

Connection Debugging



Debugging common connection problems

- PRIMER supports creation/modification/deletion of connections including spotwelds, bolts and adhesive. The Connections tool is a robust, efficient way of managing this connection data.
- However, it is possible for connections to fail to connect or 'realise'.
- The aim of this tutorial is to list some common issues encountered when creating connections and offer resolutions.
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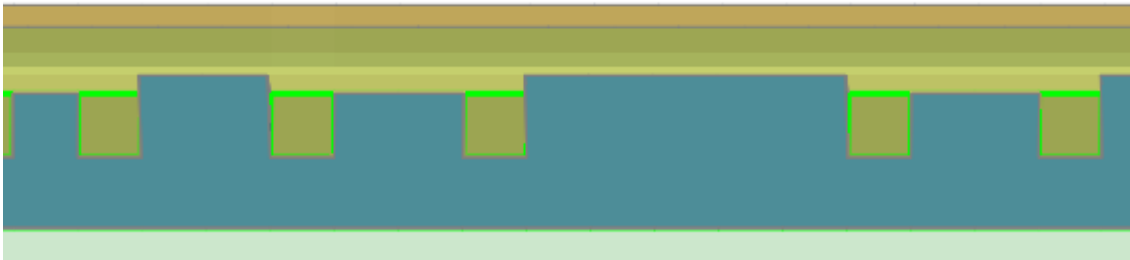


Improving patch adhesive edges



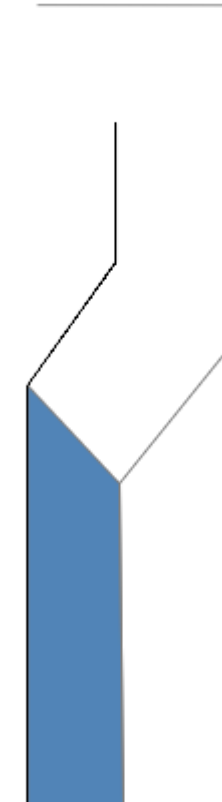
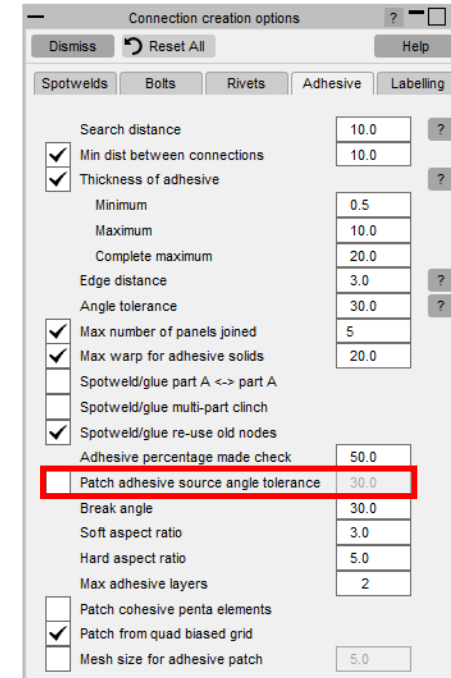
Improving patch adhesive edges

- In this example the adhesive connection defines a regular grid at the edge of the part.
- However, creating the connection gives an unexpected jagged edge with missing solids.

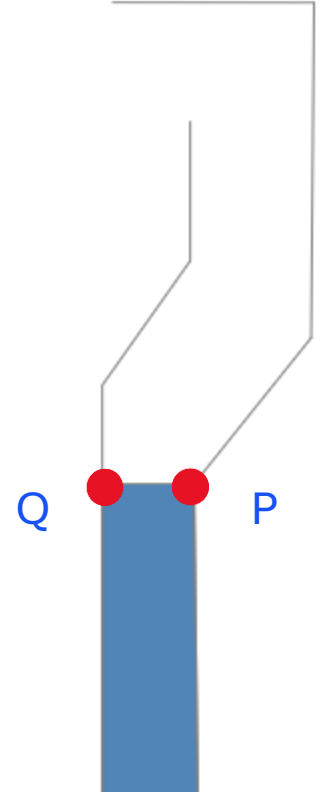


Improving patch adhesive edges

- Inspection of cross-section shows the geometry is complex.
- The default angle tolerance is 30° which can make distorted solids or fail to make.
- Setting to 60° allows point P to project to point Q.
- The global setting shown only applies when **creating** connections. For **remaking existing** connections, 'stored settings' need modification (see next slide).



