then picking a node.



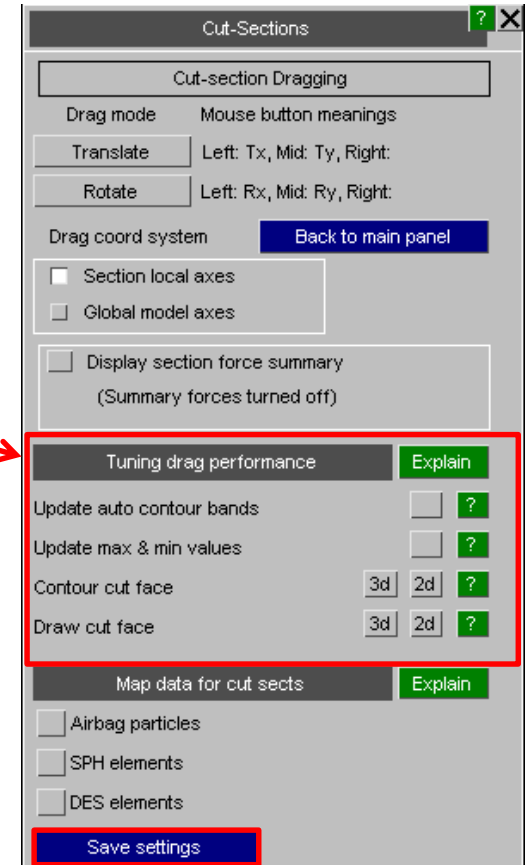
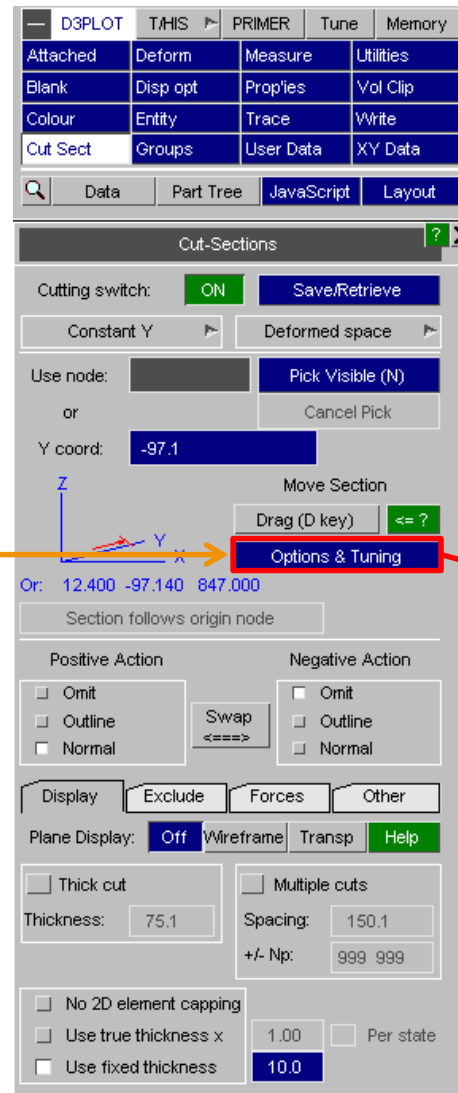
Dragging with big models

The dragging of cut sections through big models while displaying contours can be sped up by clicking the 'Options & Tuning' button.

Available options include :

- Update auto contour bands
- Update max and min values
- Draw the contours on the cut face
- Draw the cut face
- The settings can be saved as preferences in the oa_pref file by pressing the 'Save settings' button.

The options available are only applicable to the "dragging" process only. Therefore once the mouse is released to end the dragging process, the image will be redrawn and display any missing graphical information.



Display Options

PP SV

Page Number : 1

D3PLOT THIS PRIMER Tune Memory

Attached	Deform	Measure	Utilities
Blank	Disp opt	Proples	Vol Clip
Colour	Entity	Trace	WWrite
Out Sect	Groups	User Data	XY Data

Data Part Tree JavaScript Layout

Cut-Sections

Cutting switch: ON Save/Retrieve

Constant Y Deformed space

Use node: 9018 Pick Visible (N)
or Cancel Pick

Y coord: -12.4

Move Section
Drag (D key) <=> ?