Angle
tolerance
30°



Angle
tolerance
60°

Improve patch adhesive edges

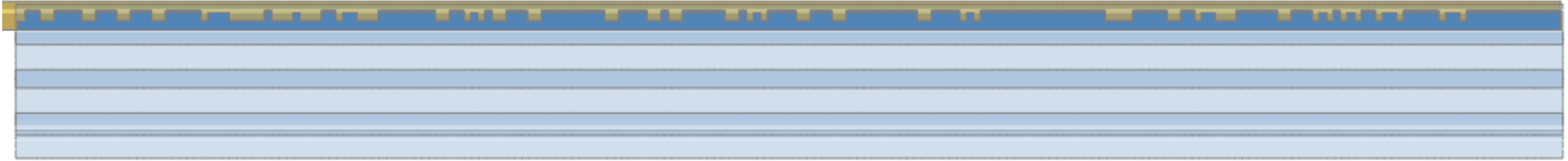
Dismiss	View...	Options...	Refresh	Autoscale	Clear	Sel all	Select	Show sel	Spotwelds	Adhesive	Rivet	Write...	Sketch conx on select	?
Apply:	Undo	All	Selected	Changed	Action:	update & remake	Show all	Bolts/Joints	Spot lines	Set columns	Save columns to pref			
ID	Type	Subtype	Status	Part ID	Adh. Patch Info	Contact id	Layer 1	Layer 2	P1 (coords)	Store/Default	Angle tolerance			
CNX1	ADHESIVE	Patch	Realized	150902	442	C100001	P101266P10042	P120040	<n/a>	STORED	30			

General	✓ Store/Default	Bolt mass adjust	Glue break angle	Warpage check
Layers	Allow same part	Bolt part min mass	Glue soft aspect	Patch angle check
Parts	Allow clinch	Bolt nrb min mass	Glue hard aspect	Patch cohesive
Spot Remesh	Align solid	Bolt feature line	Length check	Patch angle
✓ Settings Saved	Align rotate edge	Bolt dth beam	Length minimum	Patch quad bias
Set columns	Align feature line	Bolt zero len dscr	Length maximum	Search distance
Unset All	Align ignore inner	Bolt el beam thickness	Length total	Spot line tol
Reset	Align distance	Consistent weld CSA	Maximum warpage	Use _PID
Save Col Settings	Align feature angle	Edge distance	Max num of panels	
Dismiss	✓ Angle tolerance	Feat.Line Weld	Num panels check	

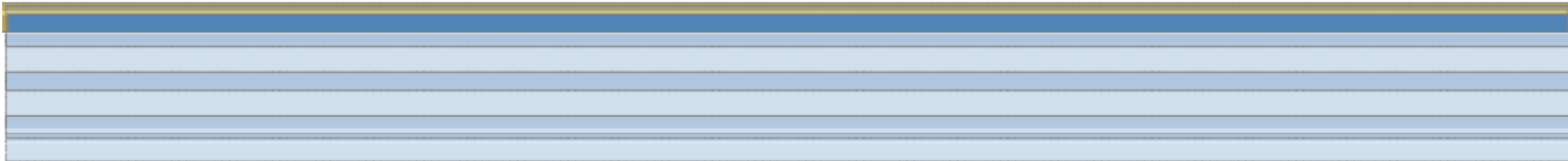
- If modifying an existing patch connection:
 - Before remake change stored Angle Tolerance to 60°.
 - NOTE – just changing global option (Options...) won't change stored setting.