Options & Tuning

Or: 12.400 -12.400 847.000

Section follows origin node

Positive Action Negative Action

<input type="checkbox"/> Omit	<input type="checkbox"/> Omit
<input type="checkbox"/> Outline	<input type="checkbox"/> Outline
<input type="checkbox"/> Normal	<input type="checkbox"/> Normal

Swap <====>

Display Exclude Forces Other

Plane Display: Off Wireframe Transp Help

Thick cut Multiple cuts

Thickness: 75.1 Spacing: 150.1

+/- Np: 999 999

No 2D element capping

Use true thickness x 1.00 Per state

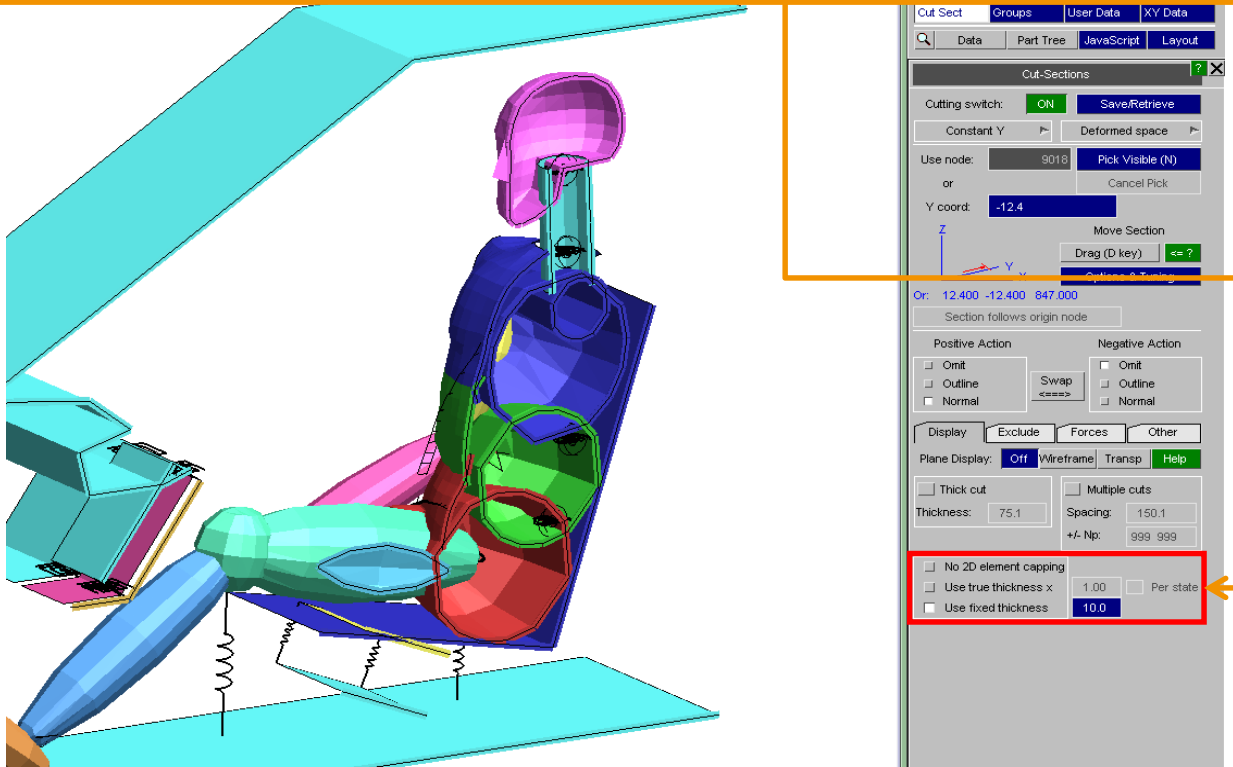
Use fixed thickness 10.0

Alternatively a 'Thick Cut' can be taken of the model with the desired width.

Display Options

2D element capping changes the appearance of shells on the cut plane.

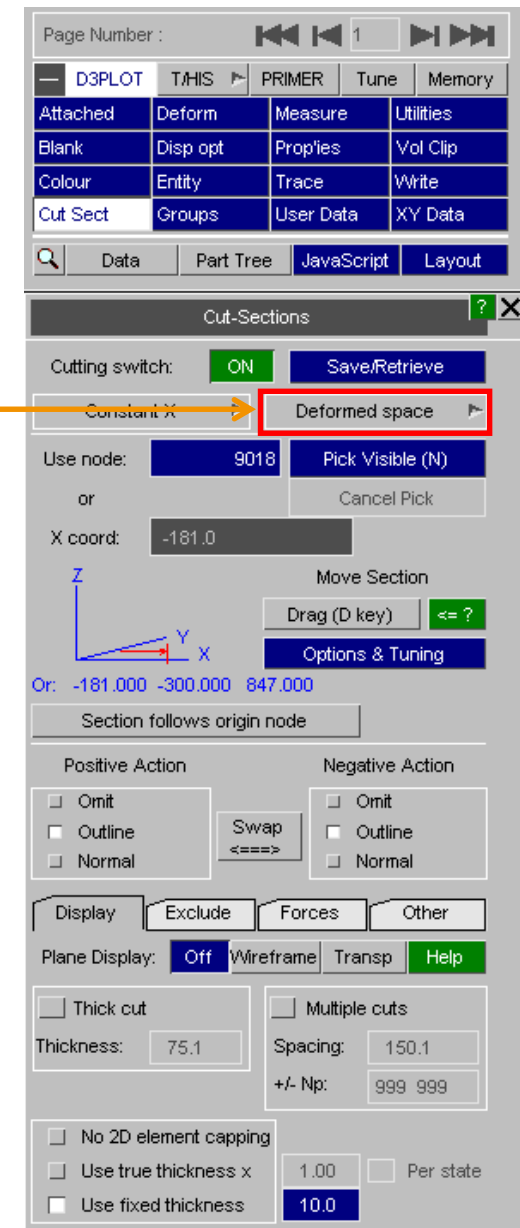
- No 2D element capping: Thin mesh line.
- Use true thickness x: Thickness of the shell multiplied by an optional scaling factor. (Requires shell thickness to be written to the results or the ztf file.)
- Use fixed thickness: All shells have the same specified value.



Cut Section Geometry

The cut plane can be set to three differing systems:

- (i) Basic Space: plane is computed on the undeformed geometry. If the elements deform, the plane deforms with the model. (*This is the default LS-DYNA approach – recommended for force results.*)
- (ii) Deformed Space: the plane is fixed in the model coordinates and the model moves through it. The plane remains flat, but the elements can move through it. (*This is the default D3PLOT approach. Fine for animations, but not recommended for force results.*)
- (iii) Screen Space: the plane is fixed in screen space. If the model is rotated, different elements will be cut. (*This is usually not used.*)



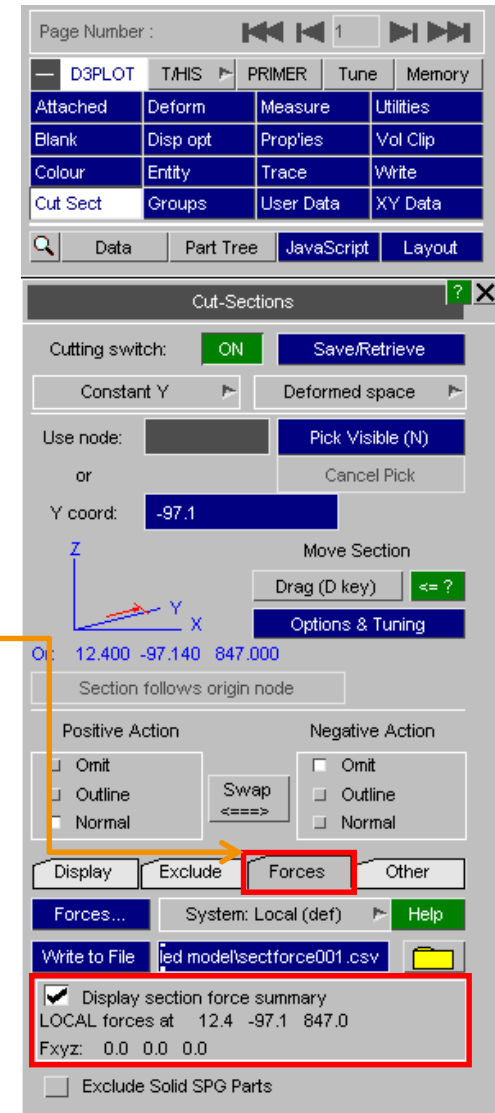
Forces

D3PLOT can calculate forces in a user defined cut section.