Improve patch adhesive edges

- Adhesive created with angle tolerance = 30°



- Adhesive remade with angle tolerance = 60°

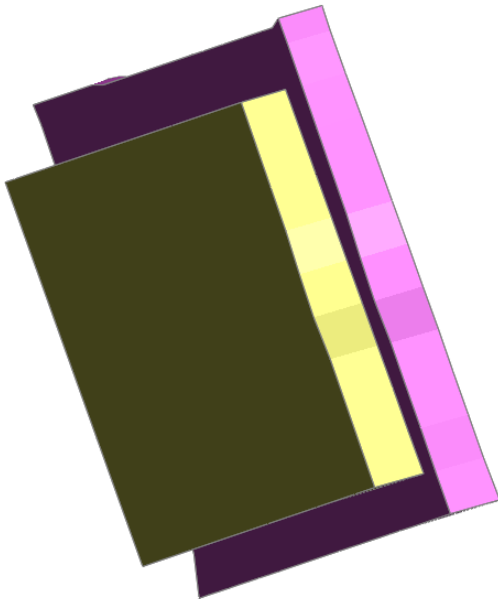


Ensuring patch adhesive projection

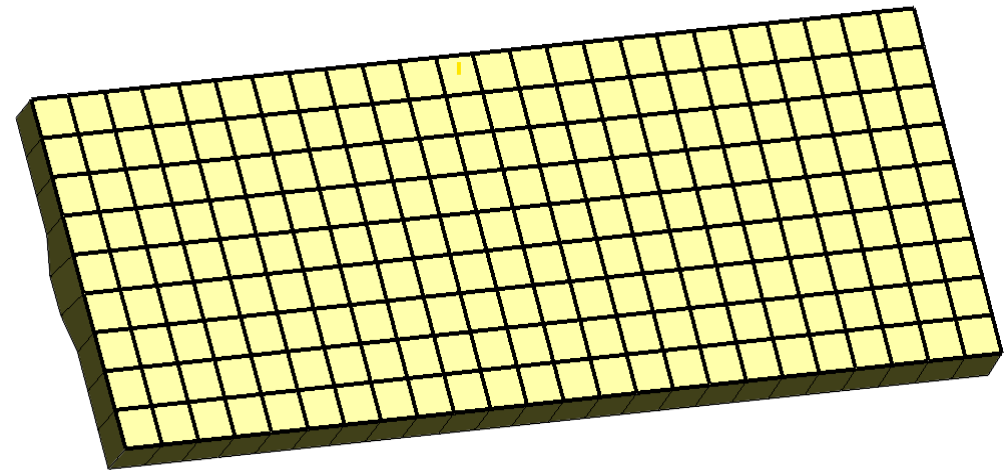


Ensuring patch adhesive projection

- When creating adhesive patches between solid plates, segments are created on the face of the smaller part, then projected to the larger part.

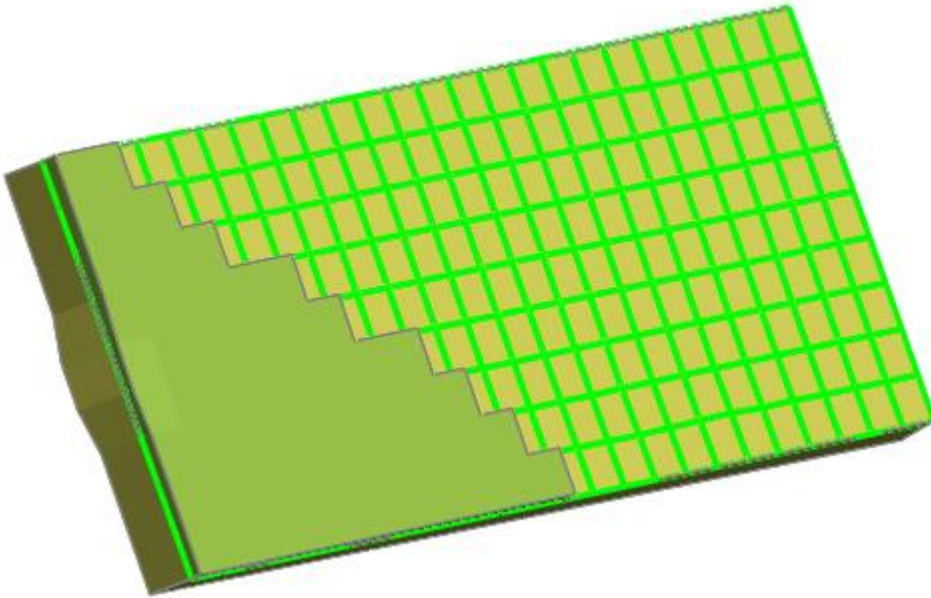


Creation method	Select patch shells/secs
<input type="radio"/> adhesive line	<input type="button" value="Sketch adhesive"/>
<input type="radio"/> auto adhesive	Hard Aspect ratio <input type="text" value="5.0"/>
<input type="radio"/> free edge	
<input type="radio"/> geometry line	
<input checked="" type="radio"/> patch	
<input type="button" value="Select patch source shells"/>	
<input type="button" value="Select patch source solids"/>	
<input checked="" type="radio"/> Extrude from quad biased grid	
<input type="radio"/> Extrude from existing mesh	



Ensuring patch adhesive projection

- In this example adhesive has only been created on part of the plate.

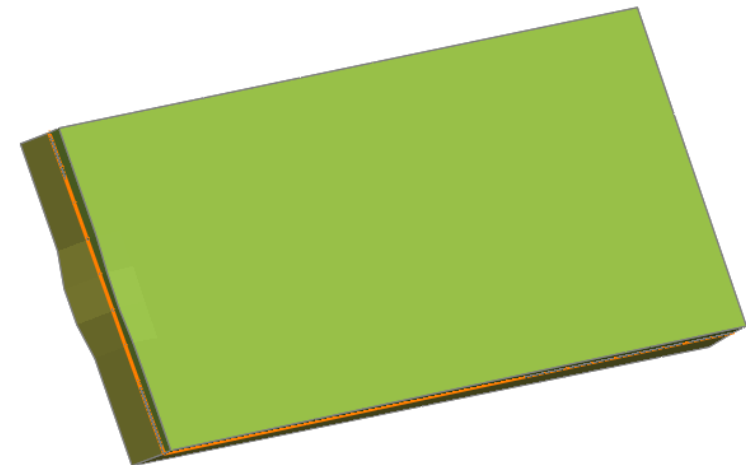


Max length and search distance default to 10

Store/Default	Length maxim	Search distanc	Angle toleranc
STORED	10	10	30

Try increasing to 20 to make complete adhesive

Store/Default	Length maxim	Search distanc	Angle toleranc
STORED	20	20	30



- In PRIMER 22.0 setting Max length alone will work (search distance automatically increased).

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