When extracting cut section forces, it is important to cut through the centre of the elements. The cut section can be dragged to achieve this.

Under the 'Forces' tab:

- Click 'Forces...' to display a message box with the forces.
- Select 'Local' or 'Global' coordinate system.
- Tick 'Display section force summary' to see a summary of Fz, Fz and Fy forces.

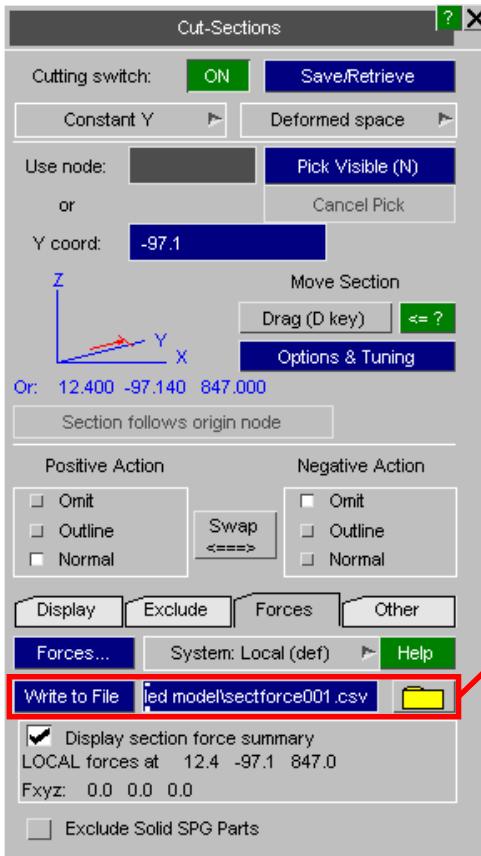


Forces

Cut section forces and moments can be written to a .csv file.

Select a file name and destination using the text entry box and/or folder button .

Click the 'Write to File' button and a .csv file should be created.



M1/W1: Cut-plane force and moment output at time, 4.99950E+00

```
PART, Fx, Fy, Fz, Mxx, Myy, Mzz
800, -7.9010E-03, 3.1136E-02, 1.7722E-01, 1.2989E+02, -1.8429E-01, 4.1719E+00,
801, -5.3758E-03, 2.7748E-03, 3.2521E-02, 1.7323E+01, 6.3289E+00, 3.9410E+00,
802, 3.5208E-02, 1.6776E-02, -2.7701E-02, -4.2919E+00, -1.0906E+01, -8.0308E+00,
804, -1.7741E-04, 3.1860E-05, -9.0481E-05, 1.1861E-03, -3.1389E-02, -2.5036E-02,
810, 1.0578E-02, -3.9736E-04, -7.6691E-02, -5.7626E+01, 1.5117E+01, -8.0408E+00,
. . . . .
. . . . .
2000242, -1.3652E-03, -4.4917E-03, -2.3154E-03, -3.0806E-01, 1.6120E-02, -1.7210E+00,
2000246, 1.2085E-02, 6.4670E-03, 2.2472E-02, 1.1535E+01, -1.6359E+01, -1.5320E+00,
2000252, 9.4278E-03, 3.5153E-04, 3.5429E-03, 7.1106E-01, -3.5469E+00, -1.6143E+00,
2000265, 8.7467E-04, -9.9446E-04, 2.0211E-03, 6.4750E-01, -1.3898E+00, -8.4476E-01,
2000266, -2.9885E-03, -4.8606E-04, 3.7147E-03, 4.9111E-01, -3.1330E+00, -6.8825E-02,
Total, -8.0324E-01, 1.0326E-01, -7.9019E-01, -2.3442E+02, 5.9231E+02, 3.1704E+02,
```

